

**UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
FINAL CAPE HATTERAS NATIONAL SEASHORE OFF-ROAD VEHICLE MANAGEMENT PLAN /  
ENVIRONMENTAL IMPACT STATEMENT**

Cape Hatteras National Seashore, North Carolina

Lead Agency: National Park Service (NPS), U.S. Department of the Interior

This final *Cape Hatteras National Seashore Off-Road Vehicle Management Plan / Environmental Impact Statement* (plan/EIS) evaluates the impacts of a range of alternatives for regulations and procedures that would carefully manage off-road vehicle (ORV) use/access in the Cape Hatteras National Seashore (Seashore) to protect and preserve natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors. Executive Order 11644 of 1972, amended by Executive Order 11989 of 1977, requires certain federal agencies permitting ORV use on agency lands to publish regulations designating specific trails and areas for this use. Title 36, section 4.10 of the Code of Federal Regulations implements the executive orders by providing that routes and areas designated for ORV use shall be promulgated as special regulations. Upon conclusion of this plan and decision-making process, the alternative selected for implementation will become the ORV management plan and will form the basis for a special regulation, guiding the management and control of ORVs at the Seashore for the next 10 to 15 years.

This plan/EIS evaluates the impacts of two no-action alternatives (A and B) and four action alternatives (C, D, E and F). Alternative A would manage ORV use and access at the Seashore based on the 2007 Finding of No Significant Impact (FONSI) for the *Cape Hatteras National Seashore Interim Protected Species Management Strategy / Environmental Assessment* and the Superintendent's Compendium 2007, as well as elements from the 1978 draft interim ORV management plan that were incorporated in Superintendent's Order 7. Alternative B would manage ORV use in the same manner as alternative A, except as modified by the consent decree, as amended, which has been in effect at the Seashore since 2008. Alternative C would provide visitors to the Seashore with a degree of predictability regarding areas available for ORV use, as well as vehicle-free areas, based largely on the seasonal resource and visitor use characteristics of various areas in the Seashore. Under alternative D, visitors to the Seashore would have the maximum amount of predictability regarding areas available for ORV use and vehicle-free areas for pedestrian use with most areas having year-round, rather than seasonal, designations. Restrictions would be applied to larger areas over longer periods of time to minimize changes in designated ORV and vehicle-free areas over the course of the year. **Alternative D is the environmentally preferable alternative.** Alternative E would provide for additional flexibility in access for both ORV and pedestrian users, including allowing some level of overnight vehicle use at selected points and spits. Where greater access is permitted, often additional controls or restrictions would be in place to limit impacts on sensitive resources. Alternative F provides a similar mileage of year-round ORV routes as the other action alternatives but provides more ORV and pedestrian access than alternative D by improving interdunal road access and enhancing pedestrian facilities and opportunities. **Alternative F is the NPS Preferred Alternative.** The plan/EIS analyzes impacts of these alternatives in detail for floodplains, wetlands, federally listed threatened or endangered species, state-listed and special status species, wildlife and wildlife habitat, visitor use and experience, soundscapes, socioeconomics, and Seashore operations.

The NPS notice of availability for the draft plan/EIS was published in the *Federal Register* on March 5, 2010. The draft plan/EIS was posted online at the NPS PEPC website at <http://parkplanning.nps.gov/caha> on March 5, 2010. The U.S. Environmental Protection Agency (EPA) notice of availability for the draft plan/EIS was published on March 12, 2010, which opened the public comment period and established the closing date of May 11, 2010, for comments. Responses to public and agency comments received on the draft plan/EIS are included as appendix C and, where needed, as text changes in this final plan/EIS. A copy of the original draft plan/EIS showing all additions, deletions, and other changes that have been made in the preparation of this final plan/EIS, including minor editorial changes, is available electronically at <http://parkplanning.nps.gov/caha>.

The publication of the EPA notice of availability of this final plan/EIS in the *Federal Register* will initiate a 30-day wait-period before the Regional Director of the Southeast Region will sign the Record of Decision, documenting the selection of an alternative to be implemented. After the NPS publishes a notice in the *Federal Register* announcing the availability of the signed Record of Decision, implementation of the alternative selected in the Record of Decision can begin.

For further information, visit <http://parkplanning.nps.gov/caha> or contact:

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National Park Service  
U.S. Department of the Interior



Cape Hatteras National Seashore  
North Carolina

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**CAPE HATTERAS NATIONAL SEASHORE  
OFF-ROAD VEHICLE MANAGEMENT PLAN  
FINAL ENVIRONMENTAL IMPACT STATEMENT**

November 2010

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## EXECUTIVE SUMMARY

This final *Cape Hatteras National Seashore Off-Road Vehicle Management Plan / Environmental Impact Statement* (plan/EIS) analyzes a range of alternatives and actions for the management of off-road vehicles (ORVs) at Cape Hatteras National Seashore (the Seashore). The plan/EIS assesses the impacts that could result from continuation of current management actions in existence during the planning period for this plan/EIS (the two “no-action” alternatives) or implementation of any of the four action alternatives.

Upon conclusion of the planning and decision-making process, the alternative selected for implementation will become the ORV management plan, which will guide the management and control of ORVs at the Seashore for the next 10 to 15 years. It will also form the basis for a special regulation to manage ORV use at the Seashore.

### BACKGROUND

Officially authorized in 1937 along the Outer Banks of North Carolina, Cape Hatteras is the nation’s first national seashore. Consisting of more than 30,000 acres distributed along approximately 67<sup>1</sup> miles of shoreline, the Seashore is part of a dynamic barrier island system.

The Seashore serves as a popular recreation destination with more than 2.1 million visitors in 2008 (NPS 2008e), showing an 8-fold increase in visitation since 1955 (NPS 2007f). Seashore visitors participate in a variety of recreational activities, including beach recreation (sunbathing, swimming, shell collecting, etc.), fishing (surf and boat), hiking, hunting, motorized boating, nonmotorized boating (sailing, kayaking, canoeing), nature study, photography, ORV use (beach driving), shellfishing, sightseeing, watersports (surfing, windsurfing, kiteboarding, etc.), and wildlife viewing. Seashore visitors use ORVs for traveling to and from swimming, fishing, and surfing areas and for pleasure driving.

Current management practices at the Seashore allow ORV users to drive on the beach seaward of the primary dune line, with a 10-meter backshore area seaward of the primary dune line protected seasonally. Drivers must use designated ramps to cross between the beach and NC-12 that runs behind the primary dune line. In addition to a multitude of visitor opportunities, the Seashore provides a variety of important habitats created by its dynamic environmental processes, including habitats for the federally listed piping plover; sea turtles; and one listed plant species, the seabeach amaranth. The Seashore contains ecologically important habitats such as marshes, tidal flats, and riparian areas, and hosts various species of concern such as colonial waterbirds (least terns, common terns, and black skimmers), American oystercatcher, and Wilson’s plover, all of which are listed by the North Carolina Wildlife Resources Commission (NCWRC) as species of special concern. In addition, the gull-billed tern, also found at the Seashore, is listed by the NCWRC as threatened.

Historically, beach driving at the Seashore was for the purpose of transportation, and not recreation. The paving of NC-12, the completion of the Bonner Bridge connecting Bodie and Hatteras islands in 1963, and the introduction of the State of North Carolina ferry system to Ocracoke Island facilitated visitor access to the sound and ocean beaches. Improved access, increased population, and the popularity of the sport utility vehicle have resulted in a dramatic increase in vehicle use on Seashore beaches.

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<sup>1</sup> Due to the dynamic nature of the barrier island system, the mileage of shoreline in the Seashore is constantly changing. This mileage estimate includes ocean shoreline and some interdunal roads managed for public recreation by the NPS. Actual on-the-ground mileage may vary, especially around the inlets and spits, due to the increased potential for erosion and accretion in these areas.

ORV use at the Seashore has historically been managed since the 1970s through various draft or proposed plans, though none were ever finalized or published as a special regulation as required by Executive Orders 11644 and 11989 and 36 Code of Federal Regulations (CFR) 4.10. Motivated in part by a decline in most beach nesting bird populations on the Seashore since the 1990s, in July 2007 the NPS finalized the *Cape Hatteras National Seashore Interim Protected Species Management Strategy / Environmental Assessment* (Interim Strategy) to provide resource protection guidance until the long-term ORV management plan and regulation could be completed. In October 2007, a lawsuit was filed on the Interim Strategy that resulted in a consent decree in April 2008. As a part of the consent decree, the court ordered deadlines for completion of an ORV management plan/EIS and special regulation. This document, once finalized and approved, will serve as the ORV management plan and will form the basis for the special regulation governing ORV use at the Seashore.

## **PURPOSE OF THE PLAN**

The purpose of this plan is to develop regulations and procedures that carefully manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors.

## **NEED FOR ACTION**

Cape Hatteras National Seashore provides a variety of visitor experiences. It is a long, essentially linear park, visitation is high, and parking spaces near roads are limited. Some popular beach sites, particularly those near the inlets and Cape Point, are a distance from established or possible parking spaces. Visitors who come for some popular recreational activities such as surf fishing and picnicking are accustomed to using large amounts and types of recreational equipment that cannot practically be hauled over these distances by most visitors without some form of motorized access. For many visitors, the time needed and the physical challenge of hiking to the distant sites, or for some even to close sites, can discourage or preclude access by nonmotorized means. As a result, ORVs have long served as a primary form of access for many portions of the beach in the Seashore, and continue to be the most practical available means of access and parking for many visitors.

In addition to these recreation opportunities, the Seashore is home to important habitats created by the Seashore's dynamic environmental processes, including habitats for several federally listed species including the piping plover and three species of sea turtles. These habitats are also home to numerous other protected species, as well as other wildlife. The NPS is required to conserve and protect all of these species, as well as the other resources and values of the Seashore. In addition, the Seashore was designated a Globally Important Bird Area by the American Bird Conservancy (American Bird Conservancy 2005). This designation recognizes those areas with populations and habitat important at the global level.

The use of ORVs must therefore be regulated in a manner that is consistent with applicable law, and appropriately addresses resource protection (including protected, threatened, or endangered species), potential conflicts among the various Seashore users, and visitor safety. Section 4.10(b) of the regulations in Title 36 of the Code of Federal Regulations, which implements Executive Orders 11644 and 11989, prohibits off-road use of motor vehicles except on designated routes or areas. It requires that "routes and areas designated for ORV use shall be promulgated as special regulations" in compliance with other applicable laws.

Therefore, in order to provide continued visitor access through the use of ORVs, the NPS must promulgate a special regulation authorizing ORV use at the Seashore. In order to ensure that ORV use is

consistent with applicable laws and policies, the Seashore has determined that an ORV management plan is necessary as part of this process. Thus, the ORV plan and special regulation will

- Bring the Seashore in compliance with Executive Orders 11644 and 11989 respecting ORV use, and with NPS laws, regulations (36 CFR 4.10), and policies to minimize impacts to Seashore resources and values.
- Address the lack of an approved plan, which has led over time to inconsistent management of ORV use, user conflicts, and safety concerns.
- Provide for protected species management in relation to ORV use by replacing the Interim Strategy (NPS 2006a), and associated Biological Opinion and amendments (USFWS 2006a, 2007a, 2008a) as modified by the consent decree.

## **OBJECTIVES IN TAKING ACTION**

### **MANAGEMENT METHODOLOGY**

- Identify criteria to designate ORV use areas and routes.
- Establish ORV management practices and procedures that have the ability to adapt in response to changes in the Seashore's dynamic physical and biological environment.
- Establish a civic engagement component for ORV management.
- Establish procedures for prompt and efficient public notification of beach access status including any temporary ORV use restrictions for such things as ramp maintenance, resource and public safety closures, storm events, etc.
- Build stewardship through public awareness and understanding of NPS resource management and visitor use policies and responsibilities as they pertain to the Seashore and ORV management.

### **NATURAL PHYSICAL RESOURCES**

- Minimize impacts from ORV use to soils and topographic features, for example, dunes, ocean beach, wetlands, tidal flats, and other features.

### **THREATENED, ENDANGERED, AND OTHER PROTECTED SPECIES**

- Provide protection for threatened, endangered, and other protected species (e.g., state-listed species) and their habitats, and minimize impacts related to ORV and other uses as required by laws and policies, such as the *Endangered Species Act*, the *Migratory Bird Treaty Act*, and NPS laws and management policies.

### **VEGETATION**

- Minimize impacts to native plant species related to ORV use.

### **OTHER WILDLIFE AND WILDLIFE HABITAT**

- Minimize impacts to wildlife species and their habitats related to ORV use.

## **CULTURAL RESOURCES**

- Protect cultural resources, such as shipwrecks, archeological sites, and cultural landscapes, from impacts related to ORV use.

## **VISITOR USE AND EXPERIENCE**

- Ensure that ORV operators are informed about the rules and regulations regarding ORV use at the Seashore.
- Manage ORV use to allow for a variety of visitor use experiences.
- Minimize conflicts between ORV use and other uses.

## **VISITOR SAFETY**

- Ensure that ORV management promotes the safety of all visitors.

## **SEASHORE OPERATIONS**

- Identify operational needs and costs to fully implement an ORV management plan.
- Identify potential sources of funding necessary to implement an ORV management plan.
- Provide consistent guidelines, according to site conditions, for ORV routes, ramps, and signage.

## **PURPOSE AND SIGNIFICANCE OF CAPE HATTERAS NATIONAL SEASHORE**

### **PARK ENABLING LEGISLATION, PURPOSE, AND SIGNIFICANCE**

All units of the national park system were formed for a specific purpose (the reason they are significant) and to conserve significant resources or values for the enjoyment of future generations. The purpose and significance of the park provides the basis for identifying uses and values that individual NPS plans will support. The following provides background on the purpose and significance of the Seashore.

As stated in the Seashore's enabling legislation (the Act), Congress authorized the Seashore in 1937 as a national seashore for the enjoyment and benefit of the people, and to preserve the area. The Act states:

Except for certain portions of the area, deemed to be especially adaptable for recreational uses, particularly swimming, boating, sailing, fishing, and other recreational activities of similar nature, which shall be developed for such uses as needed, the said areas shall be permanently reserved as a primitive wilderness and no development of the project or plan for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing in this area.

The Act also states:

...when title to all the lands, except those within the limits of established villages, within boundaries to be designated by the Secretary of Interior within the area of approximately one hundred square miles on the islands of Chicamacomico [Hatteras], Ocracoke, Bodie, Roanoke, and Collington, and the waters and the lands beneath the waters adjacent there



to shall have been vested in the United States, said areas shall be, and is hereby, established, dedicated, and set apart as a national seashore for the benefit and enjoyment of the people and shall be known as the Cape Hatteras National Seashore.

A 1940 amendment to the enabling legislation authorized hunting and re-designated the area as the Cape Hatteras National Seashore Recreational Area. (Note: The history of the Seashore’s name is described in more detail in chapter 1.)

Park significance statements capture the essence of the park’s importance to the nation’s natural and cultural heritage. Understanding park significance helps managers make decisions that preserve the resources and values necessary to the park’s purpose. The following significance statements recognize the important features of the Seashore. As stated in the 2006–2011 Strategic Plan, the Seashore has the following significance (NPS 2007b):

This dynamic coastal barrier island system continually changes in response to natural forces of wind and wave. The flora and fauna that are found in a variety of habitats at the park include migratory birds and several threatened and endangered species. The islands are rich with maritime history of humankind’s attempt to survive at the edge of the sea, and with accounts of dangerous storms, shipwrecks, and valiant rescue efforts. Today, the Seashore provides unparalleled opportunities for millions to enjoy recreational pursuits in a unique natural seashore setting and to learn of the nation’s unique maritime heritage.

## ISSUES AND IMPACT TOPICS

Issues associated with implementing an ORV management plan at Cape Hatteras National Seashore were initially identified by Seashore staff during internal scoping and were further refined through the public scoping and negotiated rulemaking processes. Table ES-1 details the issues that were discussed and analyzed in the plan/EIS.

**TABLE ES-1. ISSUES AND IMPACT TOPICS**

Issue	Reason for Analysis
Wetlands and Floodplains	<p>Vegetated wetlands along the soundside and interior of the islands are susceptible to direct damage from ORV use.</p> <p>Estuarine wetlands can be denuded of vegetation when ORVs are driven and parked along the soundside shoreline.</p> <p>Many of the interior or interdunal roads are located near wetland areas that are often not noticeable to visitors. When standing water is present along these ORV routes, visitors may drive over adjacent vegetated areas in an attempt to avoid the standing water. This results in wider roads, new vehicle routes, and crushed or dead vegetation.</p> <p>Construction of new parking areas is of concern for wetlands that may be located nearby.</p> <p>Nearly all of the Seashore is located within the 100-year floodplain, with the exception of a small area at the Navy tower site on Bodie Island and larger areas around Buxton, and could be impacted by the proposed development of ramps and parking areas under this plan/EIS.</p>

Issue	Reason for Analysis
Federally Listed Threatened or Endangered Species	<p>The Seashore is home to federally threatened and endangered species year-round. Increased year-round visitation results in a greater potential for conflicts between visitor use and listed species. Conflicts between listed species and recreational use (including ORV use) could create direct or indirect losses to a listed species.</p> <p>The Seashore is used by both the threatened Atlantic Coast population of piping plover for breeding and wintering and by the endangered Great Lakes population (considered threatened on its wintering grounds) for wintering. Seabeach amaranth, a federally listed threatened plant species, has been found in limited numbers at the Seashore in the recent past. Three species of federally listed sea turtles (loggerhead, green, and leatherback) nest on Seashore beaches, with loggerhead being the most common.</p>
State-Listed and Special Status Species	<p>Habitat for state-listed and special status species, such as the American oystercatcher and several species of colonial waterbirds, may be vulnerable to disturbances caused by recreational uses, including ORV use.</p> <p>The gull-billed tern is a state-listed threatened species in North Carolina. American oystercatcher, Wilson's plover, least tern, common tern, and black skimmer are listed by the NCWRC as species of special concern.</p> <p>In addition, the American oystercatcher is listed as a species of concern by the Southeastern Shorebird Conservation Plan, and both the American oystercatcher and the Wilson's plover are identified in the U.S. Shorebird Conservation Plan as "Species of High Concern." These species are also designated as Birds of Conservation Concern (USFWS 2008b) and/or Migratory Nongame Birds of Management Concern in the United States (USFWS 1995) which qualifies them as species of concern according to Executive Order 13186. All these state-listed or special status species have had historically low reproductive rates.</p>
Wildlife and Wildlife Habitat	<p>ORV use along the Seashore can disrupt habitat or cause a loss of habitat in high use areas. Habitat loss due to ORV use could also occur indirectly as a result of the noise and disturbance from this activity, specifically for other bird species (those not federally protected or of special concern) and invertebrates.</p>
Soundscapes	<p>Impacts related to soundscapes could occur wherever ORVs are allowed on the oceanside or the soundside. Vehicular noise has the potential to impact other recreational uses, such as bird watching or enjoying the solitude and natural soundscape of the Seashore. In addition to impacting soundscapes in relation to visitor enjoyment, vehicular noise could create unsuitable habitat for Seashore wildlife.</p>
Visitor Use and Experience	<p>ORV use at the Seashore is an integral component of the experience for some visitors and may be impacted by ORV management activities. Other Seashore visitors who are not using ORVs may be impacted by ORV use.</p> <p>Although some visitors want to use an ORV to access the Seashore, other visitors wish to engage in recreational activities on foot and away from the presence of motorized vehicles. Restricting ORVs from areas of the Seashore could enhance the recreational experience for some and diminish the experience for others. Visitor experience could be affected by conflicts between motorized and nonmotorized recreation users. A further component of visitor experience is providing for the safety of all visitors at the Seashore.</p> <p>Other issues related to visitor use and experience include viewsheds, aesthetics, and night skies. While the sight of ORVs can destroy the viewshed and aesthetics for some visitors, they also change the viewshed by altering the natural landscape.</p>
Socioeconomics	<p>Management or regulation of ORV use at the Seashore could impact the local economy by changing the demand for goods and services from ORV users in these communities. The eight villages located within the Seashore boundaries serve as access points to the Seashore for visitors, including ORV users. These villages receive economic benefit from the ORV users who take advantage of the goods and services these communities offer. The communities are concerned that if a permit system or other ORV restrictions are implemented that make it harder for ORV users to use the area, fewer tourists may come to the villages, resulting in impacts to the local economy.</p>

Issue	Reason for Analysis
Seashore Management and Operations	Accommodating recreational uses while protecting sensitive species requires a sufficient number of personnel and an adequate level of funding. Past anecdotal evidence suggested that the Seashore did not have enough personnel to properly enforce existing ORV management decisions. If operational requirements increase under the new ORV management plan, it would require an increased commitment of limited NPS resources (staff, money, time, and equipment).

## ALTERNATIVES

The *National Environmental Policy Act* (NEPA) requires federal agencies to explore a range of reasonable alternatives that address the purpose of and need for the action. The alternatives under consideration must include the “no-action” alternative as prescribed by 40 CFR 1502.14. Two no-action alternatives are included for analysis in this plan/EIS, because management changed part way through the planning process in May 2008, after the consent decree was signed (see chapter 1 for more information). Action alternatives may originate from the proponent agency, local government officials, or members of the public at public meetings or during the early stages of project development. Alternatives may also be developed in response to comments from coordinating or cooperating agencies.

The alternatives analyzed in this document, in accordance with NEPA, are the result of internal scoping, public scoping meetings, and information developed during the negotiated rulemaking process. These alternatives meet the management objectives of the Seashore, while also meeting the overall purpose of and need for the proposed action. Alternative elements that were considered but were not technically or economically feasible, did not meet the purpose of and need for the project, created unnecessary or excessive adverse impacts to resources, and/or conflicted with the overall management of the Seashore or its resources were dismissed from further analysis.

The elements of all six alternatives are detailed in tables ES-2, ES-2A, and ES-3. How each of these alternatives meets the objectives of the plan/EIS is detailed in table ES-4.

## ELEMENTS COMMON TO ALL ALTERNATIVES

The following describes elements of the alternatives that are common to all alternatives, including the no-action alternatives.

- **Vehicle/Operator Requirements.** Requirements for operators and their vehicles would be established that would require vehicles to meet all requirements to operate legally on state highways where the vehicle is registered, including any required vehicle equipment, as well as for drivers to have a valid vehicle registration, insurance, and license plate. Operators would also be required to observe any law applicable to vehicle use on a paved road in the State of North Carolina, hold a current driver’s license, and use a seatbelt.
- **Prohibited Activities.** Open containers of any type of alcoholic beverage are prohibited in vehicles and ORV drivers and/or passengers are prohibited from sitting on the tailgate or roof or hanging outside of moving vehicles.
- **Right-of-Way Requirements.** Right-of-way between vehicles is not defined by the Seashore, and the standard driving rules must be followed.
- **Ramp Configuration.** If Bonner Bridge construction closes ramp 4, a new ramp 3 would be constructed north of the Oregon Inlet campground and day-use parking would be provided.

- **Boat Access.** Launch sites, as designated under 36 CFR 3.8(a)(2), are identified in the Superintendent’s Compendium. Launching or recovery of vessels is prohibited within resource closures.
- **NPS Regulations.** Title 36: Parks, Forests, and Public Properties of the U.S. Code of Federal Regulations is applicable in all national parks, including Cape Hatteras National Seashore. These regulations include those in Title 36 applicable to the operation of ORVs in the Seashore and those applicable to individuals recreating at the Seashore. Of particular note are the provisions of 36 CFR 1.5 and 1.6, which state that the superintendent may impose public use limits, or close all or a portion of a park area to all public use or to a specific use or activity; designate areas for a specific use or activity; or impose conditions or restrictions on a use or activity, and may establish a permit, registration, or reservation system.
- **Enforcement.** Violations could result in fines or mandatory court appearances as defined in the *Collateral Schedule, Eastern District of North Carolina, National Park Service*.
- **Areas of Vehicle Operation.** Visitors accessing the Seashore by ORV must drive only on marked ORV routes, comply with posted restrictions, and adhere to the following:
  - Driving or parking outside of marked and maintained ORV routes is prohibited.
  - Operating a vehicle of any type within safety or resource closures is prohibited.
  - Accessing the beach and designated ORV routes is allowed only via designated beach access ramps and soundside access roads.
  - Reckless driving—for example, cutting circles or defacing the beach—is prohibited.
  - Observing pedestrian right-of-way is required.
  - During the shorebird and turtle breeding seasons, standard resource protection buffers would apply, which could restrict ORV access to certain areas of the Seashore. Refer to the “Visitor Use and Experience” section in chapter 3 for a description of access closures that occurred during the 2007-2010 seasons.
- **Commercial Fishing.** Commercial fishing permit holders with ORVs would be allowed to enter administrative and safety closures, but not resource closures or lifeguarded beaches. Two designated commercial fishing access points exist on the soundside of Ocracoke Island, where only vehicular access for commercial fishing is allowed.
- **Permitted Uses.** Kite flying, kite boards, and ball and Frisbee tossing are prohibited within or above all bird closures.
- **Commercial Use Authorization (CUA) permit holders** would not need to obtain an ORV permit in addition to the CUA permit. Customers of CUA permit holders who are operating an ORV while with the CUA holder would need to obtain the necessary permit for ORV use. **Protected Species Management.** In general, because of the dynamic nature of the Seashore beaches and inlets, protected species management could change by location and time; new sites (bars, islands) could require additional management, or management actions may become inapplicable for certain sites (e.g., habitat changes with vegetation growth, new overwash areas). The following would also occur:
  - Areas with symbolic fencing (string between posts) would be closed to recreational access.
  - Data collection would continue to document breeding and nest locations.
  - Essential vehicles could enter restricted areas subject to the guidelines in the Essential Vehicles section of the *U.S. Fish and Wildlife Service Piping Plover (Charadrius melodus)*,

*Atlantic Coast Population, Revised Recovery Plan* (USFWS 1996a). Due to the soft sand conditions of the Seashore, essential vehicles would be allowed to travel up to 10 miles per hour (mph).

- **Accessibility for Visitors with Disabilities.** The Seashore would provide access to visitors with disabilities as follows:
  - Beach access points and boardwalks would be provided at Coquina Beach, the Frisco Boathouse, the Ocracoke Pony Pen, and the Ocracoke day use area.
  - Beach access would be provided through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.
  - Beach wheelchairs could be checked out at each District on a first-come, first-served basis.
- **Campgrounds.** The Seashore has four campgrounds at Oregon Inlet, Frisco, Cape Point, and Ocracoke. The campgrounds would be open seasonally. Dates the campgrounds open or close would be subject to change.
- **Fishing Facilities.** Fishing piers are located in Frisco<sup>2</sup>, Avon, and Rodanthe on Hatteras Island, and a marina is located at Oregon Inlet on Bodie Island. These would continue to be available to the public.
- **Education and Outreach.** The Seashore would continue to conduct education and outreach related to ORV management such as posting signage, putting out resource updates, and notifying the public of what areas of the beach are accessible.

## NO-ACTION ALTERNATIVES

The no-action alternative is developed for two reasons. First, a no-action alternative may represent the agency's past and current actions or inaction on an issue continued into the future, which may represent a viable alternative for meeting the agency's purpose and need. Second, a no-action alternative may serve to set a baseline of existing impacts continued into the future against which to compare the impacts of action alternatives. For most agency decisions, one no-action alternative can serve both of these purposes. Here, however, the situation is more complex.

As stated in chapter 1, "in order to provide continued visitor access through the use of ORVs, NPS must promulgate a special regulation authorizing ORV use at the Seashore," and the purpose of this plan, in part, is to develop such a regulation. Without a special regulation, continued ORV use would conflict with NPS regulations (36 CFR 4.10). The consent decree recognizes this and sets a deadline of April 1, 2011, for the promulgation of a final special regulation. As the district court has recognized in another case, absent an ORV plan and regulation, as a legal matter ORV use is prohibited. The NPS acknowledges that if it does not promulgate a special regulation to authorize ORV use, then ORV use would, in fact, be prohibited at the Seashore.

"No ORV use" thus could represent a result of NPS's past inaction continued into the future, and thus might satisfy the first purpose of a no-action alternative. It is not, however, a viable alternative for meeting the purpose and need for this action. It was considered but dismissed in the broader range of

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<sup>2</sup> The Frisco pier was closed for public safety reasons due to deteriorating conditions, and then further damaged by Hurricane Earl in September 2010. The future of this pier is not known at this time.

alternatives that were identified. Included in chapter 1 is a discussion of the reasons that, for this plan/EIS, “Prohibit the Use of Off-Road Vehicles” is not considered a reasonable alternative.

NPS also does not believe that a “no ORV use” alternative would fully serve the function of a no-action alternative, because it would not satisfy the second purpose. It would not serve as an environmental baseline of existing impacts continued into the future against which to compare the impacts of action alternatives. ORV use has occurred continuously before and since the Seashore was authorized and established. Given this history, a complete ORV prohibition cannot be considered as the “current management direction or level of management intensity” or as “continuing with the present course of action,” which is how the Council on Environmental Quality describes this role of the “no-action” alternative under NEPA.

Because there is no history of prohibition at the Seashore, there are also no Seashore monitoring data for an analysis of its effects. Extrapolation from other sites that prohibit ORV use, and from experience with resource closures in limited locations and limited times at the Seashore, indicates that prohibition would likely benefit the Seashore’s wildlife more than the other alternatives, though benefits could be similar to those from alternative D. Prohibition would be easier for the Seashore to administer than the other alternatives, though it might increase the need for additional parking areas, with their attendant costs and effects. It would detract from the experience of those visitors who prefer ORVs for access, while enhancing the experience of other visitors who prefer beaches without the presence of vehicles. Prohibition would adversely affect the economies of the villages in the Seashore more than the other alternatives because ORV users would not have the opportunity to shift their visits to different areas of the Seashore or to different dates or times of day when driving would be allowed. These conclusions, however, are largely speculative and cannot substitute for a baseline of existing impacts.

Similarly, using the management measures enforced in 2004 (which were adopted from the 1978 draft plan) as a no-action alternative would fail to meet the agency’s purpose and need to regulate ORVs in a manner that is consistent with applicable law, and would not appropriately address resource protection (including protected, threatened, or endangered species), potential conflicts among the various Seashore users, and visitor safety. In addition, it would neither bring the Seashore into compliance with the criteria of Executive Orders 11644 and 11989 for designation of ORV routes nor meet the second purpose of a “no-action” alternative to serve as a baseline of existing impacts continued into the future against which to compare the impacts of action alternatives.

For this plan/EIS the range of alternatives includes two no-action alternatives. Alternative A represents continuing management as described in the Interim Strategy. This management strategy was challenged in court and subsequently modified by the consent decree that was signed on April 30, 2008. Alternative B represents continuing management as described in the consent decree. These two no-action alternatives are analyzed to capture the full range of management actions that occurred and are currently occurring during the planning process for this plan/EIS. Tables ES-2, ES-2A, and ES-3 compare the actions that would be taken under each alternative, and figure 2 in chapter 2 includes the maps of all alternatives.

## **NO-ACTION ALTERNATIVES**

**Alternative A – No Action: Continuation of Management under the Interim Protected Species Management Strategy.** Under this no-action alternative, management of ORV use and access at the Seashore would be a continuation of management based on the 2007 FONSI for the Interim Strategy and the Superintendent’s Compendium 2007, as well as elements from the 1978 draft interim ORV management plan that were incorporated in Superintendent’s Order 7. The Interim Strategy provides direction on the how, when, and where closures and buffers for federally listed species are established, and the size of buffers/closures. Buffer sizes for non-listed species allow some degree of flexibility and

management discretion. There would be no restriction on night driving or carrying capacity established under alternative A and an ORV permit would not be required. Seasonal ORV closures would be limited to the “village beaches” and the ocean and inlet shoreline and on the exiting soundside routes would be a potential ORV route.

**Alternative B – No Action: Continuation of Terms of the Consent Decree Signed April 30, 2008, and amended June 4, 2009.** Under alternative B, management of ORV use would follow the terms described under alternative A, except as modified by the provisions of the consent decree, as amended. Modifications in the consent decree include earlier and more frequent monitoring at key nesting areas and larger, non-discretionary resource protection buffers when breeding activity is observed. These modifications would result in earlier, larger, and longer-lasting ORV and pedestrian closures than alternative A. Alternative B would also prohibit night driving from 10:00 p.m. to 6:00 a.m. May 1 to September 15 and would allow night driving with a permit from September 16 to November 15. No carrying capacity would be established or ORV use permit required under alternative B, except for the night-driving permit from September 16 to November 15.

## **ACTION ALTERNATIVES**

Elements that are common to all action alternatives include the following:

- ORV routes and areas would be officially designated in accordance with the executive orders.
- Year-round ORV routes and areas would be designated only in locations without sensitive resources or high pedestrian use.
- Year-round vehicle-free areas would be designated.
- Management of protected shorebirds would be accomplished through the implementation of defined prenesting closures and breeding/nesting/unfledged chick buffers as detailed in chapter 2 (see tables 10 and 10-1). Management activities during the breeding season would focus on beach-nesting bird species such as the piping plover, Wilson’s plover, American oystercatcher, least tern, common tern, gull-billed tern, and black skimmer; however, there would be ongoing evaluation of the breeding shorebird species addressed by this plan as part of the periodic review process.
- Night-driving restrictions would be in effect from May 1 through November 15, which corresponds with turtle nesting season.
- ORV permits would be required and would involve a fee and education requirement.
- Overcrowding would be addressed using various methods for establishing carrying capacity.
- New vehicular access points and/or new or expanded parking areas would be identified.
- Commercial fishing vehicles would be exempted from some ORV restrictions, when not in conflict with resource protection.

**Alternative C – Seasonal Management.** Alternative C would provide visitors to the Seashore with a degree of predictability regarding areas available for ORV use, as well as vehicle-free areas, based largely on the seasonal resource and visitor use characteristics of various areas in the Seashore. Both seasonal and year-round ORV routes would be established, although most areas would have a seasonal focus. SMAs and some village beaches would be closed to ORV use from March 14 through October 14. Pedestrians would be able to access some SMAs depending upon specific shorebird breeding activity. Most of the seasonal ORV areas would be open to ORVs from October 15 through March 14. Seasonal night-driving

restrictions would be established between the hours of 7:00 p.m. and 7:00 a.m. from May 1 to November 15. An ORV carrying capacity would be established using a maximum number of vehicles per mile of beach area.

**Alternative D – Increased Predictability and Simplified Management. Alternative D is the Environmentally Preferable Alternative.** Under alternative D, visitors to the Seashore would have the maximum amount of predictability regarding areas available for ORV use and vehicle-free areas for pedestrian use. Restrictions would be applied to larger areas over longer periods of time to minimize changes in designated ORV and vehicle-free areas over the course of the year. To provide predictability under this alternative, only year-round ORV routes would be designated. Year-round vehicle-free areas would include all of the SMAs and village beaches. SMAs would be closed to pedestrian use under Management Level 1 (ML1) measures during the breeding season. Seasonal night-driving restrictions would be established between the hours of 7:00 p.m. and 7:00 a.m. from May 1 to November 15. An ORV carrying capacity would be addressed solely by the use of vehicle stacking limits (one vehicle deep).

**Alternative E – Variable Access and Maximum Management.** Alternative E would provide use areas for all types of visitors to the Seashore with a wide variety of access for both ORV and pedestrian users, but often with controls or restrictions in place to limit impacts on sensitive resources. Interdunal road and ramp access would be improved, and more pedestrian access would be provided through substantial additions to parking capacity at various key locations that lend themselves to walking on the beach. This alternative would close the SMAs to ORV use from March 15 through August 31, except that two spits and Cape Point would have initial ORV access corridors during the breeding season, with increased species monitoring in those areas. These ORV access corridors would close when breeding activity is observed. North Ocracoke Spit would be designated as a vehicle-free area year-round under alternative E, and village beaches would be closed to ORV use between April 1 and October 31. A seasonal night-driving restriction would be established from 10:00 p.m. to 6:00 a.m. during turtle nesting season although areas with low densities of turtle nests could open to night driving from September 16 through November 15. This alternative would offer a park-and-stay overnight option for ORVs at some spits and Cape Point during the turtle nesting season. Self-contained vehicle (SCV) camping would be allowed during the off-season at designated Seashore campgrounds under the terms of a permit. Alternative E would provide enhanced options for pedestrian access to Bodie Island Spit and South Point Ocracoke by promoting water taxi service when those areas are closed to ORVs.

**Alternative F – The NPS Preferred Alternative.** The NPS considered a variety of concepts and measures that either originated during the negotiated rulemaking process from members of the negotiated rulemaking advisory committee (Committee) or were discussed during Committee, subcommittee, or work group sessions. Although the Committee as a whole did not reach a consensus on a recommended alternative, in creating this action alternative the NPS made management judgments as to which combination of concepts and measures would make an effective overall ORV management strategy. This alternative is designed to provide visitors to the Seashore with a wide variety of access opportunities for both ORV and pedestrian users. Alternative F would provide a reasonably balanced approach to designating ORV routes and vehicle-free areas and providing for the protection of park resources. To support access to both vehicle-free areas and designated ORV routes, alternative F would involve the construction of new parking areas, pedestrian access trails, ORV ramps, and improvements and additions to the interdunal road system. A seasonal night-driving restriction would be established from 9:00 p.m. to 7:00 a.m. during turtle nesting season although areas with no turtle nests could open to night driving from September 16 through November 15. Alternative F would provide for an alternative transportation study and would encourage the establishment of a beach shuttle or water taxi.



Based in part on public and agency comments on the draft plan/EIS, this alternative has been modified within the range of alternatives described in the draft plan/EIS.

Table ES-2 indicates the designated routes and areas under alternatives A, B, C, D, and E. Table ES-2A indicates the designated routes and areas under alternative F.

## **ENVIRONMENTAL CONSEQUENCES**

Impacts of the alternatives were assessed in accordance with NPS Director's Order 12 and Handbook: Conservation Planning, Environmental Impact Analysis and Decision-Making. This handbook requires that impacts on park resources be analyzed in terms of their context, duration, and intensity. The analysis provides the public and decision-makers with an understanding of the implications of ORV management actions in the short and long term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists.

For each impact topic, methods were identified to measure the change in the Seashore's resources that would occur with the implementation of each management alternative. Thresholds were established for each impact topic to help understand the severity and magnitude of changes in resource conditions, both adverse and beneficial.

Each management alternative was compared to baselines to determine the context, duration, and intensity of resource impacts. The baselines are the conditions that resulted from management of ORVs under the management frameworks in place during the planning process for this plan/EIS. The baselines are represented by alternatives A and B.

Table ES-5 summarizes the results of the impact analysis for the impact topics that were assessed.

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TABLE ES-2. OFF-ROAD VEHICLE ROUTES AND AREAS – ALTERNATIVES A, B, C, D, AND E

Oceanside Location	Mileage <sup>a</sup>	Alternatives A and B: No Action	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management
<b>Bodie Island (north to south)</b> Ramp 1 to north end of Coquina Beach	0.9	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	ORV route—Mar 15 to Oct 14 VFA—Oct 15 to Mar 14	X	X Parking at ramp 1 expanded.
North end of Coquina Beach to 0.5 mile south of Coquina	0.8	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure). South of ramp 2 at Coquina Beach open seasonally.	X Ramp 2 relocated approx. 0.5 mile south of Coquina Beach.	X Ramp 2 relocated approx. 0.5 mile south of Coquina Beach.	X Ramp 2 relocated approx. 0.5 mile south of Coquina Beach. Parking at Coquina Beach expanded.
0.5 mile south of Coquina to 0.2 mile south of ramp 4 (Includes beach in front of Oregon Inlet Campground. If Bonner Bridge construction closes ramp 4, new ramp 3 will be constructed north of campground and day-use parking and trailhead near campground will be provided.)	2.1	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR ORV pass-through zone established on upper beach in front of campground when campground is open.
0.2 mile south of ramp 4 to inlet to southwest edge of Bait Pond (Species Management Area)	1.9	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 Area closed to ORVs from March 15 to October 14. When prenesting area is established, a pedestrian access corridor would be allowed along ocean shoreline to the inlet. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. (ML2)	X (ML1)	ORV route YR With expected limited access Mar 15 to Aug 31 When prenesting area is established, ORV corridor with pass-through zone would be allowed along ocean shoreline to the inlet. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. Pedestrian trail to inlet from new parking near campground established. Trail subject to resource closures. NPS would allow water taxi service to spit from Oregon Inlet Fishing Center, subject to designated landing zone and to resource closures. (ML2)
<b>Hatteras Island (north to south)</b> Rodanthe—Waves—Salvo to ramp 23 (includes Tri-Village beaches)	5.3	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15.	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 Parking at ramp 23 expanded.	X	ORV route—Nov 1 to Mar 31 VFA—Apr 1 to Oct 31 Parking at ramp 23 expanded.
Ramp 23 to ramp 27	4.3	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR One new ramp with parking established at 24 or 26.
Ramp 27 to ramp 30 (Species Management Area)	2.2	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	X (ML1)
Ramp 30 to (new) ramp 32.5	2.5	OPEN YR <sup>b</sup>	ORV route YR New ramp with parking established at 32.5.	ORV route YR New ramp established at 32.5.	ORV route YR New ramp with parking established at 32.5.
(New) ramp 32.5 to ramp 34 (Species Management Area)	1.8	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 (ML1)
Ramp 34 to ramp 38 (includes Avon Village Beach)	3.9	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15.	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	ORV route—Nov 1 to Mar 31 VFA—Apr 1 to Oct 31 Parking at ramp 34 expanded.
Ramp 38 to approx. 1.7 miles south	1.7	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR Parking at ramp 38 expanded.
Approximately 1.7 miles south of ramp 38 (i.e., Haulover) to Buxton line (Species Management Area)	2.0	OPEN YR <sup>b</sup> (Current 3.8-mile safety closure from 1.8 miles south of ramp 38 to 0.4 mile north of ramp 43.)	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 (ML1)
Buxton Village Beach to 0.4 mile north of ramp 43	1.9	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	X NPS or Dare County to establish new parking at old Coast Guard Station site (following Coast Guard clean-up of the site).	X	ORV route—Nov 1 to Mar 31 VFA—Apr 1 to Oct 31 NPS or Dare County to establish new parking at old Coast Guard Station site (following Coast Guard clean-up of the site).

Oceanside Location	Mileage <sup>a</sup>	Alternatives A and B: No Action	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management
0.4 mile north of ramp 43 to ramp 43	0.4	OPEN <sup>b</sup> Subject to seasonal closure May 15 to Sep 15.	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	ORV route—Mar 15 to Aug 31 VFA—Sep 1 to Mar 14 Open to ORVs only when east side of Cape Point is closed.
Ramp 43 to 0.2 mile south of ramp 44	0.6	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
0.2 mile south of ramp 44 to Cape Point to approx. 0.2 mile west of the hook (Species Management Area)	1.0	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 When prenesting area is established, a pedestrian access corridor would be allowed along ocean shoreline to the point. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. (ML2)	X (ML1)	ORV route YR With expected limited access Mar 15 to Aug 31 When prenesting area is established, ORV access corridor with pass-through zone would be allowed along ocean shoreline to the point. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. (ML2)
Cape Point 0.2 mile west of the hook to ramp 45 (Species Management Area)	1.2	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 (ML1)
Ramp 45 to (new) ramp 47 (Species Management Area)	1.7	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 Interdunal road extended and new ramp 47 established. (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 Interdunal road extended and new ramp 47 established. (ML1)
(New) ramp 47 to ramp 49 (includes beach in front of Frisco Campground)	1.7	OPEN YR <sup>b</sup>	ORV route YR Interdunal road extended to ramp 49 and new ramp 48 established.	ORV route YR	ORV route YR ORV pass-through zone established on upper beach in front of campground (or bypass beach in front of campground via new interdunal road) when campground is open. Interdunal road extended west of new ramp 47 to ramp 49 and new ramp 48 established.
Ramp 49 to East Frisco boundary	1.2	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
Frisco Village Beach (east village boundary to west boundary)	1.1	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	X Parking at day use area expanded.
Sandy Bay / Frisco day use area (west Frisco boundary to east Hatteras Village boundary)	1.4	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	X
Hatteras Village Beach (east boundary to ramp 55)	2.2	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	X
Ramp 55 along ocean beach to 0.2 mile southwest of Bone Road	1.8	OPEN YR <sup>b</sup>	ORV route YR Parking expanded at ramp 55.	ORV route YR	ORV route YR Parking expanded at ramp 55.
Pole Road from NC-12 past Cable Crossing access to Spur Road	2.3	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
Cable Crossing along sound shoreline to Spur Road	0.8	Varies	X	X	X
Spur Road along sound shoreline to Hatteras Inlet	0.2	OPEN YR <sup>b</sup>	ORV route YR Pedestrian access to the "rip" permitted from soundside during breeding season, subject to resource closures.	X	ORV route YR Pedestrian access to the "rip" permitted from soundside during breeding season, subject to resource closures.
Ocean shoreline from 0.2 mile southwest of Bone Road (a.k.a. Fort Clark Spur) to inlet (Species Management Area)	1.0	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 (ML1)

Oceanside Location	Mileage <sup>a</sup>	Alternatives A and B: No Action	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management
Ocracoke Island (north to south) Inlet to 0.25 mile northeast of ramp 59 (Species Management Area)	1.1	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 Parking area at ramp 59 expanded. (ML1)	X (ML1)	X Parking area at ramp 59 expanded. Pedestrian access corridor(s) provided, subject to resource closures during breeding season. Pedestrian boardwalk access from ferry terminal parking developed. (ML1)
0.25 mile northeast of ramp 59 to 0.25 mile southwest of ramp 59	0.5	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
0.25 mile southwest of ramp 59 to new ramp 62 at 3.0 miles northeast of Pony Pen area	2.4	OPEN YR <sup>b</sup> (Longstanding safety closure.)	ORV route YR	ORV route YR	ORV route YR
New ramp 62 to new ramp 64 at 1.0 mile northeast of Pony Pen	2.0	OPEN YR <sup>b</sup> (Longstanding safety closure.)	ORV route YR New ramps 62 and 64 established. Parking established at ramp 64.	ORV route YR New ramps 62 and 64 established.	ORV route YR New ramps 62 and 64 established. Parking established at ramp 64.
New ramp 64 at 1.0 mile northeast of Pony Pen to 0.75 mile northeast of ramp 67	2.3	OPEN YR <sup>b</sup> (Longstanding safety closure.)	X Parking at Pony Pen expanded.	X	X Parking at Pony Pen expanded.
0.75 mile northeast of ramp 67 to 0.5 mile northeast of ramp 68	1.4	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
0.5 mile northeast of ramp 68 to 0.5 mile southwest of ramp 68 (Ocracoke Campground area)	1.0	OPEN YR <sup>b</sup> Seasonally closed when campground open.	Seasonal ORV route Open when campground closed.	X	ORV route—Nov 1 to Mar 31 VFA—Apr 1 to Oct 31
0.5 mile southwest of ramp 68 to 1.2 miles northeast of ramp 70 (Species Management Area)	0.9	OPEN YR <sup>b</sup> Seasonally closed when campground open.	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	X (ML1)
1.2 miles northeast of ramp 70 to 0.5 mile northeast of ramp 70 (includes Ocracoke day use area)	0.8	OPEN YR <sup>b</sup> Seasonally closed when campground open.	X	X	X
0.5 mile northeast of ramp 70 to 0.5 mile southwest of ramp 72	2.7	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
0.5 mile southwest of ramp 72 to inlet (Species Management Area)	1.3	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 When prenesting area is established, a pedestrian access corridor would be allowed along ocean shoreline to the inlet. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. (ML2)	X (ML1)	ORV route YR With expected limited access Mar 15 to Aug 31 When prenesting area is established, ORV access corridor with pass-through zone would be allowed along ocean shoreline to the inlet. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. NPS would also allow water taxi service to spit from Silver Lake, subject to designated landing zone and resource closures. (ML2)
Inlet shoreline along South Point	1.0	OPEN YR <sup>b</sup>	X	X	X

Oceanside Location	Mileage <sup>a</sup>	Alternatives A and B: No Action	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management
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NOTES: Details on soundside access provided in table 8. Due to updated base mapping, the shape of the inlets and spits was updated for alternative F maps, resulting in a slight difference in mileage between alternative F and the other alternatives (see table 7-1).

<sup>a</sup> All mileages are approximate.

<sup>b</sup> Area(s) open to ORV use, except when resource, seasonal, or safety closures are in effect.

Designated ORV routes and areas (ORV route = ORV permitted, X = VFA (vehicle-free area); YR = year-round).

All ORV routes and areas subject to temporary resource closures.

**Species Management Areas (SMAs):** ML1 and ML2 are the two proposed strategies for species management. See table 10 for a detailed description of these strategies. All areas outside of designated SMAs would be managed under ML1 protocols.

(ML1) Once prenesting closures are established, ORV and pedestrian access would be prohibited until breeding activity is completed.

(ML2) Once prenesting closures are established, ORV or pedestrian access corridor(s) and/or boat landing areas (as indicated in the respective alternatives) would be permitted. Upon the first observation of breeding activity, similar ML2 buffers would apply, which depending upon the circumstances may close the access corridor.

Designated ORV Route Mileage (Approximate) <sup>f</sup>	Alternative A <sup>c</sup>	Alternative B <sup>c</sup>	Alternative C	Alternative D	Alternative E
Designated as ORV route YR	49.4	50.1	27.4	27.2	31.6
Designated for seasonal ORV use	17.9	16.2	27.0	0	20.2
Designated as Vehicle-Free Area YR (X) <sup>e</sup>	0 <sup>d</sup>	1.0	12.9	40.1	15.5
Total	67.3	67.3	67.3	67.3	67.3

<sup>c</sup> Routes under alternatives A and B have not been officially designated for ORV use. The mileages shown in this table are based on areas open to ORV use under the Interim Protected Species Management Strategy and the consent decree.

<sup>d</sup> Does not include mileage closed for safety reasons.

<sup>e</sup> Miles designated as closed to ORV year-round do not include the 12 miles at Pea Island National Wildlife Refuge where vehicles are not permitted. Including the mileage of Pea Island, areas designated closed to ORVs year-round would be as follows: Alternative C = 24.9; Alternative D = 52.1; Alternative E = 27.5

TABLE ES-2A. OFF-ROAD VEHICLE ROUTES AND AREAS – ALTERNATIVE F

Oceanside Location	Mileage	Alternative F: Preferred Alternative
<b>Bodie Island (north to south)</b> Ramp 1 to 0.5 miles south of Coquina Beach	1.7	X Parking at old Bodie Island Coast Guard Station site (use existing asphalt-paved parking area, or resurface using pervious material after site is used as a potential staging area for proposed widening and repaving of NC12)
0.5 mile south of Coquina to 0.2 mile south of ramp 4	2.1	ORV route YR New ramp with parking at 2.5.
0.2 mile south of ramp 4 to southeast corner of Bodie Island spit	1.1	ORV route—Sep 15 to Mar 14 X—Mar 15 to Sep 14 New parking area and trailhead near ramp 4, with pedestrian trail to the “flats” on the northeast side of the Bait Pond.
Southeast corner of Bodie Island spit along inlet shoreline to southwest edge of Bait Pond (near bridge)	0.8	X
<b>Hatteras Island (north to south)</b> Rodanthe boundary to 0.1 mile south of Rodanthe pier	1.6	X
0.1 mile south of Rodanthe Pier—Waves—Salvo to ramp 23	3.7	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Ramp 23 to 1.5 miles south of ramp 23	1.5	X New parking 1.0 mile south of ramp 23.
1.5 miles south of ramp 23 to ramp 27	2.8	ORV route YR. New ramp with parking at 25.5.
Ramp 27 to ramp 30	2.2	X New parking near soundside ramp 48.
Ramp 30 to (new) ramp 32.5	2.3	ORV route YR
(New) ramp 32.5 to ramp 34	2.0	X New parking near soundside ramp 52.
Ramp 34 to ramp 38 (includes Avon Village Beach)	3.9	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Ramp 38 to 1.5 miles south of ramp 38 (i.e., Haulover)	1.5	ORV route YR
1.5 miles south of ramp 38 (i.e., Haulover) to 0.4 mile north of ramp 43 (includes Buxton)	4.1	X New parking area on west side of highway at or near Kite Point New parking area on west side of highway at or near soundside ramp 60 NPS or Dare County to establish new parking at old Coast Guard Station site (following Coast Guard clean-up of the site) New parking area at Loran Road
0.4 mile north of ramp 43 to Cape Point to 0.3 miles west of the hook	2.1	ORV route YR Existing interdunal road Cape Point south of Salt Pond at the narrows
0.3 mile west of the hook (Cape Point) to 1.7 miles west of ramp 45	2.8	X
1.7 miles west of ramp 45 to the east Frisco boundary (includes ramp 49)	2.9	ORV route YR Interdunal road extended from ramp 45 to ramp 49, with new ramp 47.5.
Frisco Village Beach (east village boundary to west boundary)	1.1	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Sandy Bay / Frisco day use area (west Frisco boundary to east Hatteras Village boundary)	1.4	X

Oceanside Location	Mileage	Alternative F: Preferred Alternative
Hatteras Village Beach (east boundary to ramp 55)	2.2	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Ramp 55 along ocean beach to Bone Road	1.6	ORV route YR
Bone Road to Hatteras Inlet, along inlet shoreline to Spur Road	1.0	X
Pole Road from NC-12 to Spur Road	2.3	ORV route YR
Cable Crossing route (from Pole Road to sound)	0.2	ORV route YR
Spur Road route (from Pole Road to sound)	0.4	ORV route YR
(New) interdunal road from eastern portion of Spur Road west toward inlet	0.2	ORV route—Sep 15 to Mar 14 X—Mar 15 to Sep 14
<b>Ocracoke Island (north to south)</b> Inlet to (new) ramp 59.5	1.6	X
(New) ramp 59.5 to (new) ramp 63	3.9	ORV route YR New parking area on west/north side of the highway at or near the entrance to Barrow Pit Road
(New) ramp 63 to 1.0 mile northeast of ramp 67	2.5	X
1.0 mile northeast of ramp 67 to 0.5 mile northeast of ramp 68	1.7	ORV route YR
0.5 mile northeast of ramp 68 to ramp 68 (Ocracoke Campground area)	0.5	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Ramp 68 to 0.4 miles northeast of ramp 70 (includes Ocracoke Day Use area)	2.2	X
0.4 mile northeast of ramp 70 to Ocracoke Inlet (includes ramp 72)	4.1	ORV route YR
Inlet shoreline along South Point	1.0	X

NOTES: Details on soundside access provided in table 8. Parking areas indicated above would be accessible to 2-wheel drive vehicles.

All mileages are approximate.

Designated ORV routes and areas (ORV route = ORV use permitted; X = VFA (vehicle-free area); YR = year-round).

ORV routes are subject to safety closures and temporary resource closures. VFAs are subject to temporary resource closures.

Designated ORV Route Mileage (Approximate <sup>a</sup> )	Alternative F
Designated as ORV Route YR	27.9
Designated for seasonal ORV use	12.7
Designated as vehicle-free area YR (X) <sup>b</sup>	26.4
Total	67 <sup>c</sup>

<sup>a</sup> All mileages are approximate

<sup>b</sup> Miles designated as vehicle-free area year-round does not include the 12-miles at Pea Island National Wildlife Refuge where vehicles are not permitted. Including the mileage of Pea Island, areas designated closed to ORVs year-round would equal 38.4 miles under alternative F.

<sup>c</sup> Due to updated base mapping, the shapes of the inlets and spits were updated for maps of alternative F, resulting in a slight difference in mileage between alternative F and the other alternatives.



**TABLE ES-3. SUMMARY OF ALTERNATIVE ELEMENTS**

This matrix is designed to display differences among alternatives; therefore, actions common to all alternatives are not included in it. Refer to the “Elements Common to All Alternatives” section, which begins on page 56 of chapter 2.

Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>ORV Routes, Use Areas, and Corridors</b>					
<p><b>ORV use areas:</b> All areas of the Seashore are potentially open to ORV access, except when closed as described in Superintendent’s Order 7. Visitors accessing the Seashore by ORV must drive only on marked ORV routes and must comply with posted restrictions. Refer to table 7.</p> <p><b>ORV corridors:</b> The ORV corridor on the ocean beach is marked by posts placed approx. 150 feet landward from the average, normal high tide line, or if less than 150 feet of space is available, at the vegetation or the toe of the remnant dune line, except as noted in the Interim Strategy. The corridor width will fluctuate over time due to the dynamic nature of beach and surf.</p>	<p><b>ORV use areas:</b> Same as alternative A.</p> <p><b>ORV corridors:</b> Same as alternative A, except: Mar 15 to Nov 30: In all locations not in front of the villages that are open to ORV use, NPS shall provide an ORV-free zone in the ocean backshore at least 10 meters wide, wherever there is sufficient beach width to allow an ORV corridor of at least 20 meters above the mean high tide line.</p>	<p><b>ORV routes:</b> ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. An <i>ORV route</i> is a designated location, typically linear in nature (e.g., from point A to point B), where ORV travel may be authorized by the Superintendent, but which may be temporarily closed to ORV use to protect Seashore resources, provide for visitor safety, or prevent user conflicts. Refer to table 7.</p> <p><b>ORV corridors:</b> An <i>ORV corridor</i> is the actual physical demarcation of the ORV route in the field. The ORV corridor on the ocean beach would be marked by posts seaward of the toe of dune or vegetation line to the high tide line (the seaward side of the corridor would not be posted). ORV routes through vegetated areas, such as interdunal roads and ramps, would be posted on both sides of the corridor.</p> <p><b>Seasonally designated ORV routes:</b> These would occur as indicated in table 7.</p>	<p><b>ORV routes:</b> ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. The definition of ORV route is same as for alternative C.</p> <p><b>ORV corridors:</b> Same as alternative C.</p> <p><b>Seasonally designated ORV routes:</b> No seasonal designations under this alternative.</p>	<p><b>ORV routes:</b> ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. The definition of ORV route is same as for alternative C.</p> <p><b>ORV corridors:</b> Same as alternative C, except: Mar 15 to Aug 31: Where the ocean beach is at least 30 meters wide above the high tide line, the corridor would be posted 10 meters seaward of the toe of the dune to provide an ocean backshore closure.</p> <p><b>Seasonally designated ORV routes:</b> These would occur as indicated in table 7.</p>	<p><b>ORV routes:</b> ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. The definition of ORV route is same as for alternative C.</p> <p><b>ORV corridors:</b> Same as alternative C, except: Year-round: Where the ocean beach is at least 30 meters wide above the high tide line, the corridor would be posted 10 meters seaward of the toe of the dune to provide an ocean backshore closure.</p> <p><b>Seasonally designated ORV routes:</b> These would occur as indicated in table 7-1.</p>

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<b>VFAs and ORV Routes around Village, Campground, and Day Use Area Beaches</b>					
<p><b>Village beaches</b>, as identified below, are seasonally closed to ORV use from May 15 through Sep 15:</p> <ul style="list-style-type: none"> <li>• Bodie Island from ramp 1 to 0.5 mile south of Coquina Beach.</li> <li>• Beaches fronting the villages of Rodanthe, Waves, Salvo, and Avon.</li> <li>• The beach fronting Buxton south to ramp 43.</li> <li>• Beaches fronting the villages of Frisco and Hatteras.</li> </ul> <p>Ocracoke day use area and campground beaches:</p> <p>Ocracoke Island from 0.5 mile south of ramp 67 to 0.25 mile north of ramp 70 closed to ORVs when campground is open (approx. Apr 1 to Oct 31).</p>	<p>Same as alternative A, except: The beach from ramp 43 to 0.4 mile north is open to ORVs year-round.</p>	<p>Village, campground, and day-use beaches would be managed as follows (also described in table 7):</p> <p><b>Seasonally restricted ORV routes:</b> (closed to ORVs Mar 15 to Oct 14, unless otherwise indicated)</p> <ul style="list-style-type: none"> <li>• Rodanthe, Waves, Salvo, Avon, Frisco, and Hatteras Village beaches.</li> <li>• Ocracoke campground beach, from 0.5 mile northeast to 0.5 mile southwest of ramp 68 (closed to ORVs when campground is open, which is approx. Apr 1 to Oct 31).</li> </ul> <p><b>VFAs year-round:</b></p> <ul style="list-style-type: none"> <li>• Buxton beach S to 0.4 mile north of ramp 43.</li> </ul> <p>Ocracoke day use area beach, from 1.2 miles northeast to 0.5 mile northeast of ramp 70.</p>	<p>Village beaches would be managed as follows (also described in table 7):</p> <p><b>VFAs year-round:</b></p> <ul style="list-style-type: none"> <li>• All village beaches would be vehicle free year-round.</li> </ul>	<p>Village beaches would be managed as follows (also described in table 7):</p> <p><b>Seasonally restricted ORV routes:</b> (closed to ORVs Apr 1 to Oct 31)</p> <ul style="list-style-type: none"> <li>• Rodanthe, Waves, Salvo, and Avon beaches, and Buxton Beach south to 0.4 mile north of ramp 43.</li> <li>• Ocracoke Campground Beach, from 0.5 mile northeast to 0.5 mile southwest of ramp 68.</li> </ul> <p><b>VFAs year-round:</b></p> <ul style="list-style-type: none"> <li>• Bodie Island from ramp 1 to approx. 0.5 mile south of Coquina Beach.</li> <li>• Frisco and Hatteras Village beaches.</li> </ul> <p>Ocracoke day use area beach, from 1.2 miles northeast (of ramp 70) to 0.5 mile northeast of ramp 70.</p>	<p>Village beaches would be managed as follows (also described in table 7):</p> <p><b>Seasonally restricted ORV routes:</b> (closed to ORVs as indicated below)</p> <ul style="list-style-type: none"> <li>• Rodanthe (south of the pier), Waves, Salvo, Avon, Frisco, and Hatteras Village beaches, and Ocracoke Campground Beach from 0.5 mile northeast to ramp 68 (closed to ORVs Apr 1 to Oct 31).</li> <li>• When village beaches are open to ORV use from November 1 through March 31, a safety closure would be implemented on portions of a village beach that are not consistently at least 20 meters (66 feet) wide during normal high tides.</li> </ul> <p>–</p> <p><b>VFAs year-round:</b></p> <ul style="list-style-type: none"> <li>• Bodie Island from ramp 1 to approx. 0.5 mile south of Coquina Beach.</li> <li>• Rodanthe (north of the pier)</li> <li>• Buxton Beach south to 0.4 mile north of ramp 43.</li> <li>• Ocracoke day use area beach from ramp 68 to 0.4 mile northeast of ramp 70.</li> </ul>

Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>ORV Access</b>					
<p><b>Oceanside access:</b> ORV access is provided via 17 oceanside ramps and access points located off NC-12. Ramps are numbered and identified on the Seashore’s ORV route map as official vehicle access routes. Seashore staff maintains ramps and signage.</p>	<p><b>Oceanside access:</b> Same as alternative A.</p>	<p><b>Oceanside access:</b> To provide access to the designated ORV routes and VFAs in addition to the existing ramps, which would be maintained, new or improved ramps would be developed as identified in table 7. Toilet facilities and trash receptacles would be provided at high use locations.</p>	<p><b>Oceanside access:</b> Same as alternative C.</p>	<p><b>Oceanside access:</b> Same as alternative C.</p>	<p><b>Oceanside access:</b> To provide access to designated ORV routes, VFAs, and existing ramps, new ramps would be developed as identified in table 7-1.</p>
<p><b>Soundside access:</b> ORV access is provided via 18 soundside access points located off NC-12. Seashore staff maintains ramps and signage.</p>	<p><b>Soundside access:</b> Same as alternative A.</p>	<p><b>Soundside access:</b> Existing soundside ramps would be designated as ORV routes and would remain open with sufficient maintenance to provide clear passage. Signage/posts would be installed at the primitive parking areas and boat launch areas to prevent damage to vegetation and other soundside resources.</p>	<p><b>Soundside access:</b> Same as alternative A.</p>	<p><b>Soundside access:</b> Soundside ramps to designated boat launch areas and Pole Road access to the sound via Cable Crossing and Spur Road would remain open. The remaining soundside ramps would be closed to ORV use and small parking areas would be constructed to provide pedestrian access to the water, except: Existing Ocracoke Island access points north of village would remain open to commercial fishermen. Signage/posts would be installed at the parking areas and boat launch areas to prevent damage to vegetation and other soundside resources.</p>	<p><b>Soundside access:</b> Existing off-road soundside areas would be designated as ORV routes and would remain open with sufficient maintenance to provide clear passage. Signage/posts would be installed at the primitive parking areas and boat launch areas to prevent damage to vegetation and other soundside resources. Seasonal soundside access on Ocracoke Island (open Sept 15 – March 14):  <ul style="list-style-type: none"> <li>• ORV route 0.6 mile south of ramp 72 from the beach route to a pedestrian trail to Pamlico Sound.</li> </ul>                     ORV route at the north end of South Point spit from the beach route to Pamlico Sound.</p>

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<p><b>Interdunal roads:</b> One-lane, interdunal routes have been designated as follows:</p> <p><b>Bodie Island District:</b> None.</p> <p><b>Hatteras Island District:</b></p> <ul style="list-style-type: none"> <li>• Cape Point between ramp 44 and ramp 45.</li> <li>• Hatteras Inlet from ramp 55 to the inlet (includes Pole Road, Cable Crossing, and Spur Road).</li> </ul> <p><b>Ocracoke Island District:</b> None.</p>	<p><b>Interdunal roads:</b> Same as alternative A.</p> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> Same as alternative A, plus: Cape Point south of Salt Pond at the narrows.</p> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>	<p><b>Interdunal roads:</b> Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Existing interdunal roads would be better maintained as needed to provide access to ORV areas. Pullouts or road widening would be provided where appropriate to provide safe passage.</li> </ul> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Cape Point south of Salt Pond at the narrows.</li> <li>• South Beach: Extend interdunal road W of ramp 45 to ramp 49. Establish new ramps 47 and 48 off of interdunal road.</li> </ul> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>	<p><b>Interdunal roads:</b> Same as alternative A.</p> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> From ramp 55 to Bone Road (a.k.a. Fort Clark Spur); includes Pole Road, Cable Crossing, and Spur Road.</p> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>	<p><b>Interdunal roads:</b> Same as alternative C.</p> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> Same as alternative C.</p> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>	<p><b>Interdunal roads:</b> Existing interdunal roads would be designated as ORV routes and be better maintained as needed to provide access to ORV areas. Pullouts or road widening would be provided where appropriate to provide safe passage.</p> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Cape Point south of Salt Pond at the narrows.</li> <li>• South Beach: Extend interdunal road W of ramp 45 to ramp 49. Establish new ramp 47.5 off of interdunal road.</li> <li>• Hatteras Inlet Spit: Establish new interdunal road from the intersection of Pole and Spur Roads southwest towards the inlet, stopping at least 100 meters from the inlet.</li> </ul> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>

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<b>Hours of Allowable ORV Operation on Beach (Please refer to tables 7 and 7-1 to determine when routes and areas are open to ORV use.)</b>					
All areas of the Seashore open 24 hours a day year-round.	Nov 16 to Apr 30: All beaches open to ORV use 24 hours a day. May 1 to Nov 15: All potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) closed to non-essential ORV use from 10:00 p.m. to 6:00 a.m., except that from Sep 16 to Nov 15 ORV use is allowed from 10:00 p.m. to 6:00 a.m. subject to terms and conditions of a permit.	Nov 16 to Apr 30: Designated ORV routes would be open to ORV use 24 hours a day. May 1 to Nov 15: Designated ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 7:00 p.m. to 7:00 a.m. Hours of night-driving prohibition would be established in the Superintendent's Compendium and subject to periodic review.	Same as alternative C, except: • No periodic review.	Nov 16 to Apr 30: Designated ORV routes would be open to ORV use 24 hours a day. May 1 to Nov 15: Designated ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 10:00 p.m. to 6:00 a.m. Sep 16 to Nov 15: ORV routes with no or low density of turtle nests would reopen to ORV use between 10:00 p.m. and 6:00 a.m., subject to terms and conditions of permit. Hours of night-driving prohibition would be established in the Superintendent's Compendium and subject to periodic review.	Nov 16 to Apr 30: Designated ORV routes would be open to ORV use 24 hours a day. May 1 to Nov 15: Designated ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 9:00 p.m. until 7:00 a.m. Sep 16 to Nov 15: ORV routes with no turtle nests remaining would reopen for night driving, subject to terms and conditions of the standard ORV permit.

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<b>ORV Safety Closures</b>					
<p>ORV safety closures are established as needed to address safety conditions such as debris on the beach or narrow beaches. Narrow beaches are reopened as the beach widens. Safety closures are applicable only to ORV access; pedestrian access is maintained.</p> <p>Existing ORV safety closures include:</p> <ul style="list-style-type: none"> <li>• Ramp 1 to ramp 2</li> <li>• 1.8 mile south of ramp 38 to 0.4 mile north of ramp 43.</li> <li>• Buxton to Lighthouse Beach.</li> <li>• Northern boundary of Frisco to Hatteras Village.</li> <li>• Hatteras Village Beach.</li> </ul> <p>1.5 mile north of ramp 67 to 1 mile south of ramp 59.</p>	<p>Same as alternative A.</p>	<p>ORV safety closures would be established on designated ORV routes as needed to address ORV and pedestrian safety considerations, including the following:</p> <ul style="list-style-type: none"> <li>• Debris on the beach.</li> <li>• Narrow beaches.</li> <li>• Congested areas.</li> </ul> <p>Safety closures would preclude ORV access, while pedestrian and commercial fishing access would generally be maintained through safety closures.</p> <p><b>NPS law enforcement staff would monitor ORV safety closures on a weekly basis. Sufficient reduction or elimination of the conditions prompting the closure, so there is no longer an imminent hazard, would constitute the trigger for reopening an ORV safety closure.</b></p>	<p>ORV safety closures would not be established. ORV drivers would be responsible for recognizing and avoiding ORV safety hazards and would drive at own risk.</p>	<p>Same as alternative C.</p>	<p>ORV safety closures would be implemented in the event of a threat of significant bodily injury or death, and/or damage to personal property, including vehicles and their contents. ORV safety closures would preclude ORV access, while pedestrian and commercial fishing access would be maintained through most safety closures.</p> <p>Triggers that could justify an ORV safety closure include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Deep beach cuts that block the beach from dune to surf with no obvious way around.</li> <li>• Obstacles, such as exposed stumps, shipwrecks, or debris, that cannot be safely bypassed or that block the entire width of the beach and cannot be easily removed.</li> <li>• Severe beach slope that puts vehicles in an unsafe gradient position and increases the chances of the loss of vehicular control.</li> <li>• A high concentration of pedestrian users coupled with a narrow beach.</li> <li>• A narrow beach where there is insufficient width to safely exit the beach in the vehicle corridor during normal (non-storm) high tides.</li> <li>• Between November 1 and March 31 portions of a village beach that are not consistently at least 20 meters (66 feet) wide during normal high tides.</li> </ul> <p>Triggers do not include:</p> <ul style="list-style-type: none"> <li>• Hazards blocking only a portion of the beach, where safe passage is available around the hazard.</li> </ul> <p>NPS law enforcement staff will monitor ORV safety closures on a weekly basis. Sufficient reduction or elimination of the conditions prompting the closure, so there is no longer an imminent hazard, would constitute the trigger for reopening a closure.</p>

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<b>Pedestrian Safety</b>					
<p>36 CFR 4.20, Right-of-Way: An operator of a motor vehicle shall yield the right of way to pedestrians (as well as saddle and pack animals, and vehicles drawn by animals). Failure to yield the right of way is prohibited.</p> <p>36 CFR 4.22, Unsafe Operation: (b) The following are prohibited:</p> <p>(3) Failing to maintain that degree of control of a motor vehicle necessary to avoid danger to persons, property, or wildlife.</p> <p>No additional measures apply.</p>	Same as alternative A.	Same as alternative A.	Same as alternative A.	<p><b>Same as alternative A, plus:</b></p> <ul style="list-style-type: none"> <li>For village beaches that are open to ORV use during the winter season, the village beaches must be at least 20 meters (66 feet) wide from the toe of the dune seaward to mean high tide line in order to be open to ORV use.</li> </ul>	<p><b>Same as alternative A, plus:</b></p> <ul style="list-style-type: none"> <li>Vehicles must yield to pedestrians on all ORV routes.</li> <li>When approaching or passing a pedestrian on the beach, ORVs shall move to the landward side of the available ORV corridor in order to yield the wider portion of the beach corridor to the pedestrian.</li> <li>ORVs shall slow to 5 mph when traveling within 30.5 meters (100 feet) or less of pedestrians at any location on the beach at any time of year.</li> <li>Pedestrians should not block access ramps and should use pedestrian ramps/boardwalks where available. If a pedestrian walkover is not available, pedestrians should walk to the side of ORV ramps, not in the tire tracks.</li> </ul>
<b>Administrative ORV Closures</b>					
<p>The beach in front of the former site of Cape Hatteras Lighthouse is closed to ORV access.</p> <p>Buxton Woods Road is closed to ORV access.</p>	Same as alternative A.	<p><b>No administrative closures would be established. ORV routes and VFAs would be designated as described in table 7.</b></p>	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Temporary Emergency ORV Closures</b>					
<p>Temporary emergency ORV closures established per Superintendent's Compendium and NPS policy.</p>	<p>Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>NPS retains the authority to implement a temporary emergency ORV closure if any of the following conditions are observed:</li> <li>ORV traffic is backing up on the beach access ramps, either on- or off-beach bound, which threatens to impede traffic flow.</li> <li>ORV traffic on the beach is parked in such a way that two-way traffic is impeded.</li> </ul> <p>Multiple incidents of disorderly behavior are observed or reported.</p>	<p>Same as alternative B, plus:</p> <ul style="list-style-type: none"> <li>Beaches would be temporarily closed to additional ORV use if/when carrying capacity is reached or exceeded.</li> </ul>	Same as alternative B.	Same as alternative C.	<p><b>Same as alternative B, plus:</b></p> <ul style="list-style-type: none"> <li>Beaches would be temporarily closed to additional ORV use if/when carrying capacity or one-vehicle-deep beach parking limit is reached or exceeded.</li> </ul>

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<b>Ramp Characteristics</b>					
Ramp width and construction details vary. Current practice is to use shell/clay base material to provide firm driving surface where ramps cross dune line.	Same as alternative A.	<b>Ramps would be two lanes wide with shell/clay base and have:</b> <ul style="list-style-type: none"> <li>Standard regulatory signs and information boards at all ramps.</li> <li>Gates at all ramps and access points.</li> <li>Designated “air down” area with hardened surface (e.g., shell/clay base).</li> </ul>	Same as alternative C.	Same as alternative C.	– Same as alternative C.
<b>Permit Requirements</b>					
No permit required.	Night-driving permit required for ORV use from 10:00 p.m. to 6:00 a.m. Sep 16 to Nov 15.	ORV permit required.	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Permit Distribution</b>					
N/A	Available in person at various locations and online.	Available in person at designated permit issuing stations and online.	Same as alternative C.	Same as alternative C.	Available in person at designated NPS permit issuing stations.
<b>Permit Issuance Requirements</b>					
N/A	ORV owner must sign permit to acknowledge understanding of the rules and must carry permit when beach driving during the restricted period.	ORV owners must complete a short education program in person or online and pass a basic knowledge test. Owners would sign for their permits to acknowledge understanding of the rules and regulations governing ORV use at the Seashore.	ORV owners must read an information brochure and sign the permit to acknowledge understanding of the rules and regulations governing ORV use at the Seashore.	Same as alternative C.	ORV owners must complete a short education program in person and sign for the permit to acknowledge understanding of the rules and regulations governing ORV use at the Seashore.
<b>Permit Types</b>					
N/A	Night-driving permit for Sep 16 to Nov 15.	Annual ORV permits would be valid for 12 months from date of purchase.	Annual ORV permits would be valid for the calendar year.	Weekly (7-day) and annual (12-month) ORV permits would be valid from date of purchase. Permits would include night-driving component for September 16 to November 15. In addition, a separate permit would be required for the following activities: <ul style="list-style-type: none"> <li>Park-and-stay overnight.</li> <li>Self-contained vehicle (SCV) camping.</li> </ul>	7-day ORV permits would be valid from date of purchase. Annual ORV permits would be valid for the calendar year. Permits would include night-driving component for September 16 to November 15.
<b>Permit Number Limits</b>					
N/A	No limit on night-driving permits.	No limit on ORV permits.	Same as alternative C.	Same as alternative C, except: <ul style="list-style-type: none"> <li>Use limits would be established for park-and-stay and SCV camping.</li> <li>Use limits would be subject to periodic review.</li> </ul>	Same as alternative C.



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<b>Permit Fees</b>					
N/A	None	ORV permit fee would be based on cost recovery as described in NPS Director’s Order and Reference Manual 53.	Same as alternative C, except: <ul style="list-style-type: none"> <li>Amount of fee would be lower than alternative C due to decreased management costs under this alternative.</li> </ul>	Same as alternative C, except: <ul style="list-style-type: none"> <li>Fee for weekly ORV permit would be less than fee for annual permit.</li> <li>Fees for park-and-stay and SCV permits would be determined separately.</li> </ul>	Same as alternative C, except: <ul style="list-style-type: none"> <li>Fee for 7-day ORV permit would be less than fee for annual permit.</li> </ul>
<b>Permit Form</b>					
N/A	Night-driving permit is an informational brochure that the user signs and places on dash of vehicle.	ORV permit would be affixed to vehicle in a manner approved by the NPS.	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Permit Revocation</b>					
N/A	Night-driving permit may be revoked for violation of applicable park regulations or terms and conditions of the permit.	ORV permit may be revoked for violation of applicable park regulations or terms and conditions of the permit.	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Beach Parking</b>					
Parking within routes is allowed in any configuration, as long as parked vehicles do not obstruct traffic.	Same as alternative A.	Same as alternative A.	Parking within ORV routes is allowed, but only one vehicle deep. Stacking of vehicles in more than one row would be prohibited.	Same as alternative A.	Parking within ORV routes is allowed, but only one vehicle deep, as long as vehicles do not obstruct two-way traffic. Stacking of vehicles in more than one row would be prohibited.
<b>Vehicle Carrying Capacity Determination</b>					
Vehicle carrying capacity would not be determined.	Same as alternative A.	Carrying capacity would be a “peak use limit” determined for all areas based on the linear feet of beachfront and the following physical space requirements (“mile” refers to miles of beach open to ORV use): <p><b>Bodie Island District:</b></p> <ul style="list-style-type: none"> <li>260 vehicles/mile (20 feet/vehicle).</li> </ul> <p><b>Hatteras Island District:</b></p> <ul style="list-style-type: none"> <li>260 vehicles/mile (20 feet/vehicle).</li> </ul> <p><b>Ocracoke Island District:</b></p> <ul style="list-style-type: none"> <li>175 vehicles/mile (30 feet/vehicle).</li> </ul> Temporary exceptions to carrying-capacity limits may be approved for short-term events operating under a special use permit. Carrying-capacity criteria would be subject to periodic review.	Carrying capacity would be addressed solely by the beach parking restriction described in the row above.	Same as alternative C, except: <p><b>Hatteras Island District:</b></p> <ul style="list-style-type: none"> <li>Cape Point: 400 vehicles allowed within a 1 mile area centered on Cape Point.</li> </ul>	The maximum number of vehicles allowed on any particular ORV route is the linear distance of the route divided by 6 meters (20 feet) per vehicle (i.e., the equivalent of 260 vehicles per mile).

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<b>ORV Characteristic Requirements</b>					
All vehicles operating in all areas of the Seashore must have valid vehicle registration, insurance, and license plate. Vehicles must be street legal. All-terrain vehicles (ATVs) are prohibited from beach driving.	Same as alternative A.	Off-road Vehicle characteristics: <ul style="list-style-type: none"> <li>• All vehicles must be registered, licensed, and insured for highway use and must comply with state inspection regulations within the state, country, or province where the vehicle is registered</li> <li>• Four-wheel-drive vehicles are recommended.</li> <li>• Two-wheel-drive vehicles are allowed.</li> <li>• Motorcycles and ATVs are prohibited.</li> <li>• There is a three-axle maximum for vehicles (this is the axle maximum for the powered vehicle only and does not include the additional number of axles on towed trailers).</li> <li>• Any trailers are limited to no more than two axles.</li> <li>• The maximum vehicle length is 30 feet (this is the maximum length for the powered vehicle and does not include the additional length of a towed trailer).</li> <li>• Tires must be U.S. Dept. of Transportation-listed or approved.</li> </ul>	Same as alternative C.	Same as alternative C, except: <ul style="list-style-type: none"> <li>• Motorcycles would be prohibited on ocean beaches, but allowed on soundside access areas where ORVs are allowed.</li> </ul>	Off-road vehicle characteristics: <ul style="list-style-type: none"> <li>• All vehicles must be registered, licensed, and insured for highway use and must comply with state inspection regulations within the state, country, or province where the vehicle is registered.</li> <li>• Four-wheel-drive vehicles are recommended.</li> <li>• Two-wheel-drive vehicles are allowed.</li> <li>• Motorcycles, ATVs, and UTVs are prohibited.</li> <li>• The vehicle must have no more than two axles.</li> <li>• Towed boat trailers are allowed and must have no more than two axles. Travel trailers (i.e., camping trailers) are prohibited.</li> <li>• Vehicle tires must be U.S. Department of Transportation-listed or approved.</li> </ul>
<b>Equipment Requirements</b>					
None	Same as alternative A.	<b>Equipment requirements:</b> <ul style="list-style-type: none"> <li>• All vehicles shall contain a low-pressure tire gauge, shovel, jack, and jack stand.</li> <li>• A full-sized spare tire, first-aid kit, fire extinguisher, trash bag or container, flashlight (if night driving), and tow strap are recommended.</li> </ul>	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Tire Pressure</b>					
Recommend air down of tires before driving on the beach.	Same as alternative A.	When driving on designated routes, tire pressure must be lowered sufficiently to maintain adequate traction within the posted speed limit. Tire pressure of 20 psi is <i>recommended</i> for most vehicles. The softer the sand, the lower the pressure needed. Re-inflate tires to normal pressure as soon as possible after vehicle returns to paved roads.	Same as alternative C.	Same as alternative C.	Same as alternative C.

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<b>Speed Limit</b>					
Speed limit is 25 mph (unless otherwise posted) on park beaches for public and private vehicles. Speed limit is 10 mph when ORV corridor is less than 100 feet wide. Speed limit in front of villages during off season (Sep 16 to May 14) on park beaches posted at 10 mph. <b>Emergency vehicles exempt when responding to a call.</b>	May 15 to Sep 15: Speed limit is 15 mph (unless otherwise posted). Sep 16 to May 14: Speed limit is 25 mph (unless otherwise posted).	Speed limit is 15 mph (unless otherwise posted). <b>Emergency vehicles exempt when responding to a call.</b>	<b>Same as alternative C.</b>	<b>Same as alternative C.</b>	<b>Same as alternative C.</b>
<b>Essential Vehicles</b>					
Essential vehicles are allowed in VFAs and within resource closures subject to guidelines in the “Essential Vehicles” section of appendix G of the USFWS <i>Piping Plover, Atlantic Coast Population, Revised Recovery Plan</i> . To the extent practicable, emergency response vehicle operators will consult with trained resource management staff regarding protected species before driving into or through resource closures; however, prior consultation may not always be practical.	Same as alternative A.	Same as alternative A.	Same as alternative A.	Same as alternative A.	Same as alternative A.
<b>VFAs</b>					
None designated. ORVs are temporarily prohibited in seasonal (village) closures, safety closures, administrative closures, and resource closures, including some areas that have been closed to ORV use for many years.	Same as alternative A.	VFAs would be designated as indicated in table 7.	VFAs would be designated as indicated in table 7.	VFAs would be designated as indicated in table 7.	VFAs would be designated as indicated in table 7-1.
<b>Resource Education</b>					
Information is available to the general public through the park website, newspaper, information brochures, and interpretive programs. However, there is no targeted education program for beach users.	Same as alternative A, except: <ul style="list-style-type: none"> <li>• Night-driving permit has basic education component.</li> <li>• Protected species information is available at ORV access points.</li> <li>• There is a 24-hour citizen phone line.</li> <li>• The beach access brochure is to be redesigned.</li> </ul>	General information would remain available as described in alternative A. There would be a new required education program for ORV users, as described under ORV Permit Issuance Requirements.	<b>Same as alternative C.</b>	<b>Same as alternative C.</b>	<b>Same as alternative C, plus:</b> <ul style="list-style-type: none"> <li>• There would be a new voluntary resource education program targeted toward pedestrian beach users.</li> </ul>

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<b>Temporary ORV Use of VFAs</b>					
<p>Beach access would be provided through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.</p>	<p>Beach access would be provided through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.</p>	<p>Under the terms and conditions of a special use permit, the Superintendent could authorize the following:</p> <ul style="list-style-type: none"> <li>• Beach access would be provided through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.</li> <li>• Temporary emergency ORV use of VFAs if needed to bypass sections of NC-12 that are closed for repairs. This could apply to all vehicles, including private vehicles, and would require a special use permit during the temporary emergency situation.</li> <li>• Temporary non-emergency ORV use of VFAs traditionally used for fishing tournaments that were established prior to Jan 1, 2009.</li> <li>• Temporary non-emergency ORV use of VFAs in front of villages to transport mobility-impaired individuals to join their family or friends on an open beach that is otherwise closed to ORVs. ORV use would be limited to the shortest, most direct distance between the nearest designated ORV route and the location of the gathering.</li> </ul> <p>Temporary non-emergency use by <i>nonessential</i> vehicles would not be permitted within resource closures.</p>	<p>Same as alternative A.</p>	<p>Same as alternative C.</p>	<p>The superintendent may issue a special use permit for temporary off-road vehicle use to:</p> <ul style="list-style-type: none"> <li>• Authorize the North Carolina Department of Transportation to use Seashore beaches as a public way when necessary to by-pass sections of NC Highway 12 that are impassible or closed for repairs.</li> <li>• Allow participants in a regularly-scheduled fishing tournament to drive in an area not designated for off-road use, if off-road use was allowed in that area for that tournament before January 1, 2009.</li> <li>• Allow vehicular transport of mobility-impaired individuals to a predetermined location in a designated VFA in front of villages via the shortest most direct distance from the nearest designated ORV route or Seashore road; the vehicle must return to the designated ORV route or Seashore road immediately after the transport.</li> </ul> <p>Temporary non-emergency use by <i>nonessential</i> vehicles would not be permitted within resource closure.</p>
<b>Parking Areas for Access to VFAs</b>					
<p>Parking is currently provided in 32 park-maintained parking lots throughout the Seashore, totaling approx. 1,000 spaces.</p>	<p>Same as alternative A.</p>	<p>New or expanded parking would be established to support pedestrian access to VFAs as identified in table 7. NPS would use environmentally appropriate design standards to minimize stormwater runoff and other resource impacts. Toilet facilities and trash receptacles would be provided at high-use locations.</p>	<p>Same as alternative C.</p>	<p>Same as alternative C.</p>	<p>Same as alternative C, except as identified in table 7-1.</p>

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<b>Alternative Transportation</b>					
None	Same as alternative A.	NPS would consider applications for commercial use authorization to offer beach shuttle services.	Same as alternative A.	Same as alternative C, plus: <ul style="list-style-type: none"> <li>• NPS would designate and post boat landing zones (drop-off) near the inlet at Bodie Island Spit and South Point Ocracoke that could be used to drop off pedestrians if/when the inlet shoreline is not otherwise closed to protect Seashore resources. NPS would encourage a commercial water shuttle service for this purpose; however, the drop-off points would be subject to closure on short notice if needed to protect Seashore resources.</li> </ul>	NPS would consider applications for commercial use authorizations to offer beach and water shuttle services. NPS would apply for funding to conduct an alternative transportation study to evaluate the feasibility of alternative forms of transportation to popular sites, such as inlets and Cape Point.

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<b>Camping and Nighttime Beach Use</b>					
<p>Per 36 CFR 2.10: Camping<sup>a</sup> is prohibited except in designated areas. In the Superintendent's Compendium, camping is prohibited on Seashore beaches. In areas open to ORV use, ORVs are allowed on the beach overnight if someone associated with the vehicle is actively fishing.</p> <p><sup>a</sup>Camping is defined in 36 CFR 1.4 as the erecting of a tent or shelter of natural or synthetic material, preparing a sleeping bag or other bedding material for use, parking of a motor vehicle, motor home, or trailer, or mooring of a vessel for the apparent purpose of overnight occupancy.</p>	<p>Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>Nighttime use of ORVs is seasonally restricted as described under the Hours of Allowable ORV Operation section.</li> </ul>	<p>Same as alternative B, plus:</p> <ul style="list-style-type: none"> <li>Unattended beach equipment (e.g., chairs, canopies, volleyball nets, watersports gear) is prohibited on the Seashore at night. Turtle patrol and law enforcement will tag equipment found at night. Owners have 24 hours to remove equipment before it is removed by NPS staff.</li> </ul>	<p>Same as alternative C.</p>	<p>Same as alternative C, plus: SCV camping would be authorized as follows:</p> <ul style="list-style-type: none"> <li>The following campgrounds and use limits would be designated for SCV camping from Nov 1 to Mar 31: Oregon Inlet—100 spaces; Cape Point—100 spaces; and Ocracoke—50 spaces. Use limits would be established in the Superintendent's Compendium and subject to periodic review.</li> <li>SCV permits would be required, in addition to an ORV permit for beach driving, and would be available in weekly or seasonal increments.</li> <li>There would be a 7-consecutive-day- / 6-night-stay limit during any one visit and a limit of one visit per month.</li> <li>SCVs would be required to have a self-contained toilet and a separate, permanently installed holding tank for both black and grey water, each with a min. capacity of 3 days' waste.</li> <li>Holding tanks must be dumped at an appropriate facility every 72 hours during a visit.</li> </ul> <p>Between May 1 and September 16, ORV park-and-stay overnight would be allowed with a permit at selected spits and points, if not otherwise closed to protect resources. The following park-and-stay use limits would be established: Inlet spits—15 vehicles each; Cape Point and South Point Ocracoke—25 vehicles each.</p> <p>Park-and-stay use limits and hours of night-driving prohibition would be established in the Superintendent's Compendium and subject to periodic review.</p>	<p>Same as alternative C.</p>

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<b>Beach Fires</b>					
<p>Per 36 CFR 2.13: Fires are prohibited except in designated areas. In the Superintendent's Compendium, beach fires are authorized year-round, with the following restrictions:</p> <ul style="list-style-type: none"> <li>• Fires are prohibited from midnight to 6:00 a.m. year-round.</li> <li>• Fires are prohibited within resource closures.</li> </ul>	<p>Same as alternative A.</p>	<p>Same as alternative B, plus:</p> <ul style="list-style-type: none"> <li>• A non-fee educational fire permit is required for any beach fire year-round.</li> <li>• The hours that beach fires are permitted are subject to periodic review.</li> </ul>	<p>Same as alternative A.</p>	<p>Same as alternative C.</p>	<p>Beach fires are authorized year-round, with the following restrictions:</p> <ul style="list-style-type: none"> <li>• A non-fee educational fire permit is required for any beach fire.</li> <li>• Fires are prohibited from 10:00 p.m. to 6:00 a.m. year round.</li> <li>• Fires are prohibited within resource closures and within 100 meters of any turtle nest closure.</li> <li>• May 1 to Nov 15: Beach fires would be permitted only in front of Coquina Beach, Rodanthe, Waves, Salvo, Avon, Buxton, Frisco Hatteras Village, and Ocracoke day use area during the sea turtle nesting season.</li> </ul>
<b>Pets</b>					
<p>Per 36 CFR 2.15: The following are prohibited:</p> <ul style="list-style-type: none"> <li>• Possessing a pet in an area closed to the possession of pets by the Superintendent.</li> <li>• Failing to crate, cage, restrain on a leash which shall not exceed 6 feet in length, or otherwise physically confine a pet at all times.</li> </ul> <p>In the Superintendent's Compendium, pets are prohibited in all resource closures. Pets are prohibited, even if on a leash, from the landward side of the posts delineating the ORV corridor at the spits (Bodie, Hatteras, Ocracoke) and Cape Point.</p>	<p>Same as alternative A.</p>	<p>Same as alternative A, except :</p> <ul style="list-style-type: none"> <li>• Pets would be prohibited within all designated Breeding Shorebird Species Management Areas (SMAs) from Mar 15 to Oct 15.</li> <li>• Pets would be prohibited within all Nonbreeding Shorebird SMAs that are otherwise open to recreational use.</li> </ul>	<p>Same as alternative C, except :</p> <ul style="list-style-type: none"> <li>• Pets would be prohibited in all designated SMAs year-round.</li> <li>• This policy would not be subject to periodic review.</li> </ul>	<p>Same as alternative C, except:</p> <ul style="list-style-type: none"> <li>• Pets would be prohibited within all designated Breeding Shorebird SMAs, including pass-through zones, from Mar 15 to Aug 31.</li> </ul>	<p>– Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Pets would be prohibited in pedestrian shoreline access areas in front of (i.e., seaward of) bird prenesting areas.</li> </ul>

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<b>Horses</b>					
<p>Per 36 CFR 2.16: The use of horses or pack animals is prohibited outside of trails, routes, or areas designated for their use.</p> <p>In the Superintendent's Compendium, horse use is prohibited in resource closures and on lifeguarded beaches, and is allowed only in the following locations:</p> <ul style="list-style-type: none"> <li>• On the beach seaward of the existing dunes and only on beaches open to ORV use.</li> <li>• Along road shoulders or across paved roads where travel is necessary to cross to and from beach access routes.</li> <li>• On trails or in areas as authorized by commercial-use authorization or special use permit.</li> </ul>	<p>Same as alternative A.</p>	<p>Same as alternative A, except:</p> <ul style="list-style-type: none"> <li>• Horse use would be allowed in some VFAs, except for SMAs, and on a limited number of trails to be designated in the Superintendent's Compendium after ORV routes are determined.</li> <li>• Horse use would be allowed on village beaches from Sep 16 to May 14.</li> <li>• The designated horse use trails and areas would be subject to periodic review.</li> </ul>	<p>Same as alternative A.</p>	<p>Same as alternative C.</p>	<p>Same as alternative A, except:</p> <ul style="list-style-type: none"> <li>• Horse use would be allowed in some VFAs and on a limited number of trails to be designated in the Superintendent's Compendium after ORV routes are determined.</li> <li>• Horse use would be allowed on village beaches from Sep 16 to May 14.</li> <li>• Horses are prohibited in resource closures and in pedestrian shoreline access areas in front of (i.e., seaward of) bird prenesting areas.</li> </ul>
<b>Authorized Commercial Vehicles</b>					
<p>Commercial fishing at the Seashore is authorized and managed under a special use permit in accordance with 36 CFR 7.58(b). Commercial fishing vehicles are considered <i>non-essential vehicles</i> and are not authorized to enter resource closures. Permitted commercial fishermen are authorized to enter other areas that are closed to recreational ORV use, including seasonal closures and safety closures, but are not authorized to enter lifeguarded beaches.</p>	<p>Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Commercial fishing vehicles are subject to the night-driving restriction in the consent decree.</li> <li>• Under the modified consent decree, commercial fishermen would be granted access to beaches at 5:00 a.m. instead of 6:00 a.m, provided certain conditions from the modified consent decree are met.</li> </ul>	<p>Same as alternative A, except:</p> <ul style="list-style-type: none"> <li>• Commercial fishermen would not be required to obtain an ORV permit that would be required for recreational ORVs.</li> <li>• Commercial fishing vehicles would be authorized to enter VFAs, except for resource closures and lifeguarded beaches.</li> <li>• In areas outside of existing resource closures, the Superintendent would be able to modify the hours of night-driving restrictions by +/- two hours, subject to terms and conditions of the fishing permit, for commercial fishermen who are actively engaged in authorized commercial fishing activity and can produce fish house receipts from the past 30 days. Such modifications would be subject to periodic review.</li> </ul>	<p>Same as alternative C.</p>	<p>Same as alternative C.</p>	<p>Use of vehicles off-road under the terms of a commercial use authorization or commercial fishing permit issued by the superintendent would be as follows. A separate ORV permit is not required.</p> <ul style="list-style-type: none"> <li>• When driving off-road, a commercial use authorization (CUA) holder is restricted to the designated off-road routes open for use.</li> <li>• A commercial fishing permit holder may drive on designated off-road routes and, when actively engaged in authorized commercial fishing activities, on beaches not designated for off-road use, except for resource closures and lifeguarded beaches.</li> <li>• The superintendent may allow commercial fishing vehicles to enter the beach at 5 a.m. when night driving restrictions are in effect for the general public, for those actively engaged in authorized commercial fishing activity involving haul seine and gill nets and able to present fish house receipts for the previous 30 days.</li> </ul>



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<b>Periodic Review</b>					
None	Same as alternative A.	Every 5 years NPS would conduct a systematic review of the ORV management measures that are identified in this plan as being subject to Periodic Review. This could result in changes to those management actions in order to improve effectiveness.	Same as alternative A.	Same as alternative C.	Same as alternative C.
<b>Staffing and Material Costs (annual costs based on 2009 dollars)</b>					
Protection: \$1,147,500 Management/Administration: \$428,750 Resource Mgmt: \$508,500 Facilities: \$55,600 Interpretation: \$68,500 Total: \$2,208,850	Protection: \$1,481,500 Management/Administration: \$483,950 Resource Mgmt: \$813,000 Facilities: \$178,600 Interpretation: \$193,500 Total: \$3,150,550	Protection: \$1,706,900 Management/Administration: \$380,100 Resource Mgmt: \$704,000 Facilities: \$198,800 Interpretation: \$193,500 Total: \$3,183,300	Protection: \$1,768,500 Management/Administration: \$360,850 Resource Mgmt: \$649,500 Facilities: \$178,600 Interpretation: \$193,500 Total: \$3,150,950	Protection: \$2,204,300 Management/Administration: \$383,100 Resource Mgmt: \$924,200 Facilities: \$211,400 Interpretation: \$193,500 Total: \$3,916,500	Protection: \$1,956,100 Management/Administration: \$274,150 Resource Mgmt: \$943,950 Facilities: \$194,100 Interpretation: \$263,850 Total: \$3,632,150
<b>Resource Protection Measures</b>					
<b>Breeding Season Measures</b>					
Shorebird prenesting areas and ORV/pedestrian buffers for observed shorebird breeding behavior, sea turtle nests, and seabeach amaranth are established as described in the Interim Strategy FONSI (table 9).	Shorebird prenesting areas and ORV/pedestrian buffers for observed shorebird breeding behavior, sea turtle nests, and seabeach amaranth are established as described in the Interim Strategy FONSI (table 9), as modified by the consent decree.	Breeding Shorebird SMAs would be designated. Shorebird prenesting areas and ORV/pedestrian buffers for observed shorebird breeding behavior, sea turtle nests, and seabeach amaranth would be established as described in table 10.  ML1 measures would be implemented at all locations (including those outside of SMAs), except at Bodie Island Spit, Cape Point, and South Point Ocracoke, where ML2 measures would be implemented.  Designated SMAs would be subject to periodic review.	Same as alternative C, except: • ML1 would be implemented at all locations.	Same as alternative C, except: • ML2 areas at Bodie Island Spit, Cape Point, and South Point Ocracoke would include an ORV pass-through zone, using standard buffer distances as described in table 10.	Prenesting areas and buffers would be established as described in table 10-1. Pedestrian shoreline access below the high tide line would be permitted in front of (i.e., seaward of) prenesting areas until breeding activity is observed, then standard buffers for breeding activity would apply. The NPS retains discretion at all times to enforce more protective closures or take other measures, if considered necessary, consistent with its obligations under the law.
<b>Nonbreeding Season Measures</b>					
As described in the Interim Strategy FONSI: Suitable interior habitats at spits and at Cape Point are closed year-round to all recreational users to provide for resting and foraging for shorebirds. Suitable habitats include ephemeral ponds and moist flats at Cape Point, Hatteras Spit, Ocracoke, and Bodie Island Spit. Actual locations of suitable foraging and resting habitat may change periodically due to natural processes and are determined based on annual habitat assessment and monitoring.	Same as alternative A.	Nonbreeding Shorebird SMAs would be established at the points and spits based on an annual habitat assessment. In addition, year-round VFAs along the ocean shoreline outside of the villages, as identified in table 7, would be managed as Nonbreeding Shorebird SMAs with recreational activity restrictions as described in table 10.  Designated SMAs would be subject to periodic review.	Same as alternative C.	Same as alternative C.	VFAs throughout the Seashore would provide relatively less disturbed foraging, resting, and roosting habitat for migrating and wintering birds. These areas would be managed as described in table 10-1.

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<b>Vegetation</b>					
ORV use is generally restricted to minimize impacts.	Same as alternative A.	ORV use would be restricted or prohibited in locations where ORV use is causing unacceptable impacts to vegetation.	Same as alternative C.	Same as alternative C.	Same as alternative C.

**TABLE ES-4. ANALYSIS OF HOW ALTERNATIVES MEET OBJECTIVES**

Objectives	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Management Methodology</b>						
Identify criteria to designate ORV routes and areas.	Meets objective to some degree. No criteria would be developed to designate routes and areas. The ocean and inlet shoreline and existing soundside routes would potentially be open to ORV use 24 hours a day, year-round.	Meets objective to some degree. No criteria would be developed to designate routes and areas. The ocean and inlet shoreline and existing soundside routes would potentially be open to ORV use, year-round.	Meets objective to a large degree. Routes and areas designated based on seasonal resource and visitor use characteristics of various areas in the Seashore.	Meets objective to a large degree. Routes and areas designated based on providing predictability for visitors and simplified management strategies.	Meets objective to a large degree. Routes and areas designated based on providing a wide variety of access opportunities for all users, while still protecting sensitive resources.	Meets objective to a large degree. Routes and areas designated based on providing a variety of access opportunities for all users, while still protecting sensitive resources. This alternative also provides more predictability than alternative E.
Establish ORV management practices and procedures that have the ability to adapt in response to changes in the Seashore’s dynamic physical and biological environment.	Meets objective to a moderate degree. ORV use areas are determined by where resource management closures exist. Flexibility to adapt to changes, but lack of a framework to make these changes efficiently.	Meets objective to some degree. ORV use areas are set through resource management measures under the Consent Decree. Areas are set, but are rigid, and do not have flexibility to adapt as needed to respond to changing environment.	Meets objective to a large degree. Route, areas, and ORV management measures are established that are subject to Periodic Review of both ORV management and species management measures.	Meets objective to some degree. Route, areas, and ORV management measures are established that are subject to Periodic Review and species management measures, but not ORV management measures. The ability to implement safety closures would not be available.	Meets objective to a large degree. Route, areas, and ORV management measures are established that are subject to Periodic Review of both ORV management and species management measures.	Meets objective to a large degree. Route, areas, and ORV management measures are established that are subject to Periodic Review of both ORV management and species management measures.
Establish a civic engagement component for ORV management.	Meets objective to a moderate degree. The Seashore would conduct educational programs during bird and turtle hatching season, which would involve students from public schools, as well as other public involvement activities that engage the public.	Meets objective to a moderate degree. The Seashore would conduct educational programs during bird and turtle hatching season, which would involve students from public schools, as well as other public involvement activities that engage the public.	Meets objective to a large degree as the Seashore would implement more educational programs in local schools, expand the Junior Ranger program, and enlist volunteers for a Sea Turtle Nest Watch Program.	Meets objective to a large degree as the Seashore would implement more educational programs in local schools, expand the Junior Ranger program, and enlist volunteers for a Sea Turtle Nest Watch Program.	Meets objective to a large degree as the Seashore would implement more educational programs in local schools, expand the Junior Ranger program, and enlist volunteers for a Sea Turtle Nest Watch Program.	Meets objective to a large degree as the Seashore would implement more educational programs in local schools, expand the Junior Ranger program, and enlist volunteers for a Sea Turtle Nest Watch Program.
Establish procedures for prompt and efficient public notification of beach access status, including any temporary ORV use restrictions for such things as ramp maintenance, resource and public safety closures, storm events, etc.	Meets objective to some degree. Weekly beach access reports and online news releases provide prompt public notification.	Meets objective to a moderate degree. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates.	Fully meets objective. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates. Implementation of a permit system would provide ORV users with information regarding closed areas.	Fully meets objective. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates. Implementation of a permit system would provide ORV users with information regarding closed areas.	Fully meets objective. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates. Implementation of a permit system would provide ORV users with information regarding closed areas.	Fully meets objective. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates. Implementation of a permit system would provide ORV users with information regarding closed areas.
Build stewardship through public awareness and understanding of NPS resource-management and visitor-use policies and responsibilities as they pertain to the Seashore and ORV management.	Meets objective to some degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness.	Meets objective to some degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Public opinion regarding the Consent Decree would detract from these efforts.	Meets objective to a large degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Additional programs would be implemented and information provided through the permit system would increase awareness of Seashore resources.	Meets objective to a large degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Additional programs would be implemented and information provided through the permit system would increase awareness of Seashore resources.	Meets objective to a large degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Additional programs would be implemented and information provided through the permit system would increase awareness of Seashore resources.	Meets objective to a large degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Additional programs would be implemented and information provided through the permit system would increase awareness of Seashore resources.

Objectives	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Natural Physical Resources</b>						
Minimize impacts from ORV use to soils and topographic features, for example, dunes, ocean beach, wetlands, tidal flats, and other features.	Meets objective to some degree. ORV use not permitted on dunes, but permitted on the ocean and inlet shoreline and existing soundside routes would potentially be open to ORV use 24 hours a day, year-round. Lack of defined areas likely to lead to increased non-compliance and potential for these resources to be impacted.	Meets objective to a moderate degree. ORV use not permitted on dunes, but permitted on the ocean and inlet shoreline and existing soundside routes would potentially be open to ORV use, year-round. Night-driving restrictions reduce amount of disturbance from beach driving. Implementation of larger buffers and backshore closures would offer protection to resources.	Meets objective to a large degree, as ORV use not permitted on dunes, night-driving restrictions, and carrying capacity limits. However, a large amount of beach open to ORV use could result in impacts to physical resources.	Fully meets objective, as ORV use not permitted on dunes, night-driving restrictions, and beach parking limitations. Least amount of mileage open to ORV use year-round would minimize resource impacts.	Fully meets objectives, as ORV use not permitted on dunes, night-driving restrictions, carrying capacity limits, and soundside driving restrictions.	Meets objective to a large degree, as ORV use not permitted on dunes, night-driving restrictions, and carrying capacity limits. However, a large amount of beach open to ORV use could result in impacts to physical resources
<b>Threatened, Endangered, and Other Protected Species</b>						
Provide protection for threatened, endangered, and other protected species (e.g., state-listed species) and their habitats, and minimize impacts related to ORVs and other uses as required by laws and policies such as the <i>Endangered Species Act</i> , the <i>Migratory Bird Treaty Act</i> , and NPS laws and management policies.	Meets objective to some degree, as temporary resource closures provide protection for sensitive species but buffers would require frequent adjustments to provide adequate protection.	Meets objective to a moderate degree, as increased buffer distances and night-driving restrictions provide increased levels of species protection.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use 7 months per year provide proactive (prior to breeding season) protection.	Fully meets objective with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use year-round providing large areas of resource protection.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use 5.5 months per year provide proactive (prior to breeding season) protection.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, prenesting closures and large, pre-determined buffers for breeding/nesting activity would provide proactive (prior to breeding season) protection.
<b>Vegetation</b>						
Minimize impacts to native plant species related to ORV use.	Meets objective to some degree as driving on dune vegetation is prohibited, but lack of defined ORV areas or backshore closures could result in increased non-compliance and impacts to the resource.	Meets objective to a moderate degree as driving on dune vegetation is prohibited and ocean backshore closures are provided. Sensitive areas with marginal width may be open in the winter that would result in non-compliance problems.	Meets objective to a large degree by adding protective signage at soundside parking areas. Location of ORV corridor at the toe of the dune, with no buffer, may impact vegetation.	Fully meets objective as driving on dune vegetation is prohibited. Year-round SMAs protect large areas, reducing potential impacts to vegetation. ORV corridor would provide a 10 meter buffer from the toe of the dune, further protecting vegetation.	Fully meets objective by closing some soundside access areas and adding protective signage at remaining soundside parking areas. ORV corridor would provide a 10 meter buffer from the toe of the dune, further protecting vegetation.	Meets objective to a large degree by adding protective signage at soundside parking areas. However, there is the potential for damage to vegetation from new soundside access points. Location of ORV corridor at the toe of the dune, with no buffer, may impact vegetation.
<b>Other Wildlife and Wildlife Habitat</b>						
Minimize impacts to wildlife species and their habitats related to ORV use.	Meets objective to some degree, as temporary resource closures provide protection for other wildlife species but buffers are not as large as other alternatives and would not offer large levels of protection.	Meets objective to a moderate degree, as increased buffer distances and night-driving restrictions provide increased levels of species protection, which would include protection to other bird and invertebrate species.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use 7 months per year.	Fully meets objective with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use year-round, which would also offer protection to other bird species and invertebrates.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use 5.5 months per year.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, prenesting closures, and year-round and seasonal VFAs that leave areas of the Seashore less disturbed for wildlife.

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<b>Cultural Resources</b>						
Protect cultural resources, such as shipwrecks, archeological sites, and cultural landscapes, from impacts related to ORV use.	Meets objective to some degree as Seashore protections would be put in place for cultural resources, such as shipwrecks, but allowing driving at night and allowing access to large areas of the Seashore would provide for more access to these resources and more possibility for these resources to be disturbed.	Meets objective to a moderate degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Large areas of the Seashore would still be accessible by ORV and would provide some level of access to these resources.	Meets objective to a large degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Further protection would be provided by the establishment of SMAs that limit access to certain areas of the Seashore during certain times of year and the addition of a permit system that could be revoked for non-compliance, decreasing the probability of drivers taking non-compliant actions.	Meets objective to a large degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Further protection would be provided by the establishment of SMAs that limit access to certain areas of the Seashore during certain times of year and the addition of a permit system that could be revoked for non-compliance, decreasing the probability of drivers taking non-compliant actions.	Meets objective to a large degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Further protection would be provided by the establishment of SMAs that limit access to certain areas of the Seashore during certain times of year and the addition of a permit system that could be revoked for non-compliance, decreasing the probability of drivers taking non-compliant actions.	Meets objective to a large degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Further protection would be provided by the establishment of year-round and seasonal VFAs that limit access to certain areas of the Seashore during certain times of year and the addition of a permit system that could be revoked for non-compliance, decreasing the probability of drivers taking non-compliant actions.
<b>Visitor Use and Experience</b>						
Ensure that ORV operators are informed about the rules and regulations regarding ORV use at the Seashore.	Meets objective to some degree as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. No permit system would be in place to convey information or provide a mechanism for ensuring regulations are followed.	Meets objective to a moderate degree as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, on the website, and within the required night-driving permit.	Fully meets objective as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. This alternative includes a required education component as part of the ORV permit.	Fully meets objective as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. This alternative includes a required education component as part of the ORV permit.	Fully meets objective as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. This alternative includes a required education component as part of the ORV permit.	Fully meets objective as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. This alternative includes a required education component as part of the ORV permit.
Manage ORV use to allow for a variety of visitor use experiences.	Meets objective to some degree as ORV and VFAs are not officially designated. VFAs occur through seasonal and safety closures throughout the Seashore, but no defined use areas exist to provide for a variety of visitor use experiences.	Meets objective to some degree as ORV and VFAs are not officially designated. VFAs occur through seasonal and safety closures throughout the Seashore, but no defined use areas exist to provide for a variety of visitor use experiences.	Meets objective to a moderate degree as more defined areas for ORV and vehicle-free recreational opportunities are provided. New interdunal road access would be provided, offering additional options to ORV users. Some separation of uses and unique opportunities are provided for various user groups.	Meets objective to a moderate degree as more defined areas for ORV and vehicle-free recreational opportunities are provided. New interdunal road access would be provided, offering additional options to ORV users. Some separation of uses and unique opportunities are provided for various user groups, but large areas would be closed to all visitors for most of the year, and would not be available to provide for the visitor experience.	Meets objective to a large degree as more defined areas for ORV and vehicle-free recreational opportunities are provided. New interdunal road access would be provided, offering additional options to ORV users. Additional user opportunities would be provided including the addition of a park-and-stay options, as well as self-contained vehicle camping. The addition of pedestrian routes, additional parking on the soundside, as well as the potential for water taxi access would all contribute to offering a variety of visitor experiences.	Meets objective to a large degree as more defined areas for ORV and vehicle-free recreational opportunities are provided. New interdunal road access would be provided, offering additional options to ORV users. Additional visitor experiences would be provided through pedestrian routes, extra trails, and new parking. Providing some areas of the Seashore that are vehicle-free year-round or seasonally would provide for a greater variety of visitor experiences.

Objectives	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
Minimize conflicts between ORV use and other visitor uses.	Meets objective to some degree as no designated areas for uses are established, which could result in real or perceived conflicts between ORV uses and other visitor uses.	Meets objective to some degree as no designated areas for uses are established, which could result in real or perceived conflicts between ORV uses and other visitor uses.	Meets objective to a large degree as designation of ORV and VFAs would help minimize conflicts. Implementation of a permit system would provide additional education and the ability to revoke permits would likely increase compliance with ORV use regulations and further reduce conflicts. Seasonal night-driving restrictions would also reduce potential visitor use conflicts.	Meets objective to a large degree as designation of ORV and VFAs would help minimize conflicts. Implementation of a permit system would provide additional education and the ability to revoke permits would likely increase compliance with ORV use regulations and further reduce conflicts. Seasonal night-driving restrictions would also reduce potential visitor use conflicts.	Meets objective to a large degree as designation of ORV and VFAs would help minimize conflicts. Implementation of a permit system would provide additional education and the ability to revoke permits would likely increase compliance with ORV use regulations and further reduce conflicts. Seasonal night-driving restrictions would also reduce potential visitor use conflicts.	Meets objective to a large degree as designation of ORV and VFAs would help minimize conflicts. Implementation of a permit system would provide additional education and the ability to revoke permits would likely increase compliance with ORV use regulations and further reduce conflicts. Seasonal night-driving restrictions would also reduce potential visitor use conflicts.
<b>Visitor Safety</b>						
Ensure that ORV management promotes the safety of all visitors.	Meets objective to a moderate degree as ORV safety closures would be provided, as well as right-of-way and unsafe operation regulations contained in the CFR.	Meets objective to a large degree as ORV safety closures would be provided, as well as right-of-way and unsafe operation regulations contained in the CFR. Increased signage, lower speed limits, and increased public awareness would contribute to visitor safety.	Fully meets objective as ORV safety closures would be provided. Reduced speed limits would also apply in all areas. Village beaches would be closed to ORV use during the summer. Permit requirement would provide further information for increasing visitor safety.	Fully meets objective. Although ORV safety closures would not be provided, areas where these occur would be closed year-round as SMAs. Village beaches would be closed to ORVs year-round. Reduced speed limits would also apply in all areas.	Fully meets objective as ORV safety closures would be provided. Reduced speed limits would also apply in all areas. Beach width requirements would limit some ORV use in narrow beach areas and village beaches would be closed to ORV use during the summer.	Fully meets objective. Speed limits, village beach closures, and safety closures would be provided. Also, additional pedestrian safety and right-of-way requirements would provide increased protection.
<b>Seashore Operations</b>						
Identify operational needs and costs to fully implement an ORV management plan.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.
Identify potential sources of funding necessary to implement an ORV management plan.	Meets objective to a moderate degree. Funding expected under annual budget, but no additional funding source provided.	Meets objective to a moderate degree. Funding expected under annual budget, but no additional funding source provided.	Meets objective to a large degree. Funding expected under annual budget, additional funding would occur by from permit fees utilizing cost recovery.	Meets objective to a large degree. Funding expected under annual budget, additional funding would occur by from permit fees utilizing cost recovery.	Meets objective to a large degree. Funding expected under annual budget, additional funding would occur by from permit fees utilizing cost recovery.	Meets objective to a large degree. Funding expected under annual budget, additional funding would occur by from permit fees utilizing cost recovery.
Provide consistent guidelines, according to site conditions, for ORV routes, ramps, and signage.	Meets objective to some degree. Guidelines are not set and conditions would not be predictable.	Meets objective to a moderate degree. Increased signage would be consistent, but no consistent guidelines for routes and ramps would exist.	Meets objective to a large degree. Guidelines for ramp establishment and maintenance, signage, and routes would be established.	Meets objective to a large degree. Guidelines for ramp establishment and maintenance, signage, and routes would be established.	Meets objective to a large degree. Guidelines for ramp establishment and maintenance, signage, and routes would be established.	Meets objective to a large degree. Guidelines for ramp establishment and maintenance, signage, and routes would be established.

Note: Objectives are measured as fully meets objective, largely meets objective, moderately meets objective, or meets objective to some degree.

TABLE ES-5. ENVIRONMENTAL IMPACT SUMMARY BY ALTERNATIVE

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Wetlands and Floodplains</b>						
<b>Wetlands</b>	<b>Impacts of the Alternative on Marine Intertidal Wetlands:</b> Under all alternatives, there would be short term, negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas					
	<p><b>Impacts of the Alternative:</b> Under alternative A, there would be long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes.</p> <p>There would be no construction (or related impacts) under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative B, there would be long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes.</p> <p>There would be no construction (or related impacts) under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative C, there would be long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by the installation of signage.</p> <p>Construction activities would avoid wetland areas, resulting in indirect, long-term negligible adverse impacts to wetlands.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative D, there would be long-term negligible to minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side, which would not be protected with signage. Impacts to vegetated wetlands along interior ORV routes would continue.</p> <p>Construction activities would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative E, there would be long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by signage and closures of soundside access points.</p> <p>Construction activities would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative F, there would be long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by the installation of signage.</p> <p>Construction activities would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>
<b>Floodplains</b>	<p><b>Impacts of the Alternative:</b> There would be no construction under alternative A. As a result, there would be no impacts to the functions or values of floodplains.</p> <p><b>Cumulative Impacts:</b> No cumulative impacts would occur.</p>	<p><b>Impacts of the Alternative:</b> There would be no construction under alternative B. As a result, there would be no impacts to the functions or values of floodplains.</p> <p><b>Cumulative Impacts:</b> No cumulative impacts would occur.</p>	<p><b>Impacts of the Alternative:</b> Under alternative C, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of seven parking areas in the floodplain.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to floodplains would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative D there would be long-term negligible adverse impacts to floodplains due to the location of four ORV access ramps in the 100-year floodplain.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to floodplains would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative E, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of 14 parking areas in the floodplain.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to floodplains would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative F, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of 12 surfaced and 2 unsurfaced parking areas in the floodplain.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to floodplains would be long-term minor to moderate adverse.</p>

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<b>Federally Listed Threatened or Endangered Species</b>						
<p><b>Piping Plover</b></p>	<p><b>Impacts of the Alternative:</b> Overall, impacts to piping plover from resource management activities (primarily as a result of surveys and field activities) would be long-term minor to moderate adverse. Although the management of the species would provide a certain level of benefit, the manner in which buffers would be established, along with the need to adjust buffers frequently would have an adverse impact on the species.</p> <p>Overall, impacts to piping plover from ORV and other recreational use would be long-term moderate to major adverse as much of the Seashore would be open to recreational use, with an increased potential that piping plover could be impacted due to disturbance from ORV use and other recreational activities. Lack of a permit system for education and law enforcement, no night-driving restrictions, and lack of compliance with pet leash requirements would contribute substantially to these adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term moderate to major adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, impacts under alternative B from resource management activities (primarily resulting from the effects of surveying and field activities) would be long-term minor to moderate beneficial. Buffers for piping plover would be larger and provide more protection compared to buffers under alternative A. Minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures early in the breeding season, monitoring activities, education and outreach efforts, and establishment of prescribed buffers would provide long-term minor to moderate beneficial impacts to the species.</p> <p>Overall, impacts to piping plover from ORV and other recreational use would be long-term moderate adverse. While some buffers would be increased in an attempt to separate recreational uses from piping plover, access to these buffers would be provided at all Seashore beaches and could result in intentional or un-intentional non-compliance (i.e., when signs are washed out), which would impact the species. Adverse impacts would also occur due to limited prenesting protection outside of the points and spits, and the potential for protective buffers to be reduced during critical life stages of plover chicks.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall impacts under alternative C from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate beneficial. As with alternative B, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species.</p> <p>Overall, impacts to piping plover from ORV and other recreational use would be long-term minor adverse. The establishment of the SMAs which proactively reduce or preclude recreational use early in the breeding season, ORV permit requirements, seasonal night-driving restrictions, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact piping plovers, and the fact that alternative C would still include some level of pedestrian access to three SMAs during a portion of the breeding season, impacts to piping plover would be long-term minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall impacts to piping plover from resources management activities (primarily resulting from the effects of surveying and field activities) under alternative D would be long-term moderate to major beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring, but on the whole the implementation of SMAs that prohibit ORV use year-round and only allow pedestrian access outside of the breeding season, establishment of prenesting closures early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate to major beneficial impacts to the species.</p> <p>Overall impacts from ORV and other recreational use would be long-term minor adverse. The establishment of SMAs that are closed to ORVs year-round and managed under ML1 procedures during the breeding season would proactively preclude recreational use early in the breeding season from large areas of the Seashore, which would reduce the potential for disturbance to plovers during critical life stages. This protection, combined with ORV permit requirements, seasonal night-driving restriction, and pet and other recreational activities restrictions would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall impacts under alternative E from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species.</p> <p>Overall impacts from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of the SMAs which proactively reduce or preclude recreational use early in the breeding season, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. Although there would be benefits from seasonal night-driving restrictions, they would not be as great as other action alternatives because driving after dark (until 10:00 p.m.) would still be occurring, even during seasonal restrictions. The potential for adverse impacts would exist from the park-and-stay option under this alternative. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor to moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall impacts under alternative F from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate and beneficial for piping plovers. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species. Long-term moderate benefits to nonbreeding populations would be greater under alternative F than under alternatives C or E because of the addition of the year-round VFAs.</p> <p>Overall impacts under alternative F from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of prenesting closures, year-round and seasonal VFAs, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. As alternative F would provide for more flexible access to various areas of the Seashore, the potential for disturbance to piping plover is increased over alternatives C and D, resulting in long-term minor to moderate adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term minor to moderate adverse.</p>



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<p><b>Sea Turtles</b></p>	<p><b>Impacts of the Alternative:</b> Overall, resources management activities under alternative A would have long-term moderate benefits due to the protection provided to sea turtles.  Overall, ORV and other recreational use under alternative A would result in long-term major adverse impacts to sea turtles due to the amount of Seashore available for ORV use and the lack of night-driving restrictions.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term moderate to major adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, resource management activities under alternative B would have long-term moderate benefits due to the protection provided to sea turtles.  Although additional restrictions and regulations would help lessen some of the impacts from ORV use and other recreational activities, overall, the impacts would be long-term moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, resource management activities under alternative C would have long-term moderate to major beneficial impacts due to the added protection provided to sea turtles.  Restrictions placed on nonessential, recreational ORV use under alternative C would provide substantial long-term benefits to sea turtles, including seasonal night-driving restrictions that close the beach before dark (7:00 p.m.), some adverse impacts would still occur in areas where their use is allowed. Therefore, overall, ORV and other recreational use would have long-term minor adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, similar to alternative C, management activities under alternative D would result in long-term moderate to major beneficial impacts.  While restrictions placed on ORV use under alternative D would provide long-term moderate to major beneficial impacts, similar to alternative C, there would still be some level of adverse impact to sea turtles in areas where ORV use and beach fires are allowed; therefore, overall impacts from ORV and other recreational use would be long-term minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Management activities would provide long-term moderate to major beneficial impacts to sea turtles.  While additional restrictions and regulations would help lessen some of the impacts from ORVs and other recreational activities, overall, the impacts would be long-term moderate adverse from allowing night driving until 10:00 p.m., and due to increased recreational access throughout the Seashore during the turtle nesting season, including a park-and-stay option for ORVs at selected points and spits.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, resource management activities would provide long-term moderate to major beneficial impacts to sea turtles.  While additional restrictions, such as prohibiting night driving from 9:00 p.m. to 7:00 a.m and regulations would help lessen some of the impacts from ORV and other recreational use, overall, the impacts would be long-term minor to moderate adverse, due to not prohibiting night driving prior to 9:00 p.m. and the earlier re-opening of prenesting areas (after shorebird breeding activity has concluded), resulting in increased recreational access throughout the Seashore during the sea turtle nesting season.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term minor to moderate adverse.</p>
<p><b>Seabeach Amaranth</b></p>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative A, resources management actions would have long-term minor to moderate beneficial impacts, if plants are detected.  Overall, ORV and other recreational use under alternative A would have long-term moderate adverse impacts as plants may go undetected and therefore unprotected from this use.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative B, resources management actions would have long-term minor to moderate beneficial impacts, if plants are detected.  Overall, ORV and other recreational use would result in long-term moderate adverse impacts. Slightly more protection would be provided for the species when compared to alternative A, due to shorebird breeding closures being larger and lasting longer.</p> <p><b>Cumulative Impacts:</b> Cumulative to seabeach amaranth would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative C, resources management actions would have long-term moderate beneficial impacts to seabeach amaranth as the establishment of SMAs and increased protection for the species would occur compared to alternatives A and B.  Overall, ORV and other recreational use would result in long-term minor to moderate adverse impacts. Because of the establishment of SMAs and protection of approximately 40 miles of beach, the adverse impacts under alternative C would likely be long-term minor to moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the increased level of protection of seabeach amaranth habitat and plants under alternative D, when compared to other alternatives, resources management actions would have long-term moderate to major beneficial impacts.  Overall ORV and other recreational use would result in long-term minor adverse impacts. Because the establishment of SMAs closed to ORVs year-round would protect approximately 40 miles of beach, the adverse impacts under alternative D would be greatly reduced compared to the other alternatives and result in long-term minor adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative E, resources management actions would have long-term minor to moderate beneficial impacts as ORV access to more areas would be allowed during the germination period, than under action alternatives C and D.  Overall, ORV and other recreational use would have long-term minor to moderate adverse impacts to seabeach amaranth due to the increased level of recreational access allowed when compared to the other action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative F, resources management actions would have long-term minor to moderate beneficial impacts as ORV access to more areas would be allowed during the germination period, than under action alternatives C and D.  Overall, ORV and other recreational use would be similar to those under alternative E and result in long-term minor to moderate adverse impacts to seabeach amaranth.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term minor to moderate adverse.</p>

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<b>State-Listed and Special Status Species</b>						
<b>American Oystercatcher</b>	<b>Impacts of the Alternative:</b> Impacts would be long-term minor to moderate adverse as surveying and lack of specific prenesting closures for this species may miss early nesters. Piping plover prenesting closures, which could be utilized by this species as well, would not protect a number of American oystercatcher nest sites used in recent years. Also, buffer distances based on bird behavior may not provide adequate protection for the species.	<b>Impacts of the Alternative:</b> Establishment of piping plover prenesting closures earlier in the season that could be used by oystercatchers and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information and result in actions that would be beneficial to the species.	<b>Impacts of the Alternative:</b> Implementation of 10 SMAs that are closed to ORVs during the breeding season would provide a proactive resource closure early in the breeding season. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, on the whole, resources management activities would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to the American oystercatcher, greater than those provided under alternative B.	<b>Impacts of the Alternative:</b> Establishment of 10 SMAs that are closed to ORVs year-round and all managed under ML1 procedures during the breeding season would provide long-term benefits to breeding and wintering American oystercatchers, greater than those under alternative C. Additional benefits would be provided from surveying and closures outside of these established SMAs, as well as from the education and outreach provided. These surveying and field activities would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to this species, greater than those provided under alternative B.	<b>Impacts of the Alternative:</b> Implementation of 10 SMAs, 7 of which are closed to ORVs during the breeding season, would provide a proactive resource closure early in the breeding season. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts from human disturbance during field activities, resources management activities on the whole would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to this species, greater than those provided under alternative B.	<b>Impacts of the Alternative:</b> Implementation of prenesting closures would provide a proactive resource closure early in the breeding season. Seasonal and year-round VFAs that total 39 miles of Seashore would provide additional areas with less disturbance for shorebirds. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to the species, greater than those provided under alternative B.

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<p><b>American Oystercatcher (continued)</b></p>	<p>Impacts would be long-term moderate to major adverse as buffers that adjust frequently based on bird behavior are more subject to non-compliance. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets at the Seashore during breeding season would contribute to these adverse impacts.</p>	<p>Establishment of prenesting closures for piping plover earlier in the season, implementation of larger, more immediate buffers, longer lasting closures for American oystercatchers once breeding behavior occurs, and night-driving restrictions would benefit the American oystercatcher. However, recreational use, with no carrying capacity, would still occur in the vicinity of this species and the established buffers may not be large enough to afford adequate protection. Because the birds would not be under constant observation, disturbance may go undetected and implementation of adequate buffers may be delayed in some nesting locations. Compliance with closures may not be absolute, resulting in minor to moderate adverse impacts if non-compliance occurs. Further adverse impacts would result from allowing pets in the Seashore during breeding season, resulting in the possibility of non-compliance with these regulations. Because of these factors, impacts to American oystercatchers from ORV use and other recreational activities would be long term moderate adverse.</p>	<p>Implementation of a permit system with an educational component, larger buffer sizes, seasonal night-driving restrictions, establishment of breeding and nonbreeding SMAs, and not allowing pets in SMAs would benefit the American oystercatcher. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative C does manage three SMAs under ML2 procedures, which provide for some level of pedestrian access into these areas, and introduces the potential for impacts to the species. Although there would be some protection measures in place, ORV and other recreational use could still have impacts to the species, resulting in long-term minor to moderate adverse impacts to American oystercatchers.</p>	<p>Providing large SMAs that are closed year-round to ORVs and closed to pedestrians during the breeding season would provide large undisturbed areas for both breeding and nonbreeding oystercatchers. Further benefits would be provided by seasonal night-driving restrictions, the establishment of a permit system with an educational component, and prohibition of pets in SMAs year-round. With these measures in place, impacts to American oystercatchers from ORV and other recreational use would be long-term minor adverse, as the chance of disturbance still exists, but would be lower than that under the other alternatives evaluated.</p>	<p>Implementation of a permit system with an educational component, larger buffer sizes, seasonal night-driving restrictions, restrictions on pets in SMAs, and establishment of breeding and nonbreeding SMAs would benefit the American oystercatcher. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative E does allow an ORV access corridor at three SMAs managed under ML2 procedures during the breeding season (more than the other action alternatives), which provide for some level of pedestrian or ORV access into these areas, which introduces the potential for impacts to the species. Although there would be some protection measures in place, recreational use could still result in long-term minor to moderate adverse impacts to American oystercatchers.</p>	<p>Implementation of a permit system with an educational component, prenesting closures, seasonal night-driving restrictions, allowing pets under the regulations of 36 CFR 2.15 with the additional prohibition of pets in resource closures and in pedestrian shoreline access areas in front of (i.e., seaward of) bird prenesting areas and establishment of seasonal and year-round VFAs that total 39 miles of Seashore would benefit the American oystercatcher. Prenesting closures would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species, with additional areas that are relatively less disturbed provided by prenesting closures. However, alternative F does manage all areas of the Seashore to allow for ORV and/or pedestrian access, which introduces the potential for impacts to the species. As there would be some protection measures in place, but recreational use could still have impacts to the species, impacts to American oystercatchers would be long-term minor to moderate adverse.</p>

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Colonial Waterbirds	<p><b>Impacts of the Alternative:</b></p> <p>Impacts would be long-term minor to moderate adverse as no prenesting closures would be established for colonial waterbirds. Some species, such as terns and black skimmers, may be able to utilize the prenesting closures established for piping plovers; however, those prenesting areas would not protect a number of colonial waterbird nest sites used in recent years. Also, buffer distances based on bird behavior may not provide adequate protection for the species.</p> <p>Impacts would be long-term moderate to major adverse as buffers may not be adequate to protect the species, and disturbance from recreational uses is more likely. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets in the vicinity of breeding birds would also contribute to adverse impacts.</p>	<p><b>Impacts of the Alternative:</b></p> <p>Establishment of piping plover prenesting closures earlier in the season that would be used by some colonial waterbird species and establishment of larger, pre-set buffers would result in long-term beneficial impacts to colonial waterbirds. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information and result in actions that would be beneficial to the species.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term moderate adverse, for the same reasons as American oystercatchers under this alternative.</p>	<p><b>Impacts of the Alternative:</b></p> <p>Impacts to colonial waterbirds from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as American oystercatchers under this alternative.</p>	<p><b>Impacts of the Alternative:</b></p> <p>Impacts to colonial waterbirds from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor adverse, for the same reasons as American oystercatchers under this alternative.</p>	<p><b>Impacts of the Alternative:</b></p> <p>Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as those discussed above for American oystercatchers under this alternative.</p>	<p><b>Impacts of the Alternative:</b></p> <p>Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as American oystercatchers under this alternative.</p>

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<p><b>Wilson’s Plover</b></p>	<p><b>Impacts of the Alternative:</b>                      Impacts would be long-term minor adverse as the habitat for this species would be well surveyed during piping plover surveys and this species would be able to take advantage of management measures for piping plover as their breeding seasons and habitat requirements are similar. Also, buffer distances based on bird behavior may not provide adequate protection for the species. Some benefits may occur from incidental management of Wilson’s plover during piping plover management activities, both during breeding and nonbreeding seasons.</p> <p>Impacts would be long-term moderate to major adverse as no specific management would be provided for this species, although they could utilize buffers and closures established for piping plover. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets at the Seashore during breeding season would contribute to these adverse impacts.</p>	<p><b>Impacts of the Alternative:</b>                      Establishment of piping plover prenesting closures earlier in the season that could be used by other species and establishment of larger, pre-set buffers for piping plover, used by Wilson’s plover, would result in long-term beneficial impacts to Wilson’s plover. While there would still be minor adverse impacts related to human disturbance during field activities, species surveying and field activities on the whole would provide information and result in actions that would be beneficial to the species.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term minor to moderate adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover and would therefore be provided slightly more protection than other state-listed/special status species.</p>	<p><b>Impacts of the Alternative:</b>                      Impacts to Wilson’s plover from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term minor adverse, less than those under alternative A and B. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize the closures for piping plover, in addition to the specific buffers/closures provided for the species, and would therefore be provided slightly more protection than other state-listed/special status species.</p>	<p><b>Impacts of the Alternative:</b>                      Impacts to Wilson’s plover from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term negligible to minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.</p>	<p><b>Impacts of the Alternative:</b>                      Impacts to Wilson’s plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.</p>	<p><b>Impacts of the Alternative:</b>                      Impacts to Wilson’s plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.</p>

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<b>Red Knot</b>	<b>Impacts of the Alternative Common to All:</b> Many of the surveying and field activities for other species would occur outside of the primary time when the red knot is a resident at the Seashore. Therefore, any impacts to this species from surveying and field activities for other species would be long-term negligible adverse.					
	<p>Impacts to nonbreeding red knot would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures, although the ability of this species to use wintering closures for piping plover at inlets and Cape Point would result in some benefit.</p> <p>Impacts would be long-term moderate adverse as no specific management would be provided for this species especially during a key life stage of wintering. The lack of designated VFAs, a permitting system, or night-driving restrictions when red knots are at the Seashore, and allowing pets at the Seashore during the migrating/nonbreeding season would contribute to these adverse impacts. Impacts to red knots would be lower than other species as they would not be subject to impacts during their breeding cycle and their use of the Seashore corresponds to times of lower visitation.</p>	<p>The red knot would benefit from extended breeding season closures for other species and from wintering closures for piping plover at the inlets and Cape Point. Impacts to nonbreeding red knot would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures.</p> <p>Impacts to red knots from ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species especially during a key life stage of wintering. Although this species may benefit from longer lasting breeding season closures for other species and from winter closures established for piping plovers, the lack of designated VFAs, a year-round permitting system, no night-driving restrictions when red knots are at the Seashore, and allowing pets at the Seashore during the migrating / nonbreeding season would contribute to these adverse impacts.</p>	<p>Nonbreeding Shorebird SMAs and the establishment of VFAs along the ocean shoreline would result in beneficial impacts to nonbreeding red knots. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, some of which are closed to ORVs year-round, would be beneficial to those red knot that happen to use those areas, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.</p> <p>Impacts to red knot from recreation and other activities would be long-term minor adverse due to the additional nonbreeding closures provided under alternative C that offer this wintering species further protection.</p>	<p>Nonbreeding Shorebird SMAs and the establishment of VFAs along the ocean shoreline would result in beneficial impacts to nonbreeding red knots. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, all of which are closed to ORVs year-round would result in long-term beneficial impacts to red knot when compared to all other alternatives.</p> <p>Impacts to red knot from recreation and other activities would be long-term negligible to minor adverse due to the additional nonbreeding closures provided under alternative D that offer this wintering species further protection, as well as the large year-round SMAs that would offer further protection during red knot wintering.</p>	<p>The ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, some of which are closed year-round, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.</p> <p>Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative E that offer this wintering species further protection; however, there would be greater adverse impacts than under alternatives D or F due to fewer miles of shoreline being closed to ORVs under alternative E during the nonbreeding season.</p>	<p>The ability of this species to use wintering closures that have been established for piping plover as well as the establishment of year-round and seasonal VFAs over 39 miles of the Seashore (of which 26 miles would be year-round and provide protection of nonbreeding habitat) would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.</p> <p>Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the wintering closures established for piping plover, as well as the 26 miles of year-round VFAs that provide less disturbed nonbreeding habitat.</p>
<b>All State-Listed and Special Status Species</b>	<b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term moderate to major adverse.	<b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term moderate adverse.	<b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term minor to moderate adverse.	<b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term minor adverse.	<b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term minor to moderate adverse.	<b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term minor to moderate adverse.

Impact Topic	Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Wildlife and Wildlife Habitat - Other Bird Species</b>	<b>Impacts of the Alternative Common to All:</b> Many of the surveying and field activities for protected species would occur outside of the primary time when other bird species are residents at the Seashore. Therefore, any impacts to other bird species from surveying and field activities for protected species would be long-term negligible adverse.					
	<p><b>Impacts of the Alternative:</b> Impacts to other bird species from resources management activities would be long-term minor adverse as nonbreeding closures would not be species-specific and therefore would not protect important habitat areas such as the ocean shoreline. Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species, increasing the possibility of disturbance to the species from recreational use. The lack of designated VFAs, a permitting system, or night-driving restrictions during the time period when these species are present at the Seashore, and allowing ORVs, people and pets at the Seashore during the nonbreeding season in the vicinity of these species would contribute to adverse impacts.  There would be no construction and therefore no construction-related to disturbance to other bird species under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Impacts to other bird species would be long-term minor adverse as nonbreeding closures would not be species-specific and therefore would not protect important habitat areas such as the ocean shoreline when many of these species are wintering or migrating. Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species, increasing the possibility of disturbance to the species from recreational use. The lack of designated VFAs, allowing night driving during the time period when other bird species are present at the Seashore, and allowing ORVs, people and pets at the Seashore during the nonbreeding season in the vicinity of these species would contribute to adverse impacts.  There would be no construction and therefore no construction-related to disturbance to other bird species under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> The establishment of both breeding and nonbreeding SMAs, some of which are closed to ORVs year-round, would result in long-term beneficial impacts to other bird species when compared to alternatives A and B. Impacts from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative C that offer wintering species further protection.  Impacts to other bird species from construction activities would be short-term negligible to minor and adverse due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> The establishment of SMAs, which would be closed to ORVs year-round, would result in long-term beneficial impacts to other bird species. Beneficial impacts would be greater than those under alternative C due to the amount of mileage closed to ORV use year-round. ORV and other recreational use would result in long term negligible to minor adverse impacts to other bird species due to the amount of beach closed to ORV use and the additional nonbreeding closures that offer wintering species further protection.  Impacts to other bird species from construction activities would be short-term negligible to minor and adverse due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term negligible to minor adverse.</p>	<p><b>Impacts of the Alternative:</b> The establishment of both breeding and nonbreeding SMAs, some of which are closed to ORVs year-round, would result in long-term beneficial impacts to other bird species. ORV and other recreational use would result in long term minor adverse impacts to other bird species due to additional nonbreeding closures provided under alternative E that offer species further protection, with greater adverse impacts than under alternatives D or F from fewer miles of shoreline being closed to ORVs under alternative E during the nonbreeding season. Adverse impacts would be greater than those under alternatives C or D due to the increased level of recreational access provided under alternative E.  Impacts to other bird species from construction activities would be short-term negligible to minor and adverse due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> The establishment of prenesting areas, seasonal and year-round VFAs, and wintering habitat closures would result in long-term beneficial impacts to other bird species. Additional benefits, when compared to the other alternatives, would be realized under alternative F from nonbreeding closures as well as the 26 miles of year-round VFAs that would provide protection during this time. Impacts to other bird species from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative F that offer wintering species further protection.  Impacts to other bird species from construction activities would be short-term negligible to minor and adverse due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor adverse.</p>

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Wildlife and Wildlife Habitat - Invertebrates	<b>Impacts of the Alternative Common to All:</b> The use of vehicles to conduct resources management activities would result in long-term negligible adverse impacts to invertebrates due to the potential for mortality of individual invertebrate species.					
	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term minor to moderate adverse impacts to invertebrate species primarily due to mortality arising from unlimited night driving in the intertidal and wrack areas.</p> <p>There would be no construction and therefore no construction-related to disturbance to invertebrates under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts would be reduced when compared to alternative A due to limitations on ORV use at night and within the larger resources management closures under alternative B.</p> <p>There would be no construction and therefore no construction-related to disturbance to invertebrates under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term negligible to minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts would be reduced due to longer seasonal restrictions on vehicle use under alternative C.</p> <p>Short term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term negligible adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts to invertebrates would be reduced under this alternative due to the amount of beach closed to recreational use.</p> <p>Short term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term negligible to minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Adverse impacts would be greater than those under alternatives C or D due to the increased level of recreational access provided under alternative E.</p> <p>Short term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat.</p> <p>Short term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor adverse.</p>



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<b>Soundscapes</b>	<p><b>Impacts of the Alternative:</b> Overall, minor to moderate impacts, depending upon vehicle speed, would occur along the beaches where most routes are established for ORV driving. While impacts over the majority of the Seashore beaches would be long-term adverse due to greater numbers of designated year-round ORV routes, impacts would be short-term adverse in the areas in front of village beaches, which are only opened seasonally to ORV use. Short-term adverse impacts would also result during other closure periods along any ORV route for resource protection, safety or administrative purposes. During closures, the potential for increased vehicle concentrations along remaining open ORV routes would increase the frequency of occurrence of single ORV pass-by events. Impacts would remain minor to moderate adverse, depending on vehicle speed, but vehicle noise may dominate the natural soundscape more frequently. In general, as ORV use would continue intermittently over the life of the management plan, vehicle noise would be a recurring, long-term minor to moderate adverse impact in all areas of the Seashore beaches open to ORV driving. Additionally, as closure periods, which have the potential to provide short-term benefits, would be implemented throughout the life of the management plan, long-term benefits would arise. As noise from ORV use would add at least 3 decibels (A-weighted scale) (dBA) to the natural ambient sound levels within the Seashore, wildlife would also experience adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to soundscapes would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative A, impacts to the natural soundscape within the Seashore would be minor to moderate, depending upon vehicle speed. Due to the slower speed limits proposed during the peak season when more visitors would be using beach areas, the potential for a greater reduction in visitor awareness would occur under this alternative as compared to alternative A. On beaches where ORV routes are open year-round, including the additional year-round route established under alternative B, impacts would be long-term and adverse, but would potentially become short-term adverse during closure periods. In locations where ORV routes are specifically designated as “seasonal,” impacts would be short-term adverse. As with alternative A, closures of any kind present the potential for increased concentrations of vehicles in areas where ORV routes remain open. In such areas, the potential for vehicle noise to more frequently dominate the sound energy would arise. Aside from the short-term benefits that would occur in areas undergoing closure periods of any kind, additional short-term benefits may occur under alternative B as a result of regulations imposed to seasonally eliminate night driving. Impacts to wildlife would be similar to those under alternative A.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to soundscapes would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative B, impacts to the natural soundscape resulting from a 15 mph speed limit would be minor adverse. However, the potential for wildlife and visitor use impacts, as well as the extent of such impacts, may be reduced due to seasonal restrictions and designated VFAs. Like under alternatives A and B, impacts would be long-term adverse for year-round ORV areas, potentially becoming short-term subject to temporary resource closures. As seasonal closures would limit ORV activity to less than a year, short-term adverse impacts would result. Closures of any kind, depending on the closure length, would also provide short-term benefits by providing noise-free periods. Under alternative C there would be areas of negligible impacts due to designated VFAs and greater opportunities for natural sounds to prevail due to longer seasonal closure periods as compared to alternatives A and B. Conversely, fewer open ORV areas and longer seasonal closure periods also present the potential for greater concentrations of ORVs in areas with open ORV routes, thereby increasing the frequency of vehicle noise in such areas. Construction activities would be localized and of short duration and would be minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to soundscapes would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative A, impacts to the natural soundscape resulting from a 15 mph speed limit would be minor adverse. However, the potential for impacts to wildlife and visitor use from ORV noise would be the least under this alternative, as compared to the no-action and all action alternatives due to larger areas of designated vehicle-free use. During resource closures, short-term benefits would occur due to the lack of ORV noise and would also be long-term benefits since closures would recur throughout the life of the management plan. The key difference between this alternative and all other alternatives is that alternative D has the greatest extent of long-term negligible adverse impacts resulting from the number of year-round vehicle-free designations. Alternative D also has the greatest extent of long-term benefits to the natural soundscape, visitors and wildlife due to these VFAs. However, this alternative would also present the greatest potential for increased ORV pass-by events that dominate the sound energy in designated ORV areas due to the fewer number of open ORV areas in which vehicles may drive. Like under alternative C, construction related noise impacts from ramp improvements and the construction of a new ramp would be minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to soundscapes would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative A, impacts to the natural soundscape on the beaches resulting from a 15 mph speed limit would be minor adverse. However, like under alternative C, the potential for wildlife and visitor use impacts, as well as the extent of such impacts, may be reduced due to seasonal restrictions and designated VFAs. On the other hand, pass-through zones and earlier openings along seasonal routes under this alternative would potentially provide fewer “noise-free” periods for visitors and wildlife. Vehicle diversions to other open routes may not be as frequent under this alternative as under alternative C or D given that some seasonal routes are open longer than others, ORV pass-through zones would be established in certain areas, and water taxi service would be available as an alternative option to driving. Although under this alternative, more ramps would be constructed, as compared to alternatives C and D, construction-related impacts would remain minor adverse due to the localized nature and short duration of the activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts under alternative E would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative A, impacts to the natural soundscape on the beaches resulting from a 15 mph speed limit would be minor adverse. Like under alternatives C and E, the potential for wildlife and visitor use impacts from ORV noise may be reduced due to seasonal closures and designated VFAs. “Noise-free” periods would be greater than alternatives C and E. Vehicle diversions to other open routes may not be as frequent under this alternative as under the other action alternatives given that some seasonal routes are open longer than others. Although under this alternative, more ramps would be constructed, as compared to alternatives C and D, construction-related impacts would remain minor adverse due to the localized nature and short duration of the activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts under alternative F would be long-term minor adverse.</p>

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<p><b>Visitor Use and Experience</b></p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term negligible to minor adverse impacts as some areas would be closed for resource protection, but alternative A would provide the most ORV access of any alternative. Should there be extensive resource closures in a given year, the potential for long-term moderate impacts exists. Those looking for a vehicle-free experience at the Seashore would experience long-term moderate adverse impacts as alternative A does not provide for a specific separation of uses or designation of VFAs. Since night driving would be permitted under alternative A, there would be short-term minor adverse impacts to night skies.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term negligible to minor adverse for ORV users and long-term, moderate, and adverse for visitors who desire a vehicle-free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term moderate to major adverse impacts as one or more spit or point would be closed for an extended period of time during the breeding season. During the remainder of the year, there would be negligible to minor adverse impacts to ORV users as limited areas would be closed for resource protection. Those looking for a vehicle-free experience at the Seashore would experience long-term moderate adverse impacts as alternative B does not provide for a specific separation of uses outside of seasonal ORV closures of village beaches and no VFAs would be designated. Since night driving would be seasonally restricted under alternative B, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term moderate to major adverse for ORV users, and long-term moderate adverse for visitors who desire a vehicle-free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term moderate to major adverse impacts as the designation of VFAs and the establishment of the SMAs would seasonally preclude ORV use from some areas of the Seashore that are popular ORV use areas. While three areas managed under ML2 procedures would have pedestrian access corridors, no ORV corridors would be provided in the SMAs, resulting in greater impacts to ORV users. Those looking for a vehicle-free experience at the Seashore would experience long-term benefits as alternative C provides for pedestrian corridors in three SMAs under ML2 procedures, as well as providing additional VFAs. Since night driving would be seasonally restricted under alternative C, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term moderate to major adverse to ORV users, and long-term beneficial for visitors who desire a vehicle-free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term major adverse impacts as all SMAs and village beaches would be designated as VFAs year-round, which would prohibit the use of ORV in many popular visitor use areas. Those looking for a vehicle-free experience at the Seashore would experience long-term benefits as alternative D provides for many designated VFAs throughout the Seashore, although pedestrian access would be prohibited in the SMAs during the breeding season. Since night driving would be seasonally restricted under alternative D, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term major and adverse to ORV users, and long-term beneficial for visitors who desire a vehicle-free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term moderate adverse impacts as the designation of VFAs and the establishment of the SMAs would preclude ORV use, either seasonally or year-round, from some areas of the Seashore that are popular visitor use areas. Three SMAs under ML2 management procedures would provide an ORV pass-through corridor at the start of the breeding season, subject to resource closures, lessening the impacts to this user group. Additional recreational opportunities such as park-and-stay and SCV camping would provide long-term benefits. Those looking for a vehicle-free experience at the Seashore would experience long-term benefits as alternative E provides for designated year-round VFAs, as well as seasonal ORV closures in areas such as village beaches and some of the SMAs. Since night driving would be seasonally restricted, but allowed until 10:00 p.m., under alternative E, there would be long-term moderate adverse impacts to night skies due to the hours of night driving allowed, implementation of park-and-stay opportunities, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term moderate to major adverse to ORV users, and long-term beneficial for visitors who desire a vehicle-free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term moderate adverse impacts as the designation of VFAs and carrying capacity limits could or would preclude ORV use, either seasonally or year-round, from some areas of the Seashore that are popular visitor use areas. Improved access would be provided to the soundside under this alternative as well. Those looking for a vehicle-free beach experience at the Seashore would experience long-term benefits as alternative F provides for year-round VFAs, as well as seasonal ORV closures in areas such as village beaches, two new pedestrian trails, 14 new or improved parking areas with pedestrian access, and pedestrian access seaward of prenesting closures (prior to observed breeding activity). Since night driving would be seasonally restricted under alternative F, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts year-round in VFAs and seasonally on ORV routes during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term moderate to major and adverse to ORV users, and long-term beneficial for visitors who desire a vehicle-free beach experience.</p>

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<p><b>Socioeconomic Impacts</b></p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The region of influence (ROI) is expected to experience long-term negligible adverse impacts or long-term beneficial impacts depending on the extent of beach closures. The Seashore villages (the villages bordering the Seashore) would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term negligible to minor adverse impacts or long-term beneficial impacts depending on the extent of beach closures. Based on visitation statistics in 2007, there is a greater likelihood of negligible impacts.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term negligible to minor adverse impacts depending on the extent of beach closures. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Based on the current visitation statistics, the probability of negligible impacts is greater than the probability of minor adverse impacts.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term negligible to moderate adverse impacts depending on the extent of beach closures. Based on current visitation statistics there is a greater likelihood of negligible or minor impacts.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term negligible to minor adverse impacts. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Efforts to improve access through pedestrian corridors, when compared to the no-action alternatives, and changes to access ramps would decrease the impacts on businesses that rely on visitors using the beaches affected by the new corridors and ramps relative to the no-action alternatives. However, the longer ORV closures in the fall months may reduce visitation under alternative C relative to the no-action alternatives and make the mid to high impact scenarios more likely.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term negligible to moderate adverse impacts, with a greater likelihood of adverse impacts relative to the no-action alternatives due to increased fall ORV closures.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term minor adverse impacts. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Compared to the other alternatives, alternative D provides the least access to the beach by ORVs resulting in larger projected adverse impacts.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term moderate to major adverse impacts. The adverse impacts are projected to be larger relative to the other alternatives because of the limits on beach access for ORVs.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term negligible to minor adverse impacts. Based on the visitation statistics for 2008, the probability of negligible impacts is greater than the probability of minor adverse impacts. The Seashore villages would experience the majority of the impacts. Like alternative B, alternative E provides for more ORV access and the impacts would likely be on the lower end of the range compared to alternatives C and D.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term negligible to moderate adverse impacts, with a likelihood of adverse impacts in the lower end of the range relative to alternatives C and D due to increased ORV access. closures.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term negligible to minor adverse impacts. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Alternative F provides less ORV access to the beach compared to the no-action alternatives, especially with 26 miles of the Seashore designated as year-round VFA. However, some popular areas, such as Cape Point, South Point and Bodie Island spit, would have designated year-round or seasonal ORV routes, subject to resource closures. There are more VFAs for pedestrians because of the ORV route designations, as well as increased parking for pedestrian access. Compared to the no-action alternatives, these measures could increase overall visitation and increase the probability that revenue impacts would be at the low end of the estimated range rather than the high end.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses would experience long-term negligible to moderate adverse impacts. The extra efforts to increase ORV access and pedestrian access should increase the probability that the impacts are on the low rather than high end of the range.</p>

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<b>Socioeconomic Impacts (continued)</b>	<p><b>Impacts of the Alternative to Preservation Values:</b> As a result of the long-term minor to major impacts to protected species, impacts to preservation values would be long-term moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Impacts of the Alternative to Preservation Values:</b> As a result of the long-term minor to moderate impacts to protected species, and addition of protection from seasonal night-driving restrictions, impacts to preservation values would be long-term minor to moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Impacts of the Alternative to Preservation Values:</b> Adverse impacts to preservation values would be less under alternative C, relative to alternatives A and B, and overall impacts to preservation values would be long-term minor adverse with long-term beneficial impacts from the measures taken to protect sensitive species at the Seashore.</p> <p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Impacts of the Alternative to Preservation Values:</b> Adverse impacts to preservation values would be less under alternative D, relative to alternatives A and B, and the overall impact to preservation values would be long-term minor adverse, with the closure of sensitive areas to ORVs under alternative D year-round substantially increasing the probability of long-term beneficial impacts relative to all other alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Impacts of the Alternative to Preservation Values:</b> Adverse impacts to preservation values would be less under alternative E, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status species.</p> <p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Impacts of the Alternative to Preservation Values:</b> Adverse impacts to preservation values would be less under alternative F, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse, with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status species.</p> <p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>

Impact Topic	Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Seashore Operations and Management</b>	<p><b>Impacts of the Alternative:</b> Overall, each division could accomplish within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts to all areas of Seashore operations.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term negligible adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would be an increase in duties related to ORV management for staff in the park management/administration, visitor protection, and resources management divisions. Although these staff could accomplish these duties within existing budgets, it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the park outside of ORV management, resulting in long-term moderate adverse impacts. Staff in facility management and Interpretation would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts to these two divisions. Overall, impacts to Seashore operations would be long-term moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term negligible to minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would be an increase in duties related to ORV management for staff in the park management/administration, resources management, facility management divisions that could result in some re-prioritization of work, but would not be expected to impact overall duties resulting in long-term minor adverse impacts. In the visitor protection division, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the park outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts Overall, impacts to Seashore operations would be long-term, minor to moderate (but mostly minor) adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term, minor to moderate, adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would long-term negligible adverse impacts to all divisions as each division would be expected to execute their duties from existing, or expected, funding sources, without having to re-prioritize staff. These impacts are due, in part, to the expected cost recovery under the proposed permit program. Overall impacts to Seashore operations would be long-term negligible adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term negligible adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would be an increase in duties related to ORV management for staff in the facility management division that could result in some re-prioritization of work, but would not be expected to impact overall duties resulting in long-term minor adverse impacts. In the park management/administration division, the increase in ORV related responsibilities would be similar, but slightly greater with long-term minor to moderate adverse impacts. In the visitor protection and resources management divisions, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the park outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the Interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts. Overall impacts to Seashore operations would be long-term moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would be an increase in duties related to ORV management for staff in the facility management and park management/administration divisions that could result in some re-prioritization of work, but would not be expected to impact overall duties resulting in long-term minor adverse impacts. In the visitor protection and resources management divisions, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the park outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts. Overall impacts to Seashore operations would be long-term minor to moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term minor to moderate adverse.</p>

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## ACRONYMS AND ABBREVIATIONS

AEC	area of environmental concern
ATV	all-terrain vehicle
AMOY	American oystercatcher
BEA	Bureau of Economic Analysis
CAMA	<i>Coastal Area Management Act</i>
CCC	Civilian Conservation Corps
CCD	charge-coupled device
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Committee	Negotiated Rulemaking Advisory Committee
Corps	U.S. Army Corps of Engineers
CWB	Colonial Waterbird
CZMA	<i>Coastal Zone Management Act</i>
CZMP	coastal zone management programs
dB	decibel
EPA	U.S. Environmental Protection Agency
ESA	<i>Endangered Species Act</i>
FACA	<i>Federal Advisory Committee Act</i>
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLREA	<i>Federal Lands Recreation Enhancement Act</i>
FONSI	Finding of No Significant Impact
FR	Federal Register
FTE	full-time equivalent
GIS	geographic information systems
GMP	general management plan
GPRA	<i>Government Performance Results Act</i>
I/O	input/output
Interim Strategy	<i>Cape Hatteras National Seashore Interim Protected Species Management Strategy/Environmental Assessment</i>
ISS	International Shorebird Survey
Lx	exceedance levels
MBTA	<i>Migratory Bird Treaty Act</i>
ML1	Management Level 1
ML2	Management Level 2
MLLW	mean lower low water
MMPA	<i>Marine Mammal Protection Act</i>
MOBILE6	Mobile Source Emissions Model

MOU	Memorandum of Understanding
mph	miles per hour
NAICS	North American Industry Classification System
NCDCR	North Carolina Department of Cultural Resources
NCDENR	North Carolina Department of Environment and Natural Resources
NCDOT	North Carolina Department of Transportation
NCNHP	North Carolina Natural Heritage Program
NCWRC	North Carolina Wildlife Resources Commission
NDZ	naturally dark zone
NEPA	<i>National Environmental Policy Act</i>
NIPA	National Income and Product Accounts
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOI	notice of intent
NO <sub>x</sub>	nitrogen oxides
NPOMA	<i>National Parks Omnibus Management Act of 1998</i>
NPS	National Park Service
NWR	National Wildlife Refuge
ORV	off-road vehicle
OSA	Office of State Archaeology
PCE	primary constituent element
PEPC	NPS Planning, Environment, and Public Comment website
PIPL	piping plover
plan/EIS	<i>Off-Road Vehicle Management Plan / Environmental Impact Statement</i>
PLZ1	park lighting zone 1
PM	particulate matter
psi	pounds per square inch
RBO	Regional Biological Opinion
ROI	region of influence
RTI	Research Triangle Institute, International
SCV	self-contained vehicle
SECN	Southeast Coast Network
SED	special environmental zoning district
SHPO	State Historic Preservation Officer
SNHA	significant natural heritage area
SMA	Species Management Area
SMC	species of management concern
TCP	Traditional Cultural Properties
TPY	tons per year
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTV	utility-terrain vehicle

VFA	Vehicle-free area
VOC	volatile organic compound
VUA	visitor use assistant

## CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

This “Purpose of and Need for Action” chapter explains what this *Off-Road Vehicle Management Plan / Environmental Impact Statement* (plan/EIS) intends to accomplish and why the National Park Service (NPS) is taking action at this time. This plan/EIS presents four action alternatives for managing off-road vehicle (ORV) use and assesses the impacts that could result from continuing current management (the two no-action alternatives) or implementation of any of the action alternatives. Upon conclusion of this plan/EIS and decision-making process, the alternative selected for implementation will become the ORV management plan, which will guide the management and control of ORVs at Cape Hatteras National Seashore (Seashore) for the next 10 to 15 years. It will also form the basis for a special regulation to manage ORV use at the Seashore. Brief summaries of both the purpose and need are presented here; more information is available in the “Administrative Background” section of this chapter.

### PURPOSE OF THE PLAN

The purpose of this plan is to develop regulations and procedures that carefully manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors.

### NEED FOR ACTION

Cape Hatteras National Seashore provides a variety of visitor experiences. It is a long, essentially linear park, visitation is high, and parking spaces near roads are limited. Some popular beach sites, particularly those near the inlets and Cape Point, are a distance from established or possible parking spaces. Visitors who come for some popular recreational activities such as surf fishing and picnicking are accustomed to using large amounts and types of recreational equipment that cannot practically be hauled over these distances by most visitors without some form of motorized access. For many visitors, the time needed and the physical challenge of hiking to the distant sites, or for some even to close sites, can discourage or preclude access by nonmotorized means. As a result, ORVs have long served as a primary form of access for many portions of the beach in the Seashore, and continue to be the most practical available means of access and parking for many visitors.

In addition to these recreation opportunities, the Seashore is home to important habitats created by the Seashore’s dynamic environmental processes, including habitats for several federally listed species including the piping plover and three species of sea turtles. These habitats are also home to numerous other protected species, as well as other wildlife. The NPS is required to conserve and protect all of these species, as well as the other resources and values of the Seashore. In addition, the Seashore was designated a Globally Important Bird Area by the American Bird Conservancy (American Bird Conservancy 2005). This designation recognizes those areas with populations and habitat important at the global level.

The use of ORVs must therefore be regulated in a manner that is consistent with applicable law, and appropriately addresses resource protection (including protected, threatened, or endangered species), potential conflicts among the various Seashore users, and visitor safety. Section 4.10(b) of the NPS regulations in Title 36 of the Code of Federal Regulations (CFR), which implements Executive Orders 11644 and 11989, prohibits off-road use of motor vehicles except on designated routes or areas. It

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*Off-road vehicle  
(ORV) — Any  
motorized vehicle  
designed for or  
capable of cross-  
country travel on or  
immediately over land,  
water, sand, snow, ice,  
marsh, swampland, or  
other natural terrain.*

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## Chapter 1: Purpose of and Need for Action

requires that “routes and areas designated for ORV use shall be promulgated as special regulations” in compliance with other applicable laws.

Therefore, in order to provide continued visitor access through the use of ORVs, the NPS must promulgate a special regulation authorizing ORV use at the Seashore. In order to ensure that ORV use is consistent with applicable laws and policies, the Seashore has determined that an ORV management plan is necessary as part of this process. Thus, the ORV plan and special regulation will:

- Bring the Seashore in compliance with Executive Orders 11644 and 11989 respecting ORV use, and with NPS laws, regulations (36 CFR 4.10), and policies to minimize impacts to Seashore resources and values.
- Address the lack of an approved plan, which has led over time to inconsistent management of ORV use, user conflicts, and safety concerns.
- Provide for protected species management in relation to ORV use by replacing the *Cape Hatteras National Seashore Interim Protected Species Management Strategy / Environmental Assessment* (Interim Strategy) (NPS 2006a), and associated Biological Opinion and amendments (USFWS 2006a, 2007a, 2008a) as modified by the consent decree.

## OBJECTIVES IN TAKING ACTION

Objectives are what must be achieved to a large degree for the action to be considered a success (NPS 2001a). All alternatives selected for detailed analysis must meet project objectives to a large degree and resolve the purpose of and need for action. Objectives must be grounded in the Seashore’s enabling legislation, purpose, significance, and mission goals, and must be compatible with direction and guidance provided by the Seashore’s general management plan, strategic plan, and/or other management guidance. The following are objectives identified by Seashore staff for developing this plan/EIS.

### MANAGEMENT METHODOLOGY

- Identify criteria to designate ORV use areas and routes.
- Establish ORV management practices and procedures that have the ability to adapt in response to changes in the Seashore’s dynamic physical and biological environment.
- Establish a civic engagement component for ORV management.
- Establish procedures for prompt and efficient public notification of beach access status including any temporary ORV use restrictions for such things as ramp maintenance, resource and public safety closures, storm events, etc.
- Build stewardship through public awareness and understanding of NPS resource management and visitor use policies and responsibilities as they pertain to the Seashore and ORV management.

### NATURAL PHYSICAL RESOURCES

- Minimize impacts from ORV use to soils and topographic features, for example, dunes, ocean beach, wetlands, tidal flats, and other features.

## **THREATENED, ENDANGERED, AND OTHER PROTECTED SPECIES**

- Provide protection for threatened, endangered, and other protected species (e.g., state-listed species) and their habitats, and minimize impacts related to ORV and other uses as required by laws and policies, such as the *Endangered Species Act* (ESA), the *Migratory Bird Treaty Act* (MBTA), and NPS laws and management policies.

## **VEGETATION**

- Minimize impacts to native plant species related to ORV use.

## **OTHER WILDLIFE AND WILDLIFE HABITAT**

- Minimize impacts to wildlife species and their habitats related to ORV use.

## **CULTURAL RESOURCES**

- Protect cultural resources, such as shipwrecks, archeological sites, and cultural landscapes, from impacts related to ORV use.

## **VISITOR USE AND EXPERIENCE**

- Ensure that ORV operators are informed about the rules and regulations regarding ORV use at the Seashore.
- Manage ORV use to allow for a variety of visitor use experiences.
- Minimize conflicts between ORV use and other uses.

## **VISITOR SAFETY**

- Ensure that ORV management promotes the safety of all visitors.

## **SEASHORE OPERATIONS**

- Identify operational needs and costs to fully implement an ORV management plan.
- Identify potential sources of funding necessary to implement an ORV management plan.
- Provide consistent guidelines, according to site conditions, for ORV routes, ramps, and signage.

## **PROJECT STUDY AREA**

The geographic study area for this plan/EIS is Cape Hatteras National Seashore in North Carolina (figure 1), unless otherwise noted under each resource topic.

## **PURPOSE AND SIGNIFICANCE OF CAPE HATTERAS NATIONAL SEASHORE**

All units of the national park system were formed for a specific purpose (the reason they are significant) and to conserve significant resources or values for the enjoyment of future generations. The purpose and

significance of the park provides the basis for identifying uses and values that individual NPS plans will support. The following provides background on the purpose and significance of the Seashore.

As stated in the Seashore's enabling legislation (the Act), Congress authorized the Seashore in 1937 as a national seashore for the enjoyment and benefit of the people, and to preserve the area. The Act states:

Except for certain portions of the area, deemed to be especially adaptable for recreational uses, particularly swimming, boating, sailing, fishing, and other recreational activities of similar nature, which shall be developed for such uses as needed, the said areas shall be permanently reserved as a primitive wilderness and no development of the project or plan for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing in this area.

The Act also states:

...when title to all the lands, except those within the limits of established villages, within boundaries to be designated by the Secretary of Interior within the area of approximately one hundred square miles on the islands of Chicamacomico [Hatteras], Ocracoke, Bodie, Roanoke, and Collington, and the waters and the lands beneath the waters adjacent there to shall have been vested in the United States, said areas shall be, and is hereby, established, dedicated, and set apart as a national seashore for the benefit and enjoyment of the people and shall be known as the Cape Hatteras National Seashore.

A 1940 amendment to the enabling legislation authorized hunting and re-designated the area as the Cape Hatteras National Seashore Recreational Area. (Note: The history of the Seashore's name is described in more detail in the next section of this chapter.)

Park significance statements capture the essence of the park's importance to the nation's natural and cultural heritage. Understanding park significance helps managers make decisions that preserve the resources and values necessary to the park's purpose. The following significance statements recognize the important features of the Seashore. As stated in the 2006–2011 Strategic Plan, the Seashore has the following significance (NPS 2007b):

This dynamic coastal barrier island system continually changes in response to natural forces of wind and wave. The flora and fauna that are found in a variety of habitats at the park include migratory birds and several threatened and endangered species. The islands are rich with maritime history of humankind's attempt to survive at the edge of the sea, and with accounts of dangerous storms, shipwrecks, and valiant rescue efforts. Today, the Seashore provides unparalleled opportunities for millions to enjoy recreational pursuits in a unique natural seashore setting and to learn of the nation's unique maritime heritage.



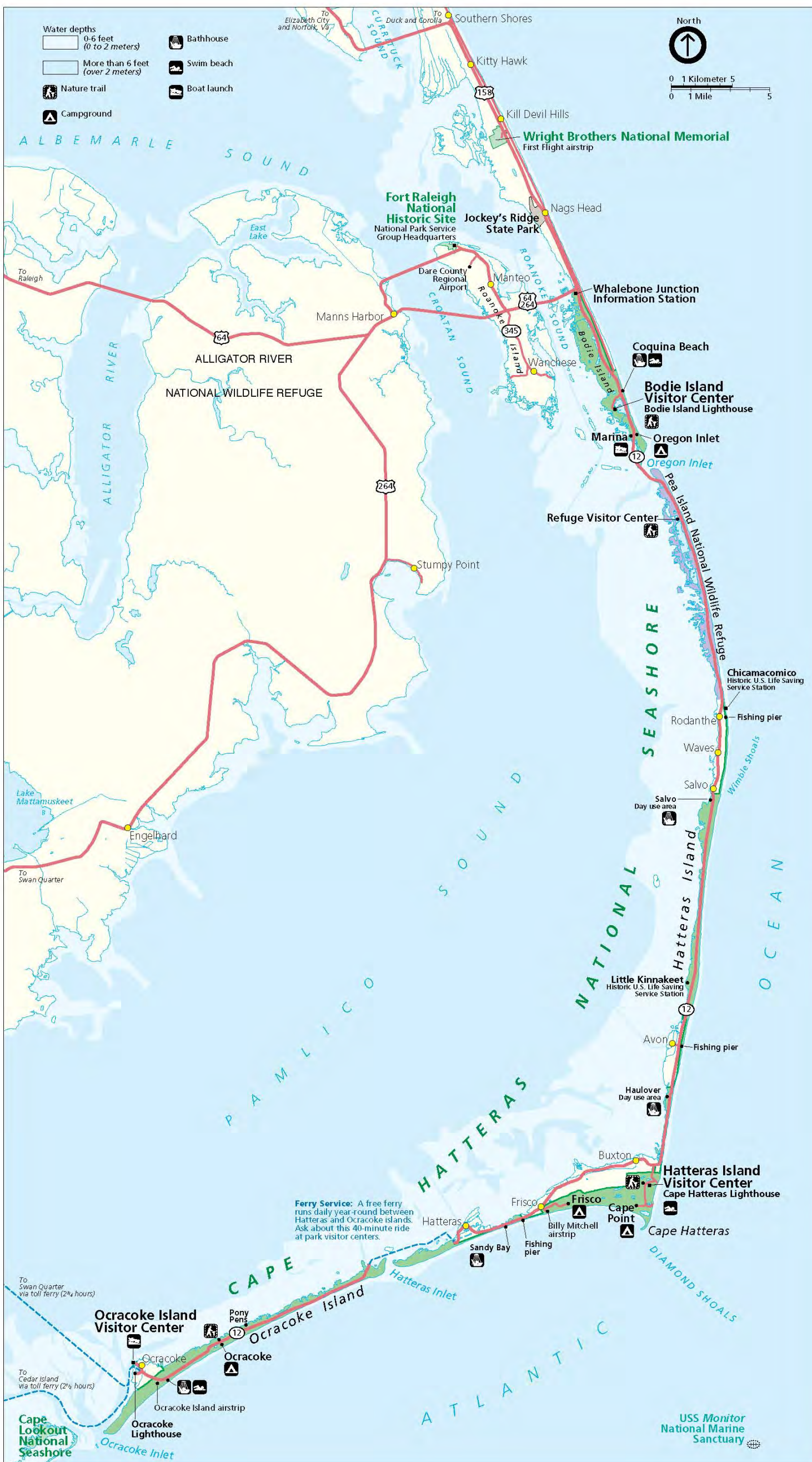


FIGURE 1. CAPE HATTERAS NATIONAL SEASHORE MAP

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## DESIRED FUTURE CONDITIONS FOR THREATENED, ENDANGERED, STATE-LISTED, AND SPECIAL STATUS SPECIES

Desired future conditions (also called management targets) describe what park resources will look like once management goals have been achieved. They derive first from the overarching requirement of the *Organic Act* to conserve wildlife without impairment for the enjoyment of present and future generations. To meet the *Organic Act* mandate, the NPS will manage the Seashore to provide habitat and other conditions necessary to support sustainable populations of these species at the Seashore. Second, desired future conditions derive from NPS responsibilities as a federal agency under the ESA and the NPS *Management Policies 2006* to conserve listed species and to contribute recovery goals for them. Finally, they originate from the NPS policy to manage the same for state-listed species and species of park management concern as for federally listed species to the extent possible.

Desired future conditions are also a learning tool in the context of periodic review and adaptive management. They provide the basis for evaluation of progress and for the research hypotheses set in the adaptive management plan. The process of developing the desired conditions points out what is known and unknown about the resource and where additional research and adaptive management are appropriate. A definitive methodology for developing desired future conditions does not exist. Desired conditions are highly variable and therefore are based on conservative estimates that consider species variability, habitat availability, and environmental factors that could affect the success of any colony or nesting individual. The adaptive management initiatives that accompany these desired future conditions address the research that the Seashore may conduct to determine the conditions under which recreational use may be managed to enhance visitor experience without adversely affecting the achievement and maintenance of the desired future conditions. In the context of this plan/EIS, the following definitions are applied to desired future conditions:

- **Short-term** means 10 years (or two 5-year periodic review cycles) after implementation of plan.
- **Long-term** means 20 years (or four 5-year periodic review cycles) after implementation of plan.

When desired future conditions for resources are met or exceeded, it may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remain stable. The populations of protected species that meet or exceed the goals set forth in this section would continue to be protected in accordance with applicable federal and state laws and regulations. Where progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may result in increased restrictions on recreational use. The management targets below are consistent with and contribute to the goals set forth by existing conservation plans such as U.S. Fish and Wildlife Service (USFWS) recovery plans (USFWS 1996a, 1996b), the Southeastern Coastal Plains–Caribbean Region Report U.S. Shorebird Conservation Plan (Hunter et al. 2002), the Waterbird Conservation Plan for the Mid-Atlantic/New England/Maritimes Region (MANEM 2006), and A Conservation Action Plan for the American Oystercatcher (*Haematopus palliatus*) for the Atlantic and Gulf coasts of the United States, Version 2.0 (Schulte et al. 2007).

The NPS considers the desired future conditions to be realistic, sustainable targets for piping plovers (table 1), nesting sea turtles (table 2), seabeach amaranth (table 3), and sensitive species of shorebirds (tables 4 and 5) at Cape Hatteras National Seashore.

**TABLE 1. DESIRED FUTURE CONDITIONS FOR PIPING PLOVERS**

Variable	Short-Term Target	Long-Term Target	Source
Number of breeding pairs	15	30	Short-term target from highest number of pairs recorded at Cape Hatteras National Seashore (1989) and the Biological Opinion (USFWS 2006a) <sup>a</sup> ; Long-term target from the Piping Plover Recovery Plan (USFWS 1996a, appendix B)
Fledge rate	5-year average of 1.0 chick per pair	5-year average of 1.5 chicks per pair <sup>d</sup>	Short-term target from the Biological Opinion (USFWS 2006a); long-term target from the Piping Plover Recovery Plan (USFWS 1996a)
Depredation rate	5-year average rate of mammalian depredation of eggs is <10%	Same as short-term target	Adapted from the Piping Plover Recovery Plan (USFWS 1996a) <sup>c</sup>

<sup>a</sup> The information is in the 2006 Biological Opinion under: Effects of the Action, A. Piping Plovers, Nature of the effect (USFWS 2006a):

"The biologically appropriate measure of population impacts is not the size of the current remnant population, but rather the potential pairs and productivity foregone. The 15 pairs documented at the Seashore in 1989 and comparison of current habitat with 1989 aerial photos furnish empirical evidence of potential for a population of at least five times the current number [which was 3] (i.e., 15 pairs). However, the demonstrated population growth elsewhere in the range provides evidence that the potential contributions at the Seashore are two to four times that number (i.e., 30 to 60 pairs). The USFWS estimated carrying capacity for the Seashore to be [sic] 30 pairs. (See USFWS 1996a, appendix B. Actual population growth at many of the sites in other states has exceeded the projections made in this exercise.)"

<sup>b</sup> In the future, if the fledge rate target in the Piping Plover Recovery Plan is revised (e.g., revised for Southern Recovery Unit), the Cape Hatteras National Seashore target will be adjusted to conform to the recovery plan.

<sup>c</sup> Recovery Plan: Recovery Tasks – Section 1.42 recommends "Deploy predator exclosures to reduce egg predation where appropriate" and states, in part: "Rimmer and Deblinger (1990) found that 24 of 26 nests (92%) protected by exclosures hatched at least one egg, while only six of 24 (25%) unexclosed nests hatched at a Massachusetts site over four years. Melvin et al. (1992) reported 90% (26/29) hatching of exclosed nests versus 17% (4/24) for unexclosed nests at six sites on Outer Cape Cod, Massachusetts."

**TABLE 2. DESIRED FUTURE CONDITIONS FOR NESTING SEA TURTLES**

Variable	Short-Term Target	Long-Term Target	Source
Number of loggerhead nests	94 <sup>a</sup> nests with an average annual rate of increase of 2%	115 <sup>a</sup> nests with an average annual rate of increase of 2%	Adapted from 2008 Loggerhead Recovery Plan goal (NMFS and USFWS 2008)
Percent of North Carolina total sea turtle nests	5-year average of 10% of North Carolina total	Same as short-term target	From the Biological Opinion (USFWS 2006a)
Ratio of false crawls to nests	5-year average of 1:1 or less	Same as short-term target	From Dodd 1988
Number of nests relocated	5-year average of <30%; Minimize number of nests relocated for reasons other than "risk of daily overwash or well-documented risk of erosion"	Same as short-term target	From Godfrey pers. comm. 2008

<sup>a</sup> Targets are based on 2% annual rate of increase from 2004-2008 average of 77.2 nests. Rate of increase of 2% for the Northern Recovery Unit is identified in the recovery plan. Based on this approach, the 50-year projection is 201 nests.

**TABLE 3. DESIRED FUTURE CONDITIONS FOR SEABEACH AMARANTH**

Variable	Short-Term Target	Long-Term Target	Source
Number of suitable sites occupied by seabeach amaranth	Develop a seabeach amaranth restoration plan for 4 suitable sites <sup>a</sup>	At least 3 of 4 suitable sites are occupied for 5 consecutive years	From the Seabeach Amaranth Recovery Plan (USFWS 1996b)

<sup>a</sup> Suitable sites include Bodie Island Spit, Cape Point, Hatteras Inlet Spits (Hatteras Island Spit and North Ocracoke Spit) and Ocracoke Inlet Spits (Southern Ocracoke Island Spit).

**TABLE 4. DESIRED FUTURE CONDITIONS FOR AMERICAN OYSTERCATCHERS**

Variable	Short-Term Target	Long-Term Target	Source
Number of nesting pairs	5-year average of 30 nesting pairs	5-year average of 45 nesting pairs	Targets based on American oystercatcher conservation action plan (Schulte et al. 2007) and recent Cape Hatteras National Seashore data <sup>a</sup>
Fledge rate (chicks fledged per nesting pair)	5-year average of 0.40 chicks per pair or higher	5-year average of 0.50 chicks per pair or higher	3 % annual increase from current rate of 0.30
Depredation rate	Percentage of nests lost that can be directly attributed to depredation of 30% or less	Percentage of nests lost that can be directly attributed to depredation of 20% or less	Average depredation rates over last 5 years: nests=31.2%, chicks=51.4% (NPS 2009n). The desired future condition is to reduce depredation rates while recognizing some depredation will continue to occur.

<sup>a</sup> From page 11 of the conservation action plan (Schulte et al. 2007): "We recommend that the population be stabilized and then gradually increased from its current level to at least 1.5 times its current size."

**TABLE 5. DESIRED FUTURE CONDITIONS FOR COLONIAL WATERBIRDS**

<b>Variable</b>	<b>Short-Term Target<sup>a</sup></b>	<b>Long-Term Target<sup>b</sup></b>	<b>Source</b>
Annual peak number of least tern nests	5-year average of 462 nests	5-year average of 577 nests	Long-term target equals 2009 peak count. Short-term target is mid-point between recent average (2007-2010) and the long-term target.
Annual peak number of common tern nests	5-year average of 292 nests	5-year average of 533 nests	Long-term target equals the average number of nests that occurred in 1977-2004. Short-term target is the mid-point between recent average (2007-2010) and the long-term target.
Annual peak number of gull-billed tern nests	5-year average of 21 nests	5-year average of 40 nests	Long-term target equals the average number of nests that occurred in 1977-2004. Short-term target is the mid-point between recent average (2007-2010) and the long-term target.
Annual peak number of black skimmer nests	5-year average of 132 nests	5-year average of 244 nests	Long-term target equals the average number of nests that occurred in 1977-2004. Short-term target is the mid-point between recent average (2007-2010) and the long-term target.

<sup>a</sup>Short-term target is to achieve the midway point between the long-term target and the recent average of the data points from the Seashore's 2007 - 2010 counts.

<sup>b</sup>Except for least terns, the long-term target for the respective species is to achieve the average number of nests that occurred at the Seashore in 1977 – 2004. Least terns are currently nesting in greater numbers than the 1977-2004 average; therefore, the long-term target is to maintain a 5-year average count equal to the 2009 peak count.

## ADMINISTRATIVE BACKGROUND

### HISTORY OF CAPE HATTERAS NATIONAL SEASHORE

Officially authorized in 1937 along the Outer Banks of North Carolina, Cape Hatteras is the nation's first national seashore. Consisting of more than 30,000 acres distributed along approximately 67<sup>1</sup> miles of shoreline, the Seashore is part of a dynamic barrier island system. The Outer Banks of North Carolina formed as a result of changes in sea level, wave and wind action, and ocean currents. These factors continue to influence the islands today through the processes of erosion and accretion of the shoreline; overwash across the islands; and the formation, migration, and closure of the inlets (NPS 1979). Since the 1930s, these natural processes have been influenced by human actions such as building sand berms<sup>2</sup> to protect roads and homes, dredging inlets, and filling inlets newly created by storms.

The story of the creation of Cape Hatteras National Seashore is documented in the Seashore's administrative history, *The Creation and Establishment of Cape Hatteras National Seashore* (NPS 2007f). No national park is suddenly brought into being except by a chain of milestones that lay the basis for an act of Congress or a presidential proclamation (NPS 2007f).

On June 23, 1936, President Roosevelt signed an "act to authorize a study of the park, parkway, and recreational area programs in the United States, and for other purposes" (49 Stat. 1894). The *Park, Parkway, and Recreational Area Study Act of 1936* significantly expanded the range and type of lands that could be preserved and managed by the NPS. The Act recommended specific additions to the national park system to provide recreational opportunities. The national recreation study led the NPS to establish four new types of parks in the park system: Recreational Demonstration Areas, national parkways, national recreation areas, and national seashores. Supporters of the park, parkway and recreation study, which included much focus upon the protection and use of coastal areas for recreational purposes, saw Cape Hatteras as the foremost example of a possible seashore recreational park. Concurrent congressional interest in erosion control, as demonstrated by the passage of the *Beach Improvement Act* in June 1936, also motivated interest in a national park in the Outer Banks. Undoubtedly, the recreational study and erosion control acts of 1936 spurred Congressman Lindsay C. Warren, who represented Dare County from 1925 to 1940, to begin work on "an act to provide for the establishment of the Cape Hatteras National Seashore" (NPS 2007f). Representative Warren introduced the

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*The enabling legislation provides that the administration, protection, and development of the national seashore shall be exercised under the direction of the Secretary of the Interior by the NPS, subject to the provisions of the Organic Act.*

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<sup>1</sup> Due to the dynamic nature of the barrier island system, the mileage of shoreline in the Seashore is constantly changing. This mileage estimate includes ocean shoreline and some interdunal roads managed for public recreation by the NPS. Actual on-the-ground mileage may vary, especially around the inlets and spits, due to the increased potential for erosion and accretion in these areas.

<sup>2</sup> The word "berm" as used in this document refers to remnants of the man-made dune or dune ridge originally constructed in the 1930s by the CCC and the Works Progress Administration. NPS actively maintained this dune ridge until the early 1970s when NPS ended the dune stabilization policy after scientists concluded that the man-made berms constructed since the 1930s had actually served to foreshorten the seashore's beaches and dramatically altered both the ecological and the topographical characteristics of the Outer Banks (NPS 2007f). "Berm" includes the man-made dune or dune ridge constructed to protect state highway NC-12 and interior sections of the island from ocean flooding and overwash during storms.

legislation in May 1937. It was subsequently approved by the House on August 2 and the Senate on August 14, then signed (50 Stat. 669) by President Roosevelt on August 17, 1937 (NPS 2007f).

In addition to articulating the recreation and preservation mission of the Seashore as stated in the “Purpose and Significance of Cape Hatteras National Seashore” section of this chapter, the enabling legislation provided that the administration, protection, and development of the national seashore shall be exercised under the direction of the Secretary of the Interior by the NPS, subject to the provisions of the *Organic Act*. It also provided that the legal residents of the villages shall have the right to earn a livelihood by fishing within the boundaries of the Seashore. The Act provided that the United States shall not use appropriated funds to purchase lands within the area, but such lands shall be secured by the United States only by public or private donation<sup>3</sup>. The Act authorized the Secretary to accept donations of land and funds to purchase lands, and to establish the national seashore contingent upon the acquisition of a minimum of ten thousand acres within the designated seashore area and provided that if such lands were not conveyed to the United States within ten years of the passage of the Act, the establishment of the national seashore may, at the discretion of the Secretary, be abandoned (NPS 2007f).

In March 1938, the NPS published the Prospectus of Cape Hatteras National Seashore in response to numerous requests for information concerning the area, which included the following recommendations for selection, use and development of the area (NPS 1938):

Inasmuch as the proposed Cape Hatteras National Seashore is the first area of its kind to be authorized by Congress, the National Park Service has adopted the following policy to be used in the selection, development and operation of this and other similar areas which may be acquired later.

Primarily a seashore is a recreation area. Therefore in its selection, the boundaries should be placed in such a manner that the maximum variety of recreation is provided. Thus while provision for bathing may be the first consideration of these areas, it must be kept in mind that a far greater number of people will be more interested in using a seashore area for other recreational purposes. It is desirable therefore to provide ample shoreline for all types of beach recreation. The Cape Hatteras National Seashore provides such an area in that there is extensive shoreline for all forms of recreation both for immediate use and for future development.

Secondarily, the area should include adjacent lands which by reason of historical, geological, forestry, wildlife, or other interests, have sufficient justification to be preserved by the Federal Government. It is important therefore to reach back into the hinterlands and acquire areas which will provide a variety of interests, scenic, scientific and historic. This principle has been followed in determining the boundaries of Cape Hatteras National Seashore.

Thirdly, it is important to include in the area, lands necessary for proper administration and lands which serve principally as a protection for the recreational and other developments which are the primary purpose of this area. Inasmuch as the Cape Hatteras National Seashore area is composed of islands and peninsulas, the land area in most cases is circumscribed by water, which fact in itself offers considerable protection. Inasmuch as control of much of the water in the Sounds may be desirable for fish and bird life, the

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<sup>3</sup> In March 1939, the North Carolina General Assembly created the North Carolina Cape Hatteras Seashore Commission to acquire seashore lands for eventual transfer to the federal government (NPS 2007f).



boundaries of Cape Hatteras National Seashore area will embrace a substantial portion of these waters.

The development and operation of the Seashore area shall follow the normal national park standards with the understanding that recreational pursuits shall be emphasized to provide activities in as broad a field as is consistent with the preservation of the area. It shall be the policy of the Service to permit fishing, boating and other types of recreation under proper regulations and in designated areas where such activities may not conflict with other factors of greater importance. Where natural landing fields occur, the use of land and sea planes may be permitted where not in conflict with the interests of wildlife or inconsistent with proper development and use of the area.

At the time, the NPS had envisioned the Seashore to incorporate lands and waters including portions of Currituck Sound, Nags Head, Roanoke Island, Bodie Island, Hatteras Island and Ocracoke Island. While certain sites were targeted for development of recreational facilities, certain sections were identified to remain undeveloped and preserved as the “primitive wilderness” that existed at that time. Such plans for general development were as described in the prospectus (NPS 1938):

While further study and planning is required, it is expected that intensive development for recreational purposes shall be undertaken on the Bodie section which is the portion of the area between Oregon Inlet and the Whalebone Inn. In this connection, arterial and subsidiary roads and facilities for bathing, fishing, boating, camping, and hiking probably will be provided in this section.

Other development which will be of secondary priority will be in the Nags Head section where provision may be made for a more appropriate and interesting entrance road and where facilities for bathing on Roanoke Island and for hiking, picnicking, fishing and boating may be made available. The Nags Head and Bodie sections are the most accessible and offer opportunities for all varieties of recreation which should be adequate to the needs of the public for many years.

The Currituck, Hatteras and Ocracoke sections will remain in their natural conditions with no development other than for administrative purposes. It is possible some additional accommodations will need to be provided for visitors to the Cape Hatteras Lighthouse and that some alterations will be required in the plans for the area which is now a State park (*Cape Hatteras State Park*). It is definitely the desire of the National Park Service that the section between Oregon Inlet and Hatteras Inlet remain in its natural condition without any roads so that future generations may see this and other undeveloped sections as they are in our day.

In the years after the enabling legislation was passed, a number of issues and local concerns arose that ultimately changed the early NPS vision for the Seashore and which complicated and delayed land acquisition and formal establishment. One such concern included whether or not hunting would be allowed to continue once the national seashore was established. On June 29, 1940, Congress amended the 1937 authorizing legislation for Cape Hatteras National Seashore to permit hunting. The amendment specifically referred to compliance with the MBTA. This provision would later be key in determining how the NPS actually interpreted “hunting” within the Seashore, but perhaps for the first time in the history of the NPS, legal hunting was now authorized within a national park. The same amendment also changed the formal title of the park to “Cape Hatteras National Seashore Recreational Area.” The term “recreational area” in the 1940 amendment was derived clearly from the Secretary’s justification to allow hunting and by the Service’s desire to limit the setting of any precedent for more traditional types of

parks. However, the NPS had already defined a “national seashore” as a recreational area in its 1937 brochure explaining the *Park, Parkway, and Recreational Study Act* and the anticipated recreational purposes of the park were established by Congress through Acting Secretary Chapman’s letter to the House Committee on Public Lands. Thus, including the term “recreational area” in the title was redundant. In 1954 the NPS authorized the original park name (“national seashore”) to be used for all administrative purposes except for formal memoranda and documents requiring the full legal name. Subsequently, the term “recreational area” fell from use in most official references to the park (NPS 2007f). In 1961, Congress authorized Cape Cod in Massachusetts as the second “national seashore” and subsequently created eight more “national seashores” between 1962 and 1975 for a total of ten. All such park units that followed Cape Hatteras were officially named “national seashores.” Since 1962, Cape Hatteras has been referred to as “national seashore” in Congressional legislation and “national seashore” has been the standard nomenclature for this type of park.

As envisioned in the 1930s, the NPS had hoped to preserve a far more natural environment than it was forced by compromise to accept in the 1950s (NPS 2007f). In 1952, fifteen years after he submitted the act to create Cape Hatteras National Seashore, former Congressman Lindsay C. Warren offered what may be the purest surviving expression of his intent in doing so: “When I introduced the bill for the Cape Hatteras National Seashore in 1937, I would have nothing to do with it unless the people were fully protected forever in their hunting and fishing rights, and unless there was a guarantee of a hard-surface road if the Government came into the picture, and unless all of the villages were exempt. At that time there was very little prospect for a paved road, but I extracted a promise from the NPS that they would favor such a road to be built, whenever possible, either through State or Federal Aid funds. Frankly, I think that this Park will mean more to the people of Dare County than anything that could ever happen to them. I do not say that because I was the author of the bill, but I say it because I had studied the history of all Parks, before I came into the picture back in 1937” (NPS 2007f).

In September 1952, Director Wirth acted to address serious criticism of the NPS and its failure to provide adequate information about the seashore project to inhabitants of the Outer Banks. At a meeting of the North Carolina Cape Hatteras Seashore Commission, he announced plans to visit the area in early October specifically to talk personally with anyone who was willing to do so, which included meeting with the villagers of Hatteras and Ocracoke Islands (NPS 2007f). The concerns that were expressed at those meetings included: (1) uncertainty about where the Seashore boundary would be drawn around the villages and whether there would be enough room left for community expansion; (2) concern about the rights of individuals to continue commercial and sport fishing; (3) concern as to whether present hunting rights would be affected; and (4) concern that once the Seashore is established, the local people would be denied access to the ocean beach (NPS 2007f).

On October 31, 1952, at the request of Director Wirth, D. Victor Meekins, who had headed the Cape Hatteras National Seashore Commission until 1945 and later became editor of *The Coastland Times*, published a special edition of the newspaper showing NPS maps and statements and assured Wirth that “every family within the project, whether a subscriber of the newspaper or not, got a copy.” In an open letter from the Director addressing all those affected by the proposal to create Cape Hatteras National Seashore, Wirth laid out the plans and intent of the NPS and made certain key promises (NPS 2007f).

Wirth outlined park boundaries that had been adjusted to address some of the concerns of residents that he had heard during his three-day tour. Once again, the total size of the park was reduced, this time to 28,500 acres. The new boundary left more room for expansion of the villages toward the ocean, which had been a major complaint, but left the beaches under NPS control. Wirth said the NPS would need “on the ocean side of the towns, only those lands along the ocean which are necessary to protect and control the sand dunes, to reestablish them where necessary, and hold them to protect the communities from the intrusion of the ocean.” The boundaries were also closer to the Pamlico Sound shoreline. The new tighter

boundaries recognized that, under the basic legislation authorizing the Seashore, fishing and hunting rights were reserved to the people. That being the case, there was no real need to include Pamlico Sound waters in the Seashore since state and federal fishing and hunting laws and regulations would still apply to waters both inside and outside the Seashore boundaries. Wirth simply set an arbitrary distance of 150 feet that would allow hunters and fishermen to clearly know when they were in or out of the park (NPS 2007f).

Residents had been concerned with beach access, as well. On this account, in the letter Wirth plainly stated that the Seashore would be a public park open to all, including those of the Banks and visitors. “However,” he stated, “it will be necessary to establish certain regulations, such as to designate places for vehicles to get to the beach, in order to reduce sand dune erosion to a minimum; to manage ocean fishing where large numbers of bathers are using the beach; and to confine bathing to certain areas. These



**Surf Fishing, 1935**

Credit: NPS

latter are safety measures, as it would be dangerous to permit surf fishing where there are large numbers of people in bathing and, likewise, fishermen would not want bathers to interfere with their fishing.” For the future, Wirth noted “the National Park Service proposes to resume the sand fixation work; to re-establish the natural plant and wildlife within the area; and to provide access to the beach for everybody.” Wirth’s “Letter to the People of the Outer Banks” effectively countered the disinformation campaign waged by park opponents, laid out a clear vision of NPS management of the national seashore, and created a key document that was later often solemnly referenced by local residents in discussion with NPS officials on park matters (NPS 2007f).

Late in 1952 agreement was reached on the final boundaries of the Seashore area and in December 1952 the state-owned lands in the Seashore were transferred to the United States. In January 1953, Wirth recommended that Secretary of the Interior Oscar L. Chapman approve an order, consistent with Section 4 of the Act of August 17, 1937, directing that certain lands on the Outer Banks of North Carolina be “administered, protected, and developed by the National Park Service for national seashore recreational purposes for the benefit and enjoyment of the people.” This order, dated January 12, 1953, marked the formal establishment of the Seashore (NPS 2007f).

Federal land ownership extends from ocean to sound across three barrier islands—Ocracoke, Hatteras, and Bodie (figure 1). The eight villages are excluded



**High Tide on Ocracoke, 1936**

Credit: NPS

from the Seashore boundaries. On the oceanside of the villages, federal ownership was established as a 500-foot strip measured landward from the mean low water at the time of acquisition. A larger area seaward of Buxton and Frisco includes portions of Buxton Woods. The 5,880-acre Pea Island National Wildlife Refuge, approximately 12 miles long and located at the northern end of Hatteras Island, lies within the Seashore boundary and is administered for refuge purposes by the USFWS in accordance with the *National Wildlife Refuge System Improvement Act of 1997* (USFWS 2006b). ORV use is not allowed in the refuge, but the 12 miles of ocean shoreline are generally open to pedestrian use, except when localized closures are in effect to protect shorebird and sea turtle nesting areas. This plan/EIS does not include the area within the refuge.

Today the Seashore serves as a popular recreation destination with more than 2.1 million visitors in 2008 (NPS 2008e), showing an 8-fold increase in visitation since 1955 (NPS 2007f). Seashore visitors participate in a variety of recreational activities, including beach recreation (sunbathing, swimming, shell collecting, etc.), fishing (surf and boat), hiking, hunting, motorized boating, nonmotorized boating (sailing, kayaking, canoeing), nature study, photography, ORV use (beach driving), shellfishing, sightseeing, watersports (surfing, windsurfing, kiteboarding, etc.), and wildlife viewing. Seashore visitors use ORVs for traveling to and from swimming, fishing, and surfing areas, and for pleasure driving. Over the past five years (2004–2008), visitation to the Seashore has averaged approximately 2.2 million visitors per year (NPS 2008e).

Current management practices at the Seashore allow ORV users to drive on the beach seaward of the primary dune line. Drivers must use designated ramps to cross between paved roads (such as North Carolina Highway 12 [NC-12]) that run behind the primary dune line and the beach. In some areas, NC-12 provides a way around full beach closures or areas where the high tide line limits beachfront access. In addition to a multitude of visitor opportunities, the Seashore provides a variety of important habitats created by its dynamic environmental processes, including habitats for the federally listed piping plover; sea turtles; and one listed plant species, the seabeach amaranth. The Seashore contains ecologically important habitats such as marshes, tidal flats, and riparian areas, and hosts various species of concern such as American oystercatcher, Wilson's plover, red knot, and colonial waterbirds, including the state-listed (as threatened) gull-billed tern.



**Bodie Island Spit, Memorial Day Weekend 2007**

Credit: NPS

## SUMMARY OF OFF-ROAD VEHICLE USE AND MANAGEMENT AT CAPE HATTERAS NATIONAL SEASHORE

The legislation creating Cape Hatteras National Seashore did not specifically mention motor vehicle use or beach driving; however, the administrative history (NPS 2007f) contains numerous references to ORV use and related issues and concerns. The Act did, however, clearly establish the mandate for NPS to administer and protect the Seashore consistent with the *Organic Act* and the purposes for which the Seashore was established.

Before 1954, local residents and visitors drove on the beaches at the Seashore because there were few formal roads in this remote area. Historically, the main purpose of beach driving was transportation, and not recreation. Because the area was sparsely populated, the number of ORVs on the beach was much smaller than it is today. In 1954, NC-12 was paved, providing a formal transportation route. The paving of NC-12, the completion of the Bonner Bridge connecting Bodie and Hatteras islands in 1963, and the introduction of the State of North Carolina vehicle ferry system to Ocracoke Island facilitated visitor access to the sound and ocean beaches and resulted in increased vehicle use on beaches for recreational purposes (NPS 2004a). Residents adopted the use of ORVs for commercial netting of fish, while sport fishermen used ORVs to pursue migrating schools of game fish and reach more productive areas, such as Cape Point or the inlets, often a mile or more from the nearest paved surface. Presently, ORVs are used for activities such as commercial and recreational fishing, sightseeing, travel to and from swimming and surfing areas, and pleasure driving (NPS 2004b).

In 1937, then NPS Assistant Director for Land Planning, Conrad L. Wirth, published an eloquent description of the primitive qualities of the Outer Banks at a time when much of the area could still not be reached by road. In fact, at the automobile service station at Whalebone, which was a small shack distinguished by the huge skeleton of a whale propped up nearby, the road south to Cape Hatteras simply ended. “Here,” Wirth wrote, “the pavement swings to the right and leads into the village of Manteo about six miles to the west. Now you are at the point where the primitive begins. You drive off the road onto the sand, stop, and let about half of the air out of your tires, because the rest of the driving will be over the almost trackless beach” (NPS 2007f).

A similar description was written by Thomas W. Morse, Assistant in Charge of North Carolina State Parks. In the 1937 Master Plan Report for Cape Hatteras State Park, Morse stated, “...no major roads enter this area and it is reached by driving almost fifty miles over the sands from the Whale Bone Filling Station, south of Nags Head to the park. This trip involves crossing Oregon Inlet by ferry. While it is agreed that this method of entry is of great aesthetic value, it should be pointed out that it also involves considerable destruction of wildlife because of promiscuous driving” (NCD CD 1937).

This was how things remained until the late 1940s, when paved roads were first built to connect some of the villages on Hatteras Island. Later, NC-12 was completed south from Whalebone to the ferry at Oregon Inlet, and in late 1952 a road was completed from there through Pea Island to the village of Hatteras. The romantic trail Wirth had followed in 1937 was nothing but a memory, and “Whalebone Station,” sans the bones and station, had become “Whalebone Junction.” If Wirth regretted this loss—as did at least a few residents of the Outer Banks—he was willing, if not eager, to push the key improvements in public access that facilitated the Seashore’s establishment, seeing that improved access reinforced the Seashore’s success (NPS 2007f).

When Conrad L. Wirth became Director of the NPS in December 1951, he faced a park system severely taxed by the postwar travel boom, fueled by increasing personal incomes, leisure time, and automobile ownership. Visits to the national parklands mushroomed from 6 million in 1942 to 33 million in 1950 and 72 million in 1960. With few improvements since the Civilian Conservation Corps (CCC) era, the

deteriorating park roads, campgrounds, employee housing, sanitary systems, and other facilities were overwhelmed. Director Wirth's response to the increasing park problems was to initiate "Mission 66," a ten-year program to upgrade facilities, staffing, and resource management throughout the system by the 50th anniversary of the NPS in 1966 (NPS 1990).

In September 1953, Chief Park Ranger G. P. Hultman, in reviewing a field-operations manual, made several cogent observations about security and conservation at the Seashore and how to further these through interpretation. Many factors limited his recommendations, including that the land acquisition program was far from complete and that wildlife and waterfowl protection, including hunting, was an unsettled issue, and, therefore, "ultimate problems cannot be visualized." Hultman was nevertheless insightful in observing that commercial development over the previous decade had greatly reduced the area available for public seashore recreation, that plant growth was far more extensive than during the era of grazing, and that "the power and changing characteristics of sea and wind seem to be greatly underestimated." Moreover, Hultman recognized that "driving conditions, including sand and water on the very pavement serving as access to the area, are aggravated by unlimited access to the beach" and the ability of park visitors to drive off-road at will were likely to become an increasing problem (NPS 2007f).

On March 8, 1954, Allyn F. Hanks arrived at Cape Hatteras to assume his duties as the first operational superintendent of the Seashore (NPS 2007f). In April 1955, Superintendent Hanks submitted to Director Wirth and his "Mission 66 Committee" a draft of the policies and practices that should guide the Mission-66 program at Cape Hatteras National Seashore. Hanks thought increased visitation would eventually link most, if not all, of the islands of the Seashore. North Carolina was making important transportation improvements during the period of Mission 66 both around Pamlico Sound and along the Outer Banks, including the construction of major roads and bridges. Hanks therefore predicted visitation at the Seashore would reach two million by 1966, and as a result, he said, "it will become increasingly difficult to preserve unimpaired primitive wilderness conditions." While roads would fulfill the NPS promise to provide public access and economic opportunities for local residents, roads would also put millions of visitors within a day's drive of the Seashore and give them easy access to its natural areas. Hanks worried that motor vehicle use would conflict with recreational pursuits and preservation (NPS 2007f).



**Beach fishing 1956**

Credit: NPS

In the prospectus, Hanks laid out the Seashore's significance, as well as its needs in protection, interpretation, development, and operations. His plans encouraged park development near the villages for the convenience of the public, to promote village growth, and to concentrate development thus leaving miles of beach front undisturbed. In the end, Hanks' prospectus determined the location and layout of most major developments at the Seashore, including the fishing piers and camping sites. The Mission 66 prospectus also encouraged the development of a roadway along the entire length of the Seashore. Although the agency now acknowledged the popularity of roads, it sought to use them to channel traffic from

more sensitive areas in the Seashore. Wirth approved the Mission 66 prospectus for Cape Hatteras National Seashore on November 15, 1956 (NPS 2007f).

During Mission 66, the impact of driving on the beaches was a major concern. The Mission 66 prospectus stated, “The beach, as the area’s most significant resource, and the narrow margin which is the locale for man’s numerous activities, requires development planning that will promote use only by people on foot. Vehicular use must be rigidly controlled and permitted only under specified conditions” (NPS 1956). Superintendent Hanks declared, “driving along the ocean shore by the public must be controlled.” To reduce its impact on the recreational purposes, the park was established to meet, specifically picnicking, swimming, and surf-casting, all of which “require assurance of non-intervention by shore driving.” Hanks further noted, “such protection has long been recognized by the more developed areas north to Kitty Hawk.” There, local property owners had restricted beach driving because of the damage it caused. Hanks thus planned to limit driving, even by NPS personnel, except for emergencies. In addition, during Mission 66, the NPS was dedicated to maintaining its barrier dune system in the Outer Banks, and Hanks sought to limit “indiscriminate access over the dunes to the ocean where in the past has been a large contributing factor in deterioration of the original barrier dune. Such practice must be curtailed to obtain overall greater protection benefits.” At the same time, Hanks acknowledged that minimum shoreline driving and limited access over the dunes “must be flexible to allow commercial fishing in general as provided for in the original Act.” Because shoreline driving negatively affected recreational activities, the Superintendent told Director Wirth, “it may be necessary, however, to exclude commercial fishing from certain portions of the Seashore by Secretarial Order to protect those portions for recreational use.” NPS policy was to protect the dunes from damage and to provide for recreational needs, which meant that vehicle use along some portions of the beach had to be entirely excluded. In other areas, access would have to be allowed for commercial fishing by local residents using, for example, “haul nets” that required motorized power (NPS 2007f).

Mission 66 brought much development to Cape Hatteras National Seashore, even if some stretches of beach were left undeveloped. As envisioned in the 1930s, the NPS had hoped to preserve a far more natural environment than it was forced by compromise to accept in the 1950s. By then, the practical necessity for fairly robust park development to meet the needs of large beach crowds and other visitors brought in on modern roads and bridges was greatly increased. The need to accommodate large crowds demanded infrastructure, a reality that few contested (NPS 2007f). In March 1957, Superintendent Hanks issued a summary of the Mission 66 prospectus that re-emphasized that most other facets of the park’s development were “dependent upon success in the field of erosion control” (NPS 2007f). In September 1958, a major management review was conducted at the Seashore. The review was generally positive but it recommended that a revised Mission 66 prospectus be completed after the final master plan and interpretive development plan, both undergoing review, were completed. Among a number of findings, the review also determined that the park urgently needed to place vehicular access ramps that would allow commercial fishermen access to the beach and stop them from building their own makeshift access points (NPS 2007f).

Between 1955 and 1958, the NPS completed major developments that established the Seashore’s basic recreational infrastructure (NPS 2007f). The new facilities, along with the completion of NC-12 on Hatteras Island in 1954 and on Ocracoke Island in 1957, contributed to more than doubling park visitation between 1955 and 1961 (NPS 2007f). After the highway was completed, a major problem was the bottleneck at Oregon Inlet where a fast-growing volume of visitors quickly overran the existing state ferry operation. Eventually, congestion at the bottleneck of Oregon Inlet became so bad that a bridge was the only solution. Because the traffic jams caused such a problem for the NPS, and because a bridge would benefit other federal agencies working on the Outer Banks, Congress authorized the NPS to help fund the needed bridge (NPS 2007f). On August 30, 1961, the NPS issued a press release discussing its support for congressional legislation that would allow the agency to help the State of North Carolina build a bridge across Oregon Inlet. The bill was submitted by Bonner on May 1, 1961, and sent to the whole House on August 28, 1961 (HR 6729). Bonner’s motivation was simple—the congestion at Oregon Inlet could not be alleviated by additional ferries. The NPS was interested in helping to pay for the bridge, which

reversed its early position, if for no other reason than the congestion generated frequent criticism both by the public and in the press. Traffic congestion also put pressure on NPS facilities north of the inlet. Cape Hatteras National Seashore was thought the only example of a park where the state maintained a road within the NPS system. The NPS acknowledged that such a bridge was a long-sought goal of the state and those living in the Outer Banks but was a cost beyond their means. NPS staff also realized the park and its visitors would benefit from the elimination of the bottleneck at Oregon Inlet. There were some minor complications, however, that may have been reminiscent of NPS sensitivity over the issue of wilderness preservation in the 1930s, when the NPS had hoped to preserve a vast expanse of wild seashore on the Outer Banks. Compromise was unavoidable, namely as a result of an NPS agreement to allow road construction, which was necessary to secure local support for the Seashore (NPS 2007f).

On October 11, 1962, Congress authorized funds for construction of a bridge to cross Oregon Inlet within Cape Hatteras National Seashore. The law (Public Law 87-79; 76 Stat. 909) allowed the Secretary of the Interior to pay \$500,000 toward the cost of the bridge as long as this amount came only from funds specifically designated for that purpose and the state agreed to pay for upkeep. The remainder of the costs would be borne by the federal government. Construction of the bridge over Oregon Inlet took approximately two years and made a huge impact on the village life of Hatteras Island and on the island's wild flora and fauna. Upon completion, the bridge brought in waves of tourists whose numbers increased with each passing year, an indisputable and considerable economic benefit to all the villages on Hatteras and Ocracoke islands. It was a windy day in early May 1964 when the new causeway linking Bodie and Hatteras islands was duly dedicated as the Herbert C. Bonner Bridge (NPS 2007f).

In some ways, the Bonner Bridge had taken as long to create as the park itself. It might even be said that neither would have been possible without the other, since to some extent, the existence of the park was predicated upon the faith of Outer Banks residents in the NPS to protect and promote their interests, which included both the preservation of an idyllic coastal recreation environment that attracted increased tourism and the development of transportation links between the remote islands and the outside world. Access was a key issue if the growing potential of a tourist-based economy was actually to be realized. In the years ahead, this fundamental dilemma, common to many national park areas, would pose great challenges to managers of Cape Hatteras National Seashore (NPS 2007f).

Well before the end of Mission 66, NPS officials understood that the beach management (i.e., dune stabilization) situation was dire. The NPS was waging a fight against a fundamental force of nature, but what was not crisply understood was the futile nature of that struggle and how a commitment to preserve a "primitive wilderness" had been transformed into a commitment to protect human-made structures using techniques that actually undermined the preservation of natural beaches. As the work continued to stabilize dunes, vehicular access to the beaches became a more pressing issue. In March 1963, Director Conrad Wirth and Rep. Herbert Bonner discussed the use of automobiles on beaches, specifically regarding vehicle ramps. Bonner had received complaints from local residents who wanted ramps set near their own property. By then, according to Wirth, eighteen ramps had been set up to allow commercial fishermen beach access, which Wirth said was prescribed by the law creating the Seashore. While these ramps had been set up to allow commercial fishermen to access the beach, Wirth said that the public could use the ramps also to gain access to the shore. According to Wirth, "past history has shown that each vehicular access is a vulnerable spot for the ocean to break through and cause extensive damage to the barrier dune and natural features of the area." "To provide more access would jeopardize NPS stabilization efforts," Wirth said, "while providing ramps near one private property owner would only inspire others to ask for similar access" (NPS 2007f).

Automobile driving on the beach was an infrequent topic in NPS and congressional correspondence from this period, but clearly the NPS viewed vehicular access to the beach as necessary to fulfill an obligation to allow continued commercial fishing by legal residents of the villages. This position, however, was an



interpretation of the law authorizing the Seashore and its amendments, since neither made specific reference to automobiles or how beach access would be provided. It only specified that commercial fishing by legal residents was to be allowed. One practice in use by local residents was “haul fishing,” a technique whereby fisherman used a jeep or similar vehicle to drag a net from the sea to the beach. Vehicle use was integral to this practice and not merely a means for transportation. The NPS established beach access ramps to enable commercial fishermen to continue to use vehicles to fish from shore while mitigating damage to the barrier dunes by controlling the points of entry, but these ramps also allowed general visitors motorized access to the beach (NPS 2007f).

Within a decade of completion of the Bonner Bridge, the NPS was facing serious public complaints on two related fronts. The first concerned the presence of ORVs or “beach buggies,” especially at Cape Point near the famous Cape Hatteras Lighthouse. Such vehicles, then mainly used by fishermen, concentrated near the best fishing sites in groups of up to fifty or so, leaving piles of beach trash and making it difficult for other visitors to enjoy the scenic vista. The problem may have existed for a while, but by 1972, as one writer informed Director George B. Hartzog, Jr., a person “literally could not take a photograph of the waves by themselves without two or three hip-booted intruders in the viewfinder.” This visitor did not want a total ban on the buggies but did want some restrictions. He protested that the NPS mission was to leave the land “unimpaired” and noted that if there were fifty buggies this year, when would it stop? “You might as well call it the Hatteras Parking Lot,” he concluded (NPS 2007f).

The stock NPS response was that “in contrast to natural areas, the recreation area is supposed to serve many needs.” Indeed, according to Deputy Assistant Director Joseph C. Rumberg, Jr., “a closure of the cape to allow full aesthetic appreciation of the power and wonder of the ocean, at the expense of fishing and beach buggy use, would be a matter fraught with controversy.” Nevertheless, Director Hartzog directed the Southeast Regional Office in Atlanta to arrange with the Superintendent to study the possibility of changes, limitations, or even the elimination of beach buggies. Hartzog hoped the study would develop recommendations that might provide the park with a better means of controlling vehicle use on the beach (NPS 2007f).

The problem was actually more serious than suggested by visitors annoyed over compromised scenic views. The Bonner Bridge had also brought increasing numbers of fishermen who were not residents of the Outer Banks but were bent on using more sophisticated means to exploit commercial opportunities. The basic issue involved fishermen using dories loaded with nets that were pulled along the beach by truck until a school of fish was located. Then, a boat was launched and part or all of the school was surrounded by the net tied to the truck onshore, which hauled in the line. According to the account of a sport-fishing newsletter, an existing practice became an acute problem by 1972. During the 1930s, only a half-dozen local residents practiced this technique, some using nets that were up to 200 yards long. Between 1936 and the early 1960s, the number of fishermen had remained fairly constant, and with up to ten such fishermen working, their nets were still no longer than 400 yards (NPS 2007f).

After the Bonner Bridge opened in 1964, however, commercial fishermen from elsewhere began participating in the fish harvest, some from as far away as New York. Now as many as twenty commercial fishermen were using nets up to sixteen hundred yards in length. This activity was wiping out striped bass because such huge nets took in 20- to 50-pound fish in catches weighing up to 10,000 pounds. Worse, non-commercial fish were merely left to die and rot on the beach. By 1972, the problem was acute, and local fishermen began to complain, noting that they brought in cash much needed by the villagers whereas outside commercial fishermen merely depleted the fishing stock. After several years of competition between these various groups of fishermen, the situation began to threaten violence, and calls for new legislation were voiced (NPS 2007f).

In the coming years, many heated debates were to erupt between commercial, sports, environmental, and park-access groups. It should be noted, however, that between the 1930s until well into the 1960s, the public lodged few complaints about fishing, beach driving, or conflicts between vehicle-users and other beach-goers. At first, the few Outer Banks residents with vehicles, and occasional visitors, did not relish the notion of beach driving and did so simply because there were almost no roads on which to drive. After World War II, improved automotive technologies allowed more villagers and visitors to drive along the seashore, but without roads this activity still entailed the onerous rituals of deflating and re-inflating tires, digging out from occasional sandpits, and risking getting stuck. Such experiences were unpleasant but whether they bothered the typical “Hatterasman” as writer Ben Dixon MacNeill phrased it, was another question (NPS 2007f).



**Beach driving 1933**

Credit: NPS

Outer Banks residents were by tradition and necessity a people of the sea and were adept at using it for transportation. They did not need roadways for their own transportation or lifestyle needs, rather an absence of roads limited economic growth. As their traditional life ways declined, Outer Banks residents increasingly sought the roads and bridges needed to sustain a tourist-based economy. A major reason the NPS began to reappraise its opposition to an island parkway was that random beach driving led to destruction of the artificial dunes and harmed native flora and fauna. Ironically, the very road that boosted tourism and was supposed to better protect the environment by eliminating the chore of beach driving was also what made commercial and recreational access to the beach ever more possible and brought those separate interests into conflict. However, some commercial fishermen used jeeps early on to operate shore-based fishing nets while the NPS set up ramps to help channel sport fishermen away from the more sensitive dune areas. These early ramps also gave access to increasing numbers of tourists. Still, such uses did not begin to elicit great controversy until after the Bonner Bridge opened in 1964. With the bottleneck at Oregon Inlet removed, there was no limit to the number of park visitors who in a day’s span could drive down the banks and out onto the beach. Completion of the Bonner Bridge, therefore, marks a key demarcation point in the history of the first national seashore (NPS 2007f).

In brief, residents adopted the use of ORVs for commercial netting of fish, while sport fishermen used ORVs to pursue migrating schools of game fish and reach more productive areas, such as Cape Point or the inlets, often a mile or more from the nearest paved surface. Presently, ORVs are used to access the beach for activities such as commercial and recreational fishing, sightseeing, travel to and from swimming and surfing areas, and pleasure driving (NPS 2004b).

Today ORVs access the ocean beaches and sound shoreline via a system of “ramps” located off NC-12 and other paved roadways. The ramps began as an informal system of unimproved access points connecting the roadway to the sounds and beaches. Over time, this system was formalized and the oceanside ramps are now numbered, maintained, and identified on the Seashore’s ORV route maps as official vehicle access routes for beach access. In 1978 there were 28 identified ramps, 22 of which were located on NPS lands. Although the NPS opened a new ramp to the public in 1998, the number of ramps

has decreased since 1978 as some were lost to erosion and others were closed to the public and are now used for administrative vehicle access only (NPS 2004a). The NPS currently has 17 oceanside access ramps available for public ORV use (NPS 2008g).

ORV use at the Seashore has historically been managed since the 1970s through various draft or proposed plans, though none were ever finalized or published as a special regulation as required by Executive Orders 11644 and 11989 and 36 CFR 4.10. In 1973, in response to Executive Order 11644, Use of Off-Road Vehicles on the Public Lands (February 8, 1972), the Seashore developed a draft ORV management plan (NPS 2004b) that included the following:

- Designation of 27 beach access routes or ramps.
- Identification of a permitted area for travel from the toe of the dune to the ocean.
- License requirements for vehicles and operators.
- Closure of one heavily eroded section of the beach near the Cape Hatteras Lighthouse year-round.
- Designation of seasonal closures in five areas heavily used by pedestrians between May 26 and September 10.

This management plan was not finalized or published as a special regulation, as required by Executive Order 11644 and 36 CFR 4.10.

A few years later, in response to Executive Order 11989, Off-Road Vehicles on Public Lands (May 24, 1977), the NPS began developing a draft ORV management plan for the Seashore. In response to the plan, which was released in January 1978, the North Carolina Beach Buggy Association and the Outer Banks Preservation Association each issued proposed alternative plans for ORV management at the Seashore. These proposed plans were considered by the Seashore, along with public comment, and in November 1978 the Draft Interim Management Plan: Off-Road Vehicle Use, Cape Hatteras National Seashore was issued (NPS 1978a). It proposed guidelines for the management of ORV use at the Seashore while the general management plan was under development. The draft interim ORV management plan identified zones of use for ORVs, as well as described conditions under which vehicles would be allowed or prohibited. The proposed zones of use were as follows:

- Zone 1 – Ocean Beach: In this zone ORVs will be permitted landward from 150 feet of the existing tide line, but no closer than 20 feet to the toe of the dune or vegetation line. Portions of Zone 1 may be closed seasonally (May 15 through September 15), or closed temporarily to protect nesting birds or sea turtles, or when the distance between the existing tide and the toe of the dune or the vegetation line is reduced to less than 100 feet. Permits must be issued for vehicles that have less than four weight-bearing wheels and do not meet all vehicular licensing and inspection requirements of their state of origin.

- Zone 1(a) – Seasonally closed areas include those Zone 1 areas which, due to seasonal heavy pedestrian, swimming, wildlife or other uses, are deemed seasonally unsuitable for ORV use.

Seasonally closed areas shall be identified by signs at both ends of the area, and shall be indicated on maps available for viewing at the offices of the Superintendent and of each District Ranger.

Dates of seasonal closures shall be May 15 through September 15 of each year, except on Pea Island National Wildlife Refuge, where the Refuge Manager shall post such closures as he may find necessary to implement the regulations of the USFWS.

Seasonally closed areas shall consist of, but not be limited to, the following areas: Bodie Island, milepost 0 to milepost 3; beach areas fronting the villages of Rodanthe, Waves, Salvo, and Avon;

northern boundary of Buxton to one mile south of the Cape Hatteras Lighthouse; beach fronting the villages of Frisco and Hatteras; milepost 49 to milepost 54; and Ocracoke Island milepost 65 to 70.

- Zone 1(b) – Temporarily closed sections include:

Those narrow beach sections of Zone 1 that have decreased in width to the point where the average distance from the existing tide to the toe of the dune or vegetation line is less than 100 feet (30 meters). These sections shall be marked at each end by signs reading “Beach Temporarily Closed to Vehicle Traffic” and shall be indicated on maps available for viewing at the offices of the Superintendent and each District Ranger.

Bird Nesting Areas – Portions of high beach and inlet flats where significant bird nesting is occurring. These areas shall be temporarily closed to all visitor use and shall be marked by posts and “Bird Nesting Area” signs.

Sea Turtle Nests – Locations on the beach where a sea turtle nest is discovered. A rectangular section of beach that includes the nest with 300 feet (92 meters) of tide line seaward of the nest shall be temporarily closed to ORV use from dune to existing tide line. Closures shall be marked at both ends by posting with signs indicating “no ORVs – temporary turtle nest.” The period of closure shall begin on posting, 50 days after the turtle lays, and shall end 25 days later on official removal of the signs. The purpose of the closure is to protect hatchling loggerhead turtles, listed as “threatened” under the ESA.

- Zone 2 – Soundside: Marsh and flat land west and northwest of NC-12. Vehicular traffic shall be confined to marked trails, posted as open. No permit shall be required.
- Zone 3 – Buxton Woods, Open Ponds: The area of grassed dunes and forest lands lying between Headquarters, Cape Hatteras Group Coast Guard, and Frisco Campground. The area is roughly bounded on the south by the ocean dunes; on the east by a northeast-southwest trending line lying west of the Cape Point Campground, Coast Guard Group Headquarters, and NPS residence-maintenance area complex; on the north by the NPS boundary through Buxton Woods; and on the west by a south-north trending line lying east of the Frisco campground. In this zone, limited vehicular access on ORV routes posted as open shall be permitted only upon application in person to the Hatteras District Ranger (or designee) and there shall be no more than 30 total ORVs in this zone at any one time. Limited access permits for vehicular entry shall not exceed 24 hours in duration and shall not be issued more than 7 days in advance. Permits are renewable upon request except when vehicular capacity has been reached.
- Zone 4 – Dunes and Sand Plains: All land and dune areas seaward of the right-of-way of NC-12, except Zone 1 and Zone 3 lands. ORV operation is permitted only on trails posted for ORV use. Permits must be issued for vehicles that have less than four weight-bearing wheels and do not meet all vehicular licensing and inspection requirements of their state of origin (NPS 1978a).

The 1978 draft interim ORV management plan also called for a posted speed limit of 25 miles per hour and for ORV operators to possess a current driver's license from their state of origin. The permitting portion of the 1978 draft plan was controversial and was removed before release of the 1978 Draft Interim Management Plan: Off-Road Vehicle Use, Cape Hatteras National Seashore (NPS 1978a). Except for Zone 1, the 1978 draft plan stated that no vehicle would enter any unpaved dirt or sand trail or path, or follow any vehicular tracks not posted as an ORV trail. Though the draft plan was not finalized or published as a special regulation as required by Executive Orders 11644 and 11989 and 36 CFR 4.10, the Seashore implemented the following plan components:

- Consolidating and clearly marking entrance and exit points to soundside areas;
- Establishing sea turtle and bird nesting protection zones;
- Increasing efforts to provide signage and other information concerning beach conditions and open and closed areas; and
- Providing better maintenance of access routes and ramps.

In 1980, the North District Ranger prepared the ORV Plan North District Cape Hatteras National Seashore (NPS 1980). During development of this draft plan, the North District Ranger asked concerned individuals for comments and suggestions regarding ORV use at the Seashore. Based on these comments and suggestions, the plan included recommendations for improvements and a general description and project status of each soundside and oceanside access point from Bodie Island to Hatteras Inlet. The plan recommended that the general management plan consider additional parking needs on the soundside and oceanside and at comfort station locations. It also recommended that the general management plan consider impacts of traffic flow changes as a result of corridor and road closures (NPS 1980). The 1984 general management plan would address these concerns by incorporating additional parking lots and parking turnouts along NC-12 (NPS 1984); however, the 1980 draft ORV plan was not finalized or published as a special regulation, as required by Executive Orders 11644 and 11989 and 36 CFR 4.10.

The 1984 General Management Plan / Development Concept Plan / Environmental Assessment: Cape Hatteras National Seashore (NPS 1984) addressed direct and indirect threats to the Seashore, with ORV use cited as one such threat. The General Management Plan specified five visitor experience zones. ORV use was listed as an appropriate activity in three of these five zones: ocean/beach, interior dunes/maritime forests, and marsh/sound. The General Management Plan called for ORV use to be regulated by the 1978 draft interim ORV management plan (NPS 1978a) which was drafted after consideration of public comment to the 1978 draft plan (NPS 1978b). The General Management Plan called for additional planning and research on ORV use and for monitoring impacts of ORVs, but did not set forth an ORV management plan or special regulation, as required by Executive Orders 11644 and 11989 and 36 CFR 4.10.

ORV use was managed by the above planning documents during the 1980s and 1990s. On December 9, 1999, a petition for rulemaking was submitted to the NPS that requested a ban on the use of all-terrain vehicles (ATVs), dune buggies, sand buggies, and other four-wheel drive vehicles on all off-road areas in the national park system, which included the Seashore. This petition was followed-up by a second petition in 2004. The second petition, specific to the Seashore, was submitted on June 7, 2004, and requested Rulemaking Governing Off-Road Vehicle Use in the Cape Hatteras National Seashore. Petitioners claimed the Seashore's informal authorization of ORV use violated the ESA, executive orders and federal regulations regarding ORV use in the national parks, the *Organic Act*, the *General Authorities Act of 1970*, the Cape Hatteras National Seashore enabling legislation, and various NPS management policies. Both of these petitions are part of the reason for developing this ORV plan/EIS.

Following the submission of the two petitions, in 2004 the Seashore issued Superintendent's Order 7, ORV Management, to resolve ORV issues created by Hurricane Isabel, which flattened sand berms and exposed areas of the Seashore to ORV use that the berms once protected from such use (NPS 2004c). After reviewing the 1984 General Management Plan, the Superintendent decided that parts of the 1978 draft interim ORV management plan (permitting sections excluded) would be used as Seashore guidance pending development of a long-term ORV management plan and special regulation.

To provide guidance for the proper management of protected species and to comply with the ESA, while providing for use of the Seashore's recreational resources until an ORV plan/EIS and special regulation could be completed, the Seashore began development of the Interim Strategy in late 2004. The species addressed in the Interim Strategy are those specifically affected by recreational and ORV use within the Seashore that are listed either federally or by the state as threatened, endangered, or species of special concern, or are of special concern to the Seashore.

While the Interim Strategy was being prepared, Defenders of Wildlife issued a notice of intent (NOI) to sue the NPS for alleged violations of the ESA at the Seashore in May 2005. After this NOI was issued, the Seashore continued to develop the Interim Strategy, which was published for public comment in January 2006.

In December 2006, after the first season that NPS had operated under the Interim Strategy and after the USFWS had issued the Biological Opinion, Defenders of Wildlife issued another NOI to sue NPS and USFWS (collectively referred to as Federal Defendants), alleging that the Biological Opinion did not meet the requirements of the ESA and re-asserting the previously stated claims against NPS from the earlier NOI to sue. NPS issued a Finding of No Significant Impact (FONSI) on the Interim Strategy in July 2007 (NPS 2007a).

Alternative D, as modified in the Interim Strategy FONSI, was identified as the selected alternative. Alternative D outlines a multifaceted strategy (including a program of increased monitoring, recreational and ORV closures, education and enforcement) for minimizing impacts to wildlife, including threatened and endangered species and other protected species, from visitor uses including ORV use. The USFWS Raleigh Field Office prepared a Biological Opinion associated with the Interim Strategy in response to their review of the Cape Hatteras National Seashore's biological assessment (NPS 2006b, January 6, 2006), the Interim Strategy (NPS 2006a, January 18, 2006), and other sources of published and unpublished biological information. The Biological Opinion evaluated the proposed action of the Interim Strategy and its potential impact to protected species at the Seashore. The USFWS concluded that incidental take of protected species would occur from management actions under the Interim Strategy, but the level of anticipated take during the limited period the Interim Strategy would be in effect is not likely to result in jeopardy to the species or destruction or adverse modification of designated or proposed critical habitat (USFWS 2006a). In March 2007 and December 2007, the NPS requested reinitiation of consultation with the USFWS. These consultations concluded with the USFWS issuing amendments to its original Biological Opinion in April 2007 and March 2008, respectively. Both amendments addressed performance measures for piping plover and loggerhead, green, and leatherback sea turtles.

In October 2007, Defenders of Wildlife and the National Audubon Society, represented by the Southern Environmental Law Center (collectively referred to as Plaintiffs), filed a lawsuit claiming the Interim Strategy violated the ESA and other laws, failed to protect species at Cape Hatteras National Seashore, and failed to comply with the requirements of the ORV executive orders and NPS regulations on ORV use. In December 2007, Dare County, Hyde County, and the Cape Hatteras Access Preservation Alliance, a coalition of ORV/access and fishing groups, were granted Intervenor-Defendant status in the lawsuit.

In April 2008, the Plaintiffs, Federal Defendants, and Intervenor-Defendants jointly submitted to the court a consent decree that would be signed by a U.S. District Court Judge on April 30, 2008, to settle the

lawsuit. The consent decree, which is enforceable by the court, provides for specific species protection measures and requires the NPS to complete the ORV management plan/EIS and required special regulation by December 31, 2010, and April 1, 2011, respectively. Consent decree modifications of the Interim Strategy included changes in the size of buffers provided for various species at the Seashore, as well as added restrictions related to night driving.

## **SUMMARY OF SCIENTIFIC LITERATURE ON OFF-ROAD VEHICLE USE**

A literature review was prepared to support the development of an ORV management plan at Cape Hatteras National Seashore. The literature review (appendix A) provides a summary of available scientific information related to the potential effects of ORV use on natural and cultural resources similar to those found at the Seashore or in geographic locations with similar environmental conditions.

### **SCOPING PROCESS AND PUBLIC PARTICIPATION**

An NOI to prepare an Environmental Impact Statement was published in the Federal Register on December 11, 2006, to announce the beginning of the ORV planning process. To determine the scope of issues to be analyzed in depth in this plan/EIS, meetings were conducted in February and March of 2007 with Seashore staff, other parties associated with preparing this document, and members of the public. Additional public meetings were held in January 2008 and a public comment period was held in January – February 2008 to examine the range of alternatives and provide input on alternative elements. In response to public input and issues raised during the scoping process, the interdisciplinary planning team reworked the preliminary alternatives to those analyzed in this plan/EIS except for alternative F, which was developed after the negotiated rulemaking process concluded. A notice of availability for the draft plan/EIS was published in the *Federal Register* on March 12, 2010. Following the release of the draft plan/EIS, a 60-day public comment period was open between March 12, 2010, and May 11, 2010. Chapter 5 of this plan/EIS provides more details about agency and public scoping activities that were an integral part of the planning process for this plan/EIS.

### **NEGOTIATED RULEMAKING PROCESS**

The *Negotiated Rulemaking Act of 1990* (5 United States Code [USC] 561-570) establishes a statutory framework for agency use of negotiated rulemaking to reach a consensus with stakeholders on a proposed regulation. Concurrent with the *National Environmental Policy Act* (NEPA) process, the NPS used a negotiated rulemaking process in an effort to develop a proposed rule for long-term ORV management at the Seashore. Because negotiated rulemaking allows interested, affected parties more direct input into the development of the proposed regulation, the NPS had hoped that the negotiated rulemaking process would result in a rule that is sensitive to the needs and limitations of both the parties and the agency.

In December 2007, the Department of the Interior established a negotiated rulemaking advisory committee (Committee) to assist the NPS in the development of an ORV regulation for the Seashore. The Committee met 11 times from January 2007 through February 2009, and conducted numerous subcommittee and work group meetings and conference calls. The Committee discussed and explored options for the full spectrum of ORV management issues covered in this plan/EIS. As a result of these discussions, the NPS considered a variety of concepts and measures that either originated from Committee members or were discussed

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*The NPS used a negotiated rulemaking process in an effort to develop a proposed rule for long-term ORV management at the Seashore.*

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during Committee, subcommittee, or work group sessions. Although the Committee as a whole did not reach a consensus on a recommended alternative, in creating the alternatives in this plan/EIS, the NPS has made a management judgment as to which combination of concepts and measures would make an effective overall ORV management strategy.

## **ISSUES AND IMPACT TOPICS**

Issues associated with implementing an ORV management plan at Cape Hatteras National Seashore were initially identified by Seashore staff during internal scoping and were further refined through the public scoping and negotiated rulemaking processes. The following text discusses the issues that formed the basis for the impact topics discussed in chapters 3 and 4 of this plan/EIS.

### **FLOODPLAINS AND WETLANDS**

Although the entire ocean shoreline of the Seashore is classified as a marine or intertidal wetland (Cowardin et al. 1979), these areas are not measurably impacted by vehicle use due to the dynamic nature of the beach environment and the ability of the intertidal areas to “restore” themselves, since ruts from vehicle tires are filled in by wave action and moving sands. A study by Leatherman and Godfrey (1979) indicated that the intertidal ocean beach (sand beach area) is the most resistant to long-term vehicle impacts. While no definite conclusions were drawn from the study, they did indicate that natural changes to the beach appeared to overwhelm vehicle effects in this particular study. Given these studies, these types of wetlands were not analyzed in detail in this plan/EIS. However, vegetated wetlands along the soundside and interior of the islands are susceptible to direct damage from ORV use, and are discussed further under the “Wetlands” impact topic.

Estuarine wetlands are often denuded of vegetation when ORVs are driven and parked along the soundside shoreline. Also, many of the interior or interdunal roads are located near wetland areas that are often not noticeable to visitors. When standing water is present along these ORV routes, visitors often drive over adjacent vegetated areas in an attempt to avoid the standing water. This results in wider roads, new vehicle routes, and crushed or dead vegetation. Construction of new parking areas is also of concern for wetlands that may be located nearby.

Nearly all of the Seashore is located within the 100-year floodplain, with the exception of a small area at the Navy tower site on Bodie Island and larger areas around Buxton. In this plan/EIS, the issue of floodplains is considered under any alternative that includes development, such as constructing new parking lots or expanding existing parking lots, because these actions have the potential to impact the function and value of the floodplain. However, it is recognized that the barrier island floodplain systems function quite differently than inland floodplains, which primarily function by providing lowland areas for floodwater storage and conveyance. In contrast, floodplains at the Seashore are subject to coastal flooding caused by storm systems that can raise water levels substantially via storm surge.

### **WILDLIFE AND WILDLIFE HABITAT**

Cape Hatteras National Seashore provides important habitats and plays a vital role in the survival of many wildlife species. Whether for nesting, resting, foraging, or feeding, the Seashore provides for a diverse assemblage of birds. Rich, varied habitats and the Seashore’s location along the Atlantic Flyway attract birds. In 1999, the American Bird Conservancy designated Cape Hatteras National Seashore as a Globally Important Bird Area in recognition of the Seashore’s value in bird migration, breeding, and wintering (American Bird Conservancy 2005). This diverse ecosystem includes both prey species that sensitive species rely on for survival, and predators of sensitive species. ORV use along the Seashore can disrupt



habitat or cause a loss of habitat in high use areas. Habitat loss due to ORV use could also occur indirectly as a result of the noise and disturbance from this activity.

Invertebrates are impacted by ORV use. A recent study at the Seashore researched the ghost crab (*Ocypode quadrata*) as an indicator of ecosystem health, since it may show the impacts of ORVs and other recreational uses (Hobbs et al. 2008). The study considered the impacts of ORVs on ghost crab population densities and recovery rates in relation to ORV use and usage regulations. Data to determine the impacts of ORVs on crab populations were collected in several areas in the Seashore. Closures of the beaches to vehicles were initiated to study short-term effects and recovery rates. It was found that ORVs had a detrimental impact on ghost crab populations at the Seashore and that areas subject to vehicle use had significantly fewer ghost crab burrows than those areas without vehicles. As shown by Steiner and Leatherman (1981), ghost crabs can be killed or mortally injured by ORVs driving over them, or by altering their environment. This study concluded that high-energy weather events change the dynamics of the population, allowing more ghost crabs to inhabit the area, but ORVs reduce the ability for ghost crabs to inhabit the area (Hobbs et al. 2008).

### **FEDERALLY LISTED THREATENED OR ENDANGERED SPECIES**

ORV use at the Seashore could impact federally threatened or endangered species and their habitats on the Seashore's soundside and ocean beaches. Conflicts between listed species and recreational use (including ORV use) could create direct or indirect losses to a listed species. The Seashore is home to federally threatened or endangered species year-round. Increased year-round visitation results in a greater potential for conflicts between visitor use and listed species. The Seashore is used by both the endangered Great Lakes population of piping plover (considered threatened on wintering grounds, which include the Seashore) and the threatened Atlantic Coast population (for breeding and wintering, with breeding occurring at the Seashore). Seabeach amaranth, a federally listed threatened plant species, has been found in limited numbers at the Seashore in the recent past. However, no plants have been documented since 2005. According to the USFWS, seabeach amaranth has been eliminated from two-thirds of its historic range and ORVs are considered one of the more serious threats to its continued existence.

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*The Seashore is home to federally threatened or endangered species year-round.*

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Nesting sea turtles at the Seashore include the loggerhead, green, and leatherback turtles. Kemp's ridley and hawksbill turtles are known to occur only on the beaches of the Seashore through strandings. Threats to listed sea turtles, their nesting sites, and young include storm events, predation, artificial lighting, campfires, and recreational beach equipment; disturbance by pedestrians and pets; and direct and indirect impacts of ORVs. In May 2008, the red knot was identified by the USFWS as a candidate for the endangered or threatened species list. This species is a migrant and occasional winter resident at the Seashore.

Current and possible future management alternatives for ORV and other recreational uses would take into consideration the needs of federally listed threatened and endangered species in determining management measures.

### **STATE-LISTED AND SPECIAL STATUS SPECIES**

Habitat for state-listed and special status species, such as the American oystercatcher and several species of colonial waterbirds, may be vulnerable to disturbances caused by recreational uses, including ORV use. As of May 2008, the American oystercatcher, Wilson's plover, least tern, common tern, and black skimmer were listed by the North Carolina Wildlife Resources Commission (NCWRC) as species of

special concern (15A NCAC 10I.0105). The NCWRC also lists the gull-billed tern as a state-threatened species. The American oystercatcher is listed as a species of concern by the Southeastern Shorebird Conservation Plan, and both the American oystercatcher and the Wilson's plover are identified in the U.S. Shorebird Conservation Plan as "Species of High Concern" (Schulte et al. 2007; Brown et al. 2001). All these state-listed or special status species have had historically low reproductive rates. The lack of large undisturbed areas for successful breeding contributes to these low rates at the Seashore. Frequent human disturbance can cause the abandonment of nest sites as well as direct loss of eggs and chicks. In addition to these breeding species, the Seashore is also home to migratory species such as the red knot, that use habitat at the Seashore during the winter or during migration. The red knot is currently a candidate for ESA protection (74 FR 57804).

All of the bird species that are described under the "State-Listed and Species Status Species" sections of the plan/EIS are listed in 50 CFR § 10.13, which indicates species that are subject to the protections of the MBTA. These species are also designated as Birds of Conservation Concern (USFWS 2008b) and/or Migratory Nongame Birds of Management Concern in the United States (USFWS 1995) which qualifies them as species of concern according to Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. The Birds of Conservation Concern designation includes migratory and non-migratory species that are of concern due to population declines, naturally or human-caused small ranges or population sizes, threats to habitat, or other factors. The USFWS 1995 list of Migratory Nongame Birds of Management Concern in the United States lists species that are of concern because of (1) documented or apparent population declines, (2) small or restricted populations, or (3) dependence on restricted or vulnerable habitats. Therefore, the NPS is required to protect these species according to the provisions of both the executive order and the MBTA.

In April 2010, the NPS signed a Memorandum of Understanding (MOU) with the USFWS to strengthen coordination for migratory bird conservation. The MOU helps identify and implement strategies to complement and support existing efforts and facilitate new collaborative migratory bird conservation partnerships and comprehensive planning strategies for migratory birds under the MBTA. The Seashore has consulted with the USFWS on this plan/EIS, as provided for under the MOU.

## **SOUNDSCAPES**

Impacts related to soundscapes could occur wherever ORVs are allowed on the oceanside or the soundside. Vehicular noise has the potential to impact other recreational uses, such as bird watching or enjoying the solitude and natural soundscape of the Seashore. In addition to impacting soundscapes in relation to visitor enjoyment, vehicular noise could create unsuitable habitat for Seashore wildlife.

## **VISITOR USE AND EXPERIENCE**

ORV use at the Seashore is an integral component of the experience for some visitors and may be impacted by ORV management activities. Other Seashore visitors who are not using ORVs may be impacted by ORV use. Currently, the mix of recreational users at the Seashore includes a variety of users such as ORV users, day-users without ORVs, swimmers, anglers, bird watchers, water sports enthusiasts, and other users. Although some visitors want to use an ORV to access the Seashore, other visitors wish to engage in recreational activities on foot and away from the presence of motorized vehicles. Restricting ORVs from areas of the Seashore could enhance the recreational experience for some and diminish the experience for others. Visitor experience could be affected by conflicts between motorized and nonmotorized recreation users. A further component of visitor experience is providing for the safety of all visitors at the Seashore.

Other issues related to visitor use and experience include viewsheds, aesthetics, and night skies. While the sight of ORVs can destroy the viewshed and aesthetics for some visitors, they also change the viewshed by altering the natural landscape. Some visual signs of ORVs include tire ruts and markings and trash left behind. ORV use impedes or destroys coastal features like wave or wind ripples in the sand, tide wrack lines, overwash deposits, wind sorted sediments, dune formation, etc. As an example, the burrows of ghost crabs, the most common beach inhabitants, are nearly absent from beaches where ORVs are allowed. Installing posts around closure areas for protected species from ORVs could also impact the views and aesthetics of the area for those who want a natural view without evidence of man-made materials.

Headlights and other artificial lights associated with nighttime ORV use may affect visitors' opportunities to enjoy night skies at the Seashore. Conversely, lack of artificial lights may make it more difficult to see, posing hazards to ORV users and pedestrians. Issues related to night skies include night driving, headlights, campfires, and all other light uses associated with human activity after dusk. The Seashore is one of the few places on the Atlantic Coast where visitors can experience the magnificence of a dark night sky. The Seashore has been ranked, along with Cape Lookout National Seashore, as the 9<sup>th</sup> best place to view the night sky by the NPS Night Sky Program. ORV use at night has the potential to affect visitor experience of the "brilliance" of the night sky. In addition to visitors, animals are also impacted by lights at night. The stars, planets, and moon are visible during clear nights and influence many species of animals, such as birds that navigate by the stars or prey animals that reduce their activities during moonlit nights. Additionally, the phosphorescence of waves on dark nights helps sea turtle hatchlings orient to the ocean. Excessive artificial light has the potential to disorient turtle hatchlings and disrupt their crawl to the ocean. Pursuant to NPS Management Policy 4.10 (NPS 2006c), to prevent the loss of natural night skies, the NPS should minimize light that emanates from park facilities, and also seek the cooperation of park visitors, neighbors, and local government agencies to prevent or minimize the intrusion of artificial light into the night scene of the ecosystems of parks. Furthermore, the NPS will not use artificial lighting in areas such as sea turtle nesting locations where the presence of the artificial lighting could disrupt a park's dark-dependent natural resource components (NPS 2006c). Impacts of artificial light sources on animals will be discussed in chapters 3 and 4 under the threatened and endangered species, state-listed and sensitive species, and wildlife and wildlife habitat impact topics.

## **SOCIOECONOMICS**

Management or regulation of ORV use at the Seashore could impact the local economy by changing the demand for goods and services from ORV users in these communities. The eight villages located within the Seashore boundaries serve as access points to the Seashore for visitors, including ORV users. These villages receive economic benefit from the ORV users who take advantage of the goods and services these communities offer. The communities are concerned that if a permit system or other ORV restrictions are implemented that make it harder for ORV users to use the area, fewer tourists may come to the villages, resulting in impacts to the local economy.

Commercial fishermen currently have ORV access to areas that are closed to other ORV users because of safety reasons (i.e., narrow beach conditions), but they do not have access to areas closed for resource protection. On Ocracoke Island, two soundside access points have been identified for commercial use. Limits placed on ORV use at the Seashore may limit the activities of local commercial fishermen. Disrupting the ability of commercial fishermen to conduct business at the Seashore could negatively impact them.

## SEASHORE MANAGEMENT AND OPERATIONS

Accommodating recreational uses while protecting sensitive species requires a sufficient number of personnel and an adequate level of funding. Past anecdotal evidence suggested that the Seashore did not have enough personnel to properly enforce existing ORV management decisions. If operational requirements increase under the new ORV management plan, it would require an increased commitment of limited NPS resources (staff, money, time, and equipment).

## ISSUES CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS

The following issues were dismissed from further analysis.

**Geologic Resources:** ORV use may also impact the ocean beach at Cape Hatteras National Seashore by disturbing sand, compacting sand, creating ruts, and changing local topography. Studies have also shown that heavy ORV use could result in increased beach erosion (see the literature review in appendix A). However, the Seashore is part of a dynamic coastal barrier ecosystem, and visual effects of ORVs on ocean beaches can no longer be visible in a matter of hours due to daily tidal action, winds, rain, hurricanes, and other storm events. Although ORV use could impact geologic resources if ORVs are driven through dunes where there is no designated ramp, the use of ramps is strictly enforced and ORVs illegally cutting through dunes are rare occurrences at the Seashore, resulting in impacts that would be minor or less. ORV use can cause the collapse of beach escarpments and potentially affect sea turtle habitat. Ruts from ORV tires can also impact the behavior of piping plovers, and compaction of sand can impact invertebrate populations that are a food source for many of the shorebird species at the Seashore. However, these secondary impacts are addressed under the other impact topics in the plan/EIS including threatened or endangered species, state-listed and special status species, and wildlife and wildlife habitat. Therefore, the issue of geologic resources was not retained as an impact topic.

**Geohazards:** There are no known geohazards in the Seashore that would be affected by the implementation of an ORV management plan.

**Vegetation:** Numerous scientific studies have documented the impacts of ORV use on vegetation. However, because vegetation that exists near ORV use areas at the Seashore is almost exclusively wetland vegetation, impacts to vegetation were analyzed under the wetlands section in this plan/EIS. Potential impacts to the federally listed seabeach amaranth are addressed under the threatened and endangered species analysis in this document. Other vegetation that could be impacted from ORV use includes vegetation near the dunes, which functions to trap sand and facilitate natural dune building processes. All of the alternatives considered in this plan/EIS would include prohibitions from driving on the dunes, as well as mechanisms for establishing the ORV corridor so that any impacts to dune vegetation would be minimized. In addition, the plan/EIS would also include consultation and compliance under the *North Carolina Coastal Area Management Act (CAMA)*, which includes provisions for minimization of impacts to natural dunes. Given the alternative elements that minimize dune impacts, as well as the alternatives compliance with the CAMA, impacts to vegetation associated with dune processes would be expected to be negligible to minor and were not carried forward for detailed analysis in this document.

**Unique Ecosystems, Biosphere Reserves, World Heritage Sites:** There are no known biosphere reserves, World Heritage sites, or unique ecosystems listed in the Seashore; therefore, implementation of an ORV management plan would have no effect. The Seashore is classified as a Globally Important Bird Area and potential impacts to bird species are included for discussion in this document.

**Water Quality / Marine and Estuarine Resources:** ORV use has the potential to impact water quality at the Seashore due to fluids leaking from submerged vehicles or tire ruts altering natural drainage patterns. However, water quality impacts from submerged vehicles would not rise above the level of negligible as long as the vehicle was removed from the water in a timely fashion. Also, due to the ephemeral (temporary) nature of tire ruts in beach sand, they would not result in impacts to water quality. Therefore, this impact topic was dismissed from further analysis.

**Wildlife and Wildlife Habitat – Fish, Marine Mammals, and Mammals:** Essential fish habitat at the Seashore is located on the soundside in areas of submerged vegetation. As previously discussed, water quality impacts from ORV use would be negligible at most and would be associated primarily with vehicle use on the ocean side. Therefore, there would be no impacts to essential fish habitat and it is not addressed as an impact topic in this plan/EIS. Mammalian species at the Seashore include red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*), deer mice (*Peromyscus* spp.), white-tailed deer (*Odocoileus virginianus*), muskrat (*Ondatra zibethica*), nutria (*Myocastor coypus*), otter (*Lutra* spp.), mink (*Neovison vison*), and others. Impacts to mammals from ORV use and management would be expected to be negligible as most of these species do not use ORV routes and areas as habitat. The alternatives discussed in this ORV management plan do not involve the removal of mammalian predators. Any impacts to the potential for an increase of mammalian predators due to increased human activity are discussed as an indirect impact to wildlife species in chapter 4 of this document. Impacts associated with predator control efforts will be discussed in the Seashore's forthcoming Predator Control Program for Protected Species Management / Environmental Assessment and as a cumulative impact in chapter 4 of this document. Although harassment of resting or stranded marine mammals on the beach could occur from various park users, including those using ORVs, the plan will include measures to educate all visitors about marine mammal protection, resulting in negligible to minor impacts. For the reasons mentioned above, impacts to terrestrial and marine mammals were dismissed from further analysis in this document.

**Air Quality:** Currently, Cape Hatteras National Seashore is located in an area classified by the U.S. Environmental Protection Agency (EPA) as being in attainment for all six criteria air pollutants. Activities associated with ORV use (such as driving or idling engines) result in the emission of criteria air pollutants; the pollutants of most concern for this project include nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), and particulate matter (PM). For this reason, the NPS completed a modeling analysis to quantify the magnitude of annual emissions associated with ORV activities at Cape Hatteras National Seashore, and utilized these results to determine whether additional air quality modeling was necessary to estimate downwind pollutant concentrations and associated impacts.

Emission factor estimates were computed using the current EPA recommended model for mobile source emissions, the EPA-developed Mobile Source Emissions Model (MOBILE6), and ORV data specific to the Seashore. The results of this analysis show that for the current average vehicle use patterns on the Seashore, emissions of VOCs, NO<sub>x</sub> and PM are all individually below 5 tons per year (TPY). Emissions for these pollutants associated with the upper bound estimates for ORV use patterns (i.e., the highest estimates of observed ORV use anticipated to occur park-wide on an annual basis under any of the alternatives) are just above 5 TPY, but all below 7 TPY. Given these low annual emission levels, daily pollutant concentrations resulting from ORV use are anticipated to be extremely low. Accordingly, it was determined that implementation of the ORV management plan would result in negligible air quality impacts, and air quality was dismissed from further analysis and discussion. The MOBILE6 modeling results and report are available on the plan/EIS project website at <http://parkplanning.nps.gov/CAHA>.

**Prime Farmlands:** There are no designated prime farmland soils in the Seashore.

**Streamflow Characteristics:** Actions related to ORV management would not have an effect on streamflow characteristics. The proposed actions would not occur in any area that would impact streamflow.

**Introduce or Promote Non-Native Species:** While the potential for vehicles to bring non-native species to the Seashore occurs, only a small number of non-native species can live in the salt and wind of the seashore environment. Additionally, ORVs are prohibited from driving on vegetation at the Seashore. Therefore, the potential for spreading plants from one area of the Seashore to another by driving on Seashore vegetation is also very low. *Phragmites (Phragmites australis)*, a non-native plant species, is present at the Seashore, but is not likely to be transported by ORVs because its primary method of colonization is by rhizomes (underground root extensions) and not by seeds, which are prone to spreading by vehicle tires (Wisconsin DNR 2007). Therefore, because of the low potential for ORVs to promote non-native species in such a dynamic, salty environment, this topic was not carried forward for analysis in this EIS.

**Archeological Resources:** Archeological resources are the remains of past human activity and records documenting the scientific analysis of these remains. Archeological features are typically buried but may extend above ground; they are commonly associated with prehistoric peoples but may be products of more contemporary society (NPS 1998). Cape Hatteras National Seashore is rich in prehistoric and historic culture. The Outer Banks are rich with history of humankind's attempt to survive at the edge of the sea, and with accounts of dangerous storms, shipwrecks, and valiant rescue efforts. As of fiscal year 2007, the NPS Archeological Sites Management Information System listed 28 archeological sites within the Seashore, ranging from a single projectile point (spear, dart, or arrow tip), to cemeteries, to the Cape Hatteras Lighthouse Complex, as well as shipwrecks. The condition of almost all of the extant resources was listed as good (NPS 2007d).

None of the archeological remains associated with structures, such as lighthouse complexes, are in immediate danger of damage from ORVs because those areas are not frequented by ORV users. Other archeological sites, such as cemeteries, are on the soundside of the island and are also not in areas frequented by ORV users. Therefore, the impact to these types of sites is considered negligible.

Thousands of shipwrecks have occurred along the coast. As a result of the ongoing research, the North Carolina Office of State Archaeology (OSA) Underwater Archaeology Branch catalog lists 63 historic shipwreck remains on beaches at the Seashore as of January 2008 (OSA 2008). At this time, none of the shipwrecks within the boundaries of the Seashore are listed in the National Register of Historic Places (National Register). One shipwreck, the Laura A. Barnes on Bodie Island Beach, was considered eligible for the National Register until its recent destruction by beach erosion during Hurricane Isabel (Stover pers. comm. 2009).

Shipwrecks on the beach are the resources of most concern because many of these shipwreck sites are ephemeral; in other words, they are uncovered and covered by storms, winds, and tides. This makes it difficult for NPS to manage them. If visible, the location of the resource is marked and protected, but many times the sand will move again before this is possible. Once resources are covered, or partially covered, it is possible that they could be run over or hit by ORV users who are unable to see them under the sand. In addition to unintentional impacts on the Seashore's cultural resources, some resources have been knowingly disturbed and even destroyed. ORV access also allows visitors to reach a shipwreck and take portions of the shipwreck that would normally be too large or heavy to remove if on foot (Stover pers. comm. 2009). During inventories of the condition of known shipwreck locations over the past seven years, NPS has found that an average of 25 to 30 of the 63 known shipwrecks are constantly being damaged by natural and human forces (Stover pers. comm. 2008).

The impact from unintentional ORV damage or intentional vandalism may be measurable or perceptible, but it is localized within a relatively small area of the site. Therefore, impacts on shipwrecks are considered minor. In general, impacts do not affect the character-defining features of any listed or eligible National Register archeological site at the Seashore. Therefore, this topic was not carried forward for further analysis.

**Cultural Landscapes:** The NPS defines cultural landscapes as settings that humans have created in the natural world. They reveal fundamental ties between people and the land. They are special places: expressions of human manipulation and adaptation of the land. Although only one Cultural Landscape Report has been prepared for the Cape Hatteras Light Station (NPS 2003a), there are five cultural landscapes within the Seashore's official database: Bodie Island Light Station, Little Kinnakeet Life Saving Station, Cape Hatteras Light Station, Hatteras Weather Bureau Station, and Ocracoke Light Station (NPS 1997; Stover pers. comm. 2008). None of these cultural landscapes is in the areas of routine ORV use under any of the proposed action alternatives, and none should be impacted by the implementation of an ORV management plan. In addition, because the oceanside ORV use areas under all alternatives are close to one mile from the Cape Hatteras Light Station, there should be no cultural landscape viewshed impacts from the base or the top of the lighthouse resulting from ORV use (Stover pers. comm. 2008).

**Historic Structures and Districts:** According to Director's Order 28, structures are defined as material assemblies that extend the limits of human capability. In plain language, this means a constructed work, usually immovable by nature or design, consciously created to serve some human activity. Examples are buildings, monuments, dams, roads, railroad tracks, canals, millraces, bridges, tunnels, locomotives, nautical vessels, stockades, forts and associated earthworks, Indian mounds, ruins, fences, and outdoor sculpture. The Seashore contains 36 historic structures, 20 of which are in good condition (NPS 2007b). Structures at the Seashore range from cemeteries to entire complexes. For example, three historic U.S. Life Saving Service stations still stand at Chicamacomico, Little Kinnakeet, and Bodie Island. The Hatteras Weather Bureau Station and Ocracoke Light Station are listed in the National Register. The Bodie Island Light Station, Bodie Island Lifesaving/Coast Guard Station, and Cape Hatteras Light Station are listed in the National Register as historic districts. In general, ORV use does not occur in the areas surrounding standing structures, because structures are located off the beach in the dunes or on the soundside of the Seashore. There are two tower concrete pad foundations (not standing structures). One is at Cape Point and the other is near Frisco Bath House. Only the foundation at Cape Point is in an area of ORV use but it is often buried and only becomes visible when the sands shift. Neither of these foundations is in danger of impact from ORVs.

**Ethnographic Resources:** An ethnographic study for the Seashore was completed in late 2005 (Impact Assessment, Inc. 2005). The study looked at the eight villages in the Seashore that reflect the nearly 300-year history and culture of the Outer Banks to support the Seashore in interpretation of its cultural resources, stewardship of ethnographic resources, and community relations with the villages. Archival/documentary research and ethnographic fieldwork was completed as part of the study to further socio-cultural understanding of the villages adjoining the Seashore. The villages contain a mix of populations that have evolved from the original British settlers, European seafarers, farmers, and other more recent migrants to the Outer Banks. No discrete, continuous ethnic groups or traditionally associated peoples (NPS *Management Policies 2006*, chapter 5) are documented for the Seashore; therefore, no ethnographic resources (NPS *Management Policies 2006*) would be impacted by the implementation of an ORV management plan.

In 2008, the Cape Hatteras Preservation Alliance submitted a request to the North Carolina Department of Cultural Resources (NCDCCR), State Historic Preservation Officer (SHPO) for Bodie Island Spit and adjoining beaches, Cape Point and adjoining beaches, Hatteras Inlet and adjoining beaches, and South

Point Ocracoke and adjoining beaches to be recognized as Traditional Cultural Properties (TCPs), eligible for inclusion in the National Register. The NCDCCR/SHPO responded to this request in a letter dated June 2, 2009, stating that a significance ascribed to a property in only the last 50 years cannot be considered traditional, and that the application focused on the past 50 years. The NCDCCR/SHPO also stated that in order to make the case that the sites qualify as TCPs worthy of preservation, documentation must be presented to substantiate the community's historically rooted beliefs, customs, and practices as they relate to recreational fishing and identify the "living community of people" who have established a pattern of land use reflected in the cultural traditions valued by its long-term residents. Further, documentation must show that the four sites are the specific places that played a significant role in the community's historically rooted beliefs, customs, and practices and that those beliefs, customs, and practices are integral to the community's cultural identity. The letter pointed out that most of the application's text appeared to focus on the past 50 years when recreational fishing at the sites has almost completely supplanted commercial fishing, a long-established practice (although not necessarily a traditional cultural practice as interpreted by the NPS) and the application provided no historical documentation to establish that recreational fishing practices of the past 50 years have a direct relationship and continuity with the traditional beliefs, customs, or practices associated with historical commercial fishing patterns on the Outer Banks. The NCDCCR/SHPO concluded that, based on the limited information in the application, there appears to be little if any justification that the properties qualify as TCPs.

The NPS concurs with this analysis, and has not found or been presented either with sufficient evidence that Outer Banks communities have cultural practices and beliefs associated with specific beaches or with a sufficient demonstration of an association with cultural practices and beliefs that are integral to the continuing cultural identity of any community. On October 21, 2009, the NPS further replied to this request stating that there is not sufficient evidence as to whether there are Outer Banks communities that have cultural practices and beliefs associated with specific beaches or sufficient information demonstrating an association between any community's cultural practices and beliefs that are integral to the continuing cultural identity of that community. Following an additional review, NPS determined the areas ineligible and provided its determination to the NCDCCR/SHPO, and the NCDCCR/SHPO offered no opinion. Because no TCPs were found to exist at the Seashore, this topic was not carried forward for analysis.

**Museum Collections:** Museum objects are manifestations and records of behavior and ideas that span the breadth of human experience and depth of natural history. The Seashore has collections of artifacts on display at the Cape Hatteras Lighthouse and at each visitor center. The official Seashore archives and artifact collections are housed at Fort Raleigh National Historic Site at Manteo. These various collections are not located on the ocean or soundside beaches and would not be impacted by implementation of an ORV management plan. Therefore this topic was not carried forward for further analysis.

**Indian Trust Resources.** The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights. No Indian trust resources have been identified for Cape Hatteras National Seashore. Therefore, this impact topic is eliminated from further consideration.

**Sacred Sites.** Of the federally acknowledged tribes recognized pursuant to Public Law 103-454, 108 Statute 4791, the Tuscarora Nation is the only tribe affiliated with the Seashore. NPS is not aware of any historic properties that may be of religious and cultural significance to the Tuscarora Nation that would potentially be affected by the management alternatives described in the draft plan/EIS. The Seashore has consulted with the Tuscarora Nation about the ORV management draft plan/EIS, and the Tuscarora Nation has not informed the Seashore of sacred sites or other historic properties of religious or cultural significance to them which would be potentially affected. Therefore, the topic of sacred sites has been dismissed from further consideration.



**Environmental Justice:** On February 11, 1994, the President of the United States issued Executive Order 12898: Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. The executive order is designed to focus the attention of federal agencies on the human health and environmental conditions in minority communities and low-income communities. Environmental justice analyses are performed to identify the disproportionate effects of high and adverse environmental or health impacts from proposed federal actions on minority or low-income populations, and to identify alternatives that could mitigate these impacts.

Data from the U.S. Department of Commerce 2000 Census of Population and Housing (U.S. Census Bureau 2008) identify minority populations as Black or African American; American Indian and Alaska Native; Asian; Native Hawaiian and other Pacific Islander; of some other race; of two or more races; and Hispanic or Latino. Poverty status, used in this plan/EIS to define low-income status, is reported as the number of persons with income below poverty level. The 2000 Census defines the poverty level as an annual income of \$8,794, or less, for an individual and an annual income of \$17,603, or less, for a family of four.

Dare and Hyde counties in North Carolina had a population of 35,793 in the year 2000, of whom 4,185 people (12%) were minorities and 3,271 (9%) were living below poverty level. People of Hispanic or Latino origin composed 787 (2%) of the total population; 2,854 (8%) were Black or African American; 107 (0.3%) were American Indian or Alaskan Native; 143 (0.4%) were Asian; 0 were Native Hawaiian or other Pacific Islander; 317 (0.8%) were of some other race; and 347 (0.9%) were of two or more races. It should be noted that persons of Hispanic or Latino origin may be of any race. The only village at the Seashore that is a Census Designated Place is Ocracoke Village. Ocracoke had a population of 769 in the year 2000, of whom 30 (3.9%) were minorities and 68 (9.3%) were living below poverty level.

The census block group containing the villages of Rodanthe, Waves, Salvo, and Avon had a population of 1,600 in the year 2000, of whom 55 people (3%) were minorities and approximately 11% were living below the poverty level. The census block group containing Hatteras Village had a population of 709 in the year 2000, of whom four people were minorities and approximately 3% were living below the poverty level. The census block group containing the villages of Buxton and Frisco had a population of 1,692 in the year 2000, of whom 24 were minorities and approximately 5% were living below the poverty level.

The data for the counties and the areas containing the villages indicate poverty rates that are lower than the national and state average of 12% in the year 2000. None of the minority populations in the area of the Seashore were above the state or national averages for those populations (U.S. Census Bureau 2008). Therefore, based on the definitions provided in the executive order for minority or low-income populations, there are no such populations that would be disproportionately impacted by the implementation of this plan/EIS.

**Energy Resources:** This topic involves assessing energy requirements and the potential for energy conservation associated with the various alternatives, but is most relevant to facility construction projects. The majority of ORV use at the Seashore involves gaining access to fishing areas, where vehicles are then turned off once the desired fishing spot is reached. Because vehicular access to the beach would be maintained under this plan/EIS at current or reduced levels, there would only be negligible impacts on energy resources, as public fuel consumption would not change to a large degree as a result of the implementation of this plan. However, due to differences in management intensity among the alternatives, there would be differences in energy (fuel) consumption from implementation of the ORV management plan. The Seashore would continue to operate under the wise energy use guidelines and requirements stated in the NPS 2006 Management Policies, Executive Order 13123 (Greening the Government Through Effective Energy Management), Executive Order 13031 (Federal Alternative Fueled Vehicle

Leadership), Executive Order 13149 (Greening the Government Through Federal Fleet and Transportation Efficiency), and the 1993 NPS Guiding Principles of Sustainable Design.

**Green House Gas Emissions and Climate Change:** There is strong evidence linking global climate change to human activities, especially greenhouse gas emissions associated with the burning of fossil fuels (IPCC 2007). Some of the activities associated with ORV management and use would result in fossil fuel consumption, for example, vehicular trips by Seashore personnel conducting monitoring and management activities such as erecting, moving, or removing species closures; marking ORV corridors; and law enforcement patrol and response in ORV areas would consume fossil fuels. Equipment used to construct and maintain ramps, interdunal roads, and parking areas would also consume fossil fuels. Additionally visitors driving ORVs on the Seashore beaches would result in fossil fuel consumption and release of greenhouse gas emissions. However, greenhouse gas emissions associated with the plan would be negligible in comparison to local, regional, and national greenhouse gas emissions. Therefore, the issue of the contribution of ORV management and use activities to climate change through greenhouse gas emissions was dismissed from further analysis.

**Urban Quality, Gateway Communities:** A gateway community is defined by the NPS *Management Policies 2006* as a community that exists in close proximity to a unit of the national park system whose residents and elected officials are often affected by the decisions made in the course of managing the park. Because of this, there are shared interests and concerns regarding decisions. Gateway communities usually offer food, lodging, and other services to park visitors. They also provide opportunities for employee housing and a convenient location to purchase goods and services essential to park administration. The communities within and adjacent to the Seashore would fall under this definition, and the issues and interests that would be impacted by this plan are addressed under the Socioeconomics impact topic.

**Paleontological Resources:** No paleontological resources are located within the Seashore that would be impacted by ORV use; therefore, paleontological resources would not be impacted by implementation of an ORV management plan.

**Health and Safety:** Large numbers of vehicles and pedestrians use many of the same Seashore beaches at the same time, increasing the potential for visitor use conflicts and safety issues. Health and safety issues related to ORV use are discussed under the Visitor Use topic.

**Topography and Soils:** Issues related to topography and soils include impacts to the sand and beach environment, which are discussed above under geologic resources. Since no other impacts would occur to soils or topographic conditions, these were not included as separate impact topics.

## **FEDERAL LAWS, POLICIES, REGULATIONS AND PLANS DIRECTLY RELATED TO OFF-ROAD VEHICLE MANAGEMENT**

### **Executive Order 11644: Use of Off-Road Vehicles on the Public Lands**

On February 8, 1972, President Richard Nixon issued Executive Order 11644 to “establish policies and provide for procedures that will ensure the use of ORVs on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.”

The executive order directs agencies to develop and issue regulations and administrative instructions to designate the specific areas and trails on public lands on which ORV use may be permitted, and areas in which ORV use may not be permitted. The location of areas and trails shall:

- minimize damage to soil, watershed, vegetation, or other resources of the public lands;
- minimize harassment of wildlife or significant disruption of wildlife habitats;
- minimize conflicts between ORV use and other existing or proposed recreational uses of the same on neighboring public lands, and ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors; and
- not be located in officially designated wilderness areas or primitive areas and shall be located in areas of the national park system, natural areas, or national wildlife refuges and game ranges only if the respective agency head determines that ORV use in such locations will not adversely affect their natural, aesthetic, or scenic values.

#### **Executive Order 11989: Off-Road Vehicles on Public Lands**

This executive order, issued on May 24, 1977, by President Jimmy Carter, directs agencies to immediately close off-road areas or trails when it is determined that the use of ORVs is causing or will cause considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources to the type of ORV causing such effects, until such time as determined that such adverse effects have been eliminated and measures have been implemented to prevent future recurrence. Also included in the executive order is the authority to adopt the policy that portions of the public lands under an agency's jurisdiction shall be closed to use by ORVs except those areas or trails that are suitable and specifically designated as open to such use.

#### **Code of Federal Regulations, Title 36, Section 4.10: Travel on Park Roads and Designated Routes**

This CFR section states, "operating a motor vehicle is prohibited except on park roads, in parking areas and on routes and areas designated for off-road motor vehicle use." Additionally, routes and areas designated for ORV use shall be promulgated as special regulations, with designations complying with Executive Order 11644 and 36 CFR 4.10. Routes and areas may be designated only in national recreation areas, national seashores, national lakeshores, and national preserves. As a result of the plan/EIS and special regulation, the Seashore will be in compliance with this regulation.

### **OTHER APPLICABLE FEDERAL LAWS, POLICIES, REGULATIONS AND PLANS**

This plan/EIS must conform to the following federal laws, policies, regulations, and plans described in this section. Although some of the following documents may not be directly related to ORV management, they are relevant to issues at the Seashore that may be indirectly influenced by or associated with ORV use.

#### **Code of Federal Regulations, Title 36**

Title 36, chapter 1, provides the regulations "for the proper use, management, government, and protection of persons, property, and natural and cultural resources within areas under the jurisdiction of the National Park Service." These regulations are utilized to fulfill the statutory purposes of the units of the national park system: to conserve scenery, natural and historical objects, and wildlife, and to provide for the

enjoyment of those resources in a manner that will leave them unimpaired for the enjoyment of future generations. Part 2 of these regulations establishes resource protection, public use, and recreation regulations applicable to public use of units of the national park system. Part 4 of these regulations establishes vehicle and traffic safety regulations applicable to areas within a park that are open to public traffic, which under this plan/EIS will include designated ORV routes.

### **Coastal Zone Management Act, 1966**

The *Coastal Zone Management Act* (CZMA) (16 USC 1451 et seq.) seeks to preserve and protect coastal resources. Through the CZMA, states are encouraged to develop coastal zone management programs (CZMPs) to allow economic growth that is compatible with the protection of natural resources, the reduction of coastal hazards, the improvement of water quality, and sensible coastal development. The CZMA provides financial and technical incentives for coastal states to manage their coastal zones in a manner consistent with CZMA standards and goals. CZMA Section 307 states, “Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.”

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*The Coastal Zone Management Act (CZMA) seeks to preserve and protect coastal resources.*

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The CAMA (G.S. 113A) established the state’s cooperative program of coastal area management, including unified policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance. This Act established the Coastal Resources Advisory Council and North Carolina Coastal Resources Commission, under the state’s Department of Environment and Natural Resources (NCDENR). The NCDENR Division of Coastal Management uses the rules and policies of the North Carolina Coastal Resources Commission to protect, conserve, and manage North Carolina’s coastal resources through an integrated program of planning, permitting, education, and research. These activities are carried out through the state’s responsibilities under the CAMA, the North Carolina Dredge and Fill Law (G.S. 113-229), and the federal CZMA in the 20 coastal counties. The CAMA program was federally approved in 1978 and is the state’s CZMP under the CZMA. Localities are responsible for planning while the state establishes areas of environmental concern. A project must obtain a CAMA permit if it:

- is in one of the 20 counties covered by the Act (including Dare and Hyde counties),
- is considered “development” under the Act,
- is in or affects an area of environmental concern (AEC), and
- does not qualify for an exemption.

As a part of this program, the Coastal Resources Commission designated “areas of environmental concern” in the 20 coastal counties and set rules for managing development in these areas. An AEC is an area of natural importance that may be easily destroyed by erosion or flooding or that may have environmental, social, economic, or aesthetic values that make it valuable to North Carolina. At least 90 days prior to taking action, NPS would provide a consistency determination stating how the plan/EIS is, to the maximum extent practicable, consistent with the enforceable policies of the CAMA.

### **Endangered Species Act of 1973, as Amended**

The 1973 ESA provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. Section 7 of this Act requires all federal agencies to consult

with the Secretary of the Interior on all projects and proposals with the potential to impact federally endangered or threatened plants and animals. It also requires federal agencies to use their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species. Federal agencies are also responsible for ensuring that any action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat. Section 9 of the Act makes it unlawful for a person to “take” a listed animal without a permit. The term “take” is defined in the Act as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct.” Through regulations, the term “harm” is defined as “an act which actually kills or injures wildlife. Such an Act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.” Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on federal land. The Act also imposes civil and criminal penalties for violations of any provisions of the Act.

### **Critical Habitat Designation for Piping Plovers**

Under the authority of Section 4 of the ESA, the USFWS must, to the maximum extent prudent and determinable, designate critical habitat for protected species. “Critical habitat” refers to (1) specific geographic areas occupied by the species at the time it is listed as threatened or endangered that contain features essential for the conservation of a threatened or endangered the species and that may require special management or protection; and (2) areas outside the areas occupied by the species at the time it is listed that are nonetheless determined to be essential to the conservation of the species. On October 21, 2008 (73 FR 62816), the USFWS published a revised designation for the following areas as critical habitat for the wintering population of the piping plover in the Seashore: (1) Unit NC-1, Oregon Inlet; (2) Unit NC-2, Cape Hatteras Point; (3) Unit NC-4, Hatteras Inlet; and (4) Unit NC-5, Ocracoke Island. Unit NC-1 is approximately 5 miles long, and consists of about 485 acres of sandy beach and inlet spit habitat on Bodie Island and Pea Island. Unit NC-2 comprises 646 acres and extends south approximately 2.8 miles from the ocean groin near the old location of the Cape Hatteras Lighthouse to the point of Cape Hatteras, and then extends west 4.7 miles along South Beach to the edge of ramp 49 near the Frisco campground. Unit NC-4 is approximately 5 miles long and consists of 410 acres of sandy beach and inlet spit habitat on the western end of Hatteras Island and the eastern end of Ocracoke Island. Unit NC-5 consists of 502 acres on the western portion of Ocracoke Island beginning at the beach access point at the edge of ramp 72 (South Point Road), extending west approximately 2.1 miles to Ocracoke Inlet, and then back east on the Pamlico Sound side. On February 6, 2009, Cape Hatteras Access Preservation Alliance and Dare and Hyde Counties, North Carolina filed a legal challenge to the revised designation. On August 18, 2010, a U.S. District Court granted the government’s motion for summary judgment and dismissed the case with prejudice, and the critical habitat designation for these four units remains in effect. Under Section 7(a)(2) of the ESA, if a federal action may affect a listed species or its critical habitat, the responsible federal agency must enter into consultation with the USFWS to ensure that the affected critical habitat would remain functional to serve its intended conservation role for the species.

### **Antideficiency Act**

The *Antideficiency Act* is a series of statutes (originating from 16 Stat. 251 in 1870) that prohibit federal managers from making or authorizing expenditures in excess of the amount available to them from appropriations or other funds, unless authorized by law. Based on this, the plan/EIS created must be able to be implemented through expected funding sources.

### **Marine Mammal Protection Act, 1972**

The *Marine Mammal Protection Act* (MMPA) prohibits, with certain exceptions, the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. The MMPA defines “take” as “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.” It defines harassment as “any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild; or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.” The MMPA recognizes that some marine mammal species or stocks may be in danger of extinction or depletion as a result of human activities, and that these species or stocks must not be permitted to be depleted. The MMPA, as amended in 1994, provides for certain exceptions to the take prohibitions, such as Alaska Native subsistence and permits and authorizations for scientific research; a program to authorize and control the taking of marine mammals incidental to commercial fishing operations; preparation of stock assessments for all marine mammal stocks in waters under U.S. jurisdiction; and studies of pinniped-fishery interactions.

This Act is relevant to this plan/EIS in two ways. ORVs are often used to respond to stranded marine mammals, and can be essential for quick and humane response. These actions are coordinated by the National Oceanic and Atmospheric Administration (NOAA) and/or the Seashore with government vehicles, and are considered beneficial for the protection and management of marine mammals on the Seashore. ORVs also have the potential to impact resting or stranded marine mammals due to the fact that ORVs facilitate access to and increase visitor presence in relatively remote sections of the beach, which could bring people and vehicles into direct, short-term contact with resting or stranded marine mammals. This increases the potential for resting or stranded marine mammals to be disturbed or harassed. For example, harassment of resting seals has been documented numerous times on the Seashore, and ORVs would most likely continue to contribute to this as the area’s winter seal population continues to increase.

### **Migratory Bird Treaty Act of 1918 and Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds**

Migratory birds are of great ecological and economic value to this country and to other countries. They contribute to biological diversity and bring tremendous enjoyment to millions of people who study, watch, feed, or hunt these birds throughout the United States and other countries. The United States has recognized the critical importance of this shared resource by ratifying international, bilateral conventions for the conservation of migratory birds. These migratory bird conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats, and through the MBTA, the United States has implemented these migratory bird conventions with respect to the United States. Executive Order 13186 directs executive departments and agencies to take certain actions to further implement the MBTA. The MBTA implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under this Act, it is prohibited, unless permitted by regulations, to “pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention...for the protection of migratory birds...or any part, nest, or egg of any such bird” (16 USC 703). Subject to limitations in the Act, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

### **National Environmental Policy Act, 1969, as Amended**

NEPA is implemented through regulations of the Council on Environmental Quality (CEQ) (40 CFR 1500–1508). The NPS has in turn adopted procedures to comply with NEPA and the CEQ regulations, as found in Director’s Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making, and its accompanying handbook (NPS 2001a). Section 102 (2)(C) of NEPA requires that an EIS be prepared for proposed major federal actions that may significantly affect the quality of the human environment.

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the human  
environment.*

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### **National Historic Preservation Act of 1966, as Amended**

Section 106 of this Act requires federal agencies to consider the effects of their undertakings on properties listed or potentially eligible for listing on the National Register of Historic Places. All actions affecting the Seashore’s historic, archaeological, and cultural resources must comply with this legislation. For this plan/EIS, compliance with Section 106 is being combined with NEPA compliance.

### **National Parks Omnibus Management Act of 1998**

Both the *National Parks Omnibus Management Act of 1998* (NPOMA) (16 USC 5901 et seq.) and NEPA are fundamental to NPS park management decisions. Both acts provide direction for articulating and connecting the ultimate resource management decision to the analysis of impacts, using appropriate technical and scientific information. Both also recognize that such data may not be readily available and provide options for resource impact analysis in this case.

### **NPS Organic Act, as Amended**

By enacting the *Organic Act of 1916*, Congress directed the U.S. Department of the Interior and NPS to manage units of the national park system “to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (16 USC 1). The 1978 *Redwood Amendment* reiterates this mandate by stating that the NPS must conduct its actions in a manner that will ensure no “derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress” (16 USC 1 a-1). Congress intended the language of the *Redwood Amendment* to reiterate the provisions of the *Organic Act*, not to create a substantively different management standard. The House Committee report described the *Redwood Amendment* as a “declaration by Congress” that the promotion and regulation of the national park system is to be consistent with the *Organic Act*. The Senate Committee report stated that under the *Redwood Amendment*, “The Secretary has an absolute duty, which is not to be compromised, to fulfill the mandate of the 1916 Act to take whatever actions and seek whatever relief as will safeguard the units of the national park system.” Although the *Organic Act* and the *Redwood Amendment* use different wording (“unimpaired” and “derogation”) to describe what the NPS must avoid, both acts define a single standard for the management of the national park system—not two different standards. For simplicity, NPS *Management Policies 2006* uses “impairment,” not both statutory phrases, to refer to that single standard.

Despite these mandates, the *Organic Act* and its amendments afford the NPS latitude when making resource decisions to allow appropriate visitor use while preserving resources. By these acts Congress “empowered [the NPS] with the authority to determine what uses of park resources are proper and what

proportion of the park's resources are available for each use" (*Bicycle Trails Council of Marin v. Babbitt*, 82 F.3d 1445, 1453 [9th Cir. 1996]).

Courts consistently interpret the *Organic Act* and its amendments to elevate resource conservation above visitor recreation. *Michigan United Conservation Clubs v. Lujan*, 949 F.2d 202, 206 (6<sup>th</sup> Cir. 1991) states: "Congress placed specific emphasis on conservation." The court in *National Rifle Association of America v. Potter*, says "in the *Organic Act* Congress speaks of but a single purpose, namely, conservation." The *NPS Management Policies 2006* also recognize that resource conservation takes precedence over visitor recreation. The policy dictates: "when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant" (NPS 2006c, sec. 1.4.3, 10). This policy has been further reiterated in a recent court ruling on the Yellowstone Winter Use Plan/EIS (*National Parks Conservation Association v. National Park Service* – No. 07-2112) that states,

The *Organic Act* charges the NPS with the duty to provide for the enjoyment: of the parks' resources and values in "such manner and by such means as will leave them unimpaired for the enjoyment of future generations" 16 U.S.C. Section 1. This is not blanket permission to have fun in the parks in any way the NPS sees fit. As Plaintiffs articulated at the hearing, the "enjoyment" referenced in the *Organic Act* is not enjoyment for its own sake, or even enjoyment of the parks generally, but rather the enjoyment of "the scenery and natural and historic objects and the wild life" in the parks in a manner that will allow future generations to enjoy them as well.

Because conservation remains predominant, the NPS seeks to avoid or to minimize adverse impacts on park resources and values. Yet, the NPS has discretion to allow negative impacts when necessary (NPS 2006c, sec. 1.4.3, 10). While some actions and activities cause impacts, the NPS cannot allow an adverse impact that constitutes resource impairment (NPS 2006c, sec. 1.4.3, 10). Specifically, *NPS Management Policies 2006*, section 1.4.3.1 states: "In the administration of authorized uses, park managers have the discretionary authority to allow and manage the use, provided that the use will not cause impairment or unacceptable impacts." The *Organic Act* prohibits actions that permanently impair park resources unless a law directly and specifically allows for the action (16 USC 1a-1). An action constitutes "an impairment" when its impacts "harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values" (NPS 2006c, sec. 1.4.5, 11). To determine impairment, the NPS must evaluate "the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts" (NPS 2006c, sec. 1.4.5, 11).

Park managers must also not allow uses that would cause unacceptable impacts (NPS 2006c, sec. 1.4.7, 12) These are impacts that fall short of impairment, but are still not acceptable within a particular park's environment. For the purposes of these policies, unacceptable impacts are impacts that, individually or cumulatively, would

- be inconsistent with a park's purposes or values, or
- impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values, or



- unreasonably interfere with
  - park programs or activities, or
  - an appropriate use, or
  - the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park, or
  - NPS concessioner or contractor operations or services.

Because park units vary based on their enabling legislation, natural resources, cultural resources, and missions, management activities appropriate for each unit, and for areas in each unit, vary as well. An action appropriate in one unit could impair or cause unacceptable impacts to resources in another unit. Since publication of the DEIS in March 2010, the NPS has issued Interim Guidance for Impairment Determinations in NPS NEPA documents (NPS 2010h). Consistent with the Interim Guidance, a draft plan/EIS written impairment determination only for the preferred alternative is included in appendix E of this final plan/EIS, and the impact analysis for the no-action alternative A in the final/plan EIS discusses the potential of alternative A to result in impairment to sea turtles, common tern, gull-billed tern, and black skimmer.

#### **Executive Order 11990: Protection of Wetlands**

This executive order directs federal agencies to avoid, to the extent possible, the long-term and short-term adverse impacts associated with the destruction or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

#### **Executive Order 11988: Floodplain Management**

This executive order directs federal agencies to avoid, to the extent possible, the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

#### **NPS Management Policies 2006**

NPS *Management Policies 2006* address management of ORVs in section 8.2.3.1, Off-Road Vehicle Use. This section states (NPS 2006c):

Off-road motor vehicle use in national park units is governed by Executive Order 11644 (*Use of Off-Road Vehicles on the Public Lands*, as amended by Executive Order 11989), which defines off-road vehicles as “any motorized vehicle designed for or capable of cross-country travel on or immediately over, land, water, sand, snow, ice, marsh, swampland, or other natural terrain” (except any registered motorboat or any vehicle used for emergency purposes). Unless otherwise provided by statute, any time there is a proposal to allow a motor vehicle meeting this description to be used in a park, the provisions of the executive order must be applied.

In accordance with 36 CFR 4.10(b), routes and areas may be designated only in national recreation areas, national seashores, national lakeshores, and national preserves, and only by special regulation. In accordance with the executive order, they may be allowed only in locations where there will be no adverse impacts on the area’s natural, cultural, scenic, and esthetic values, and in consideration of other existing or proposed recreational uses.

The criteria for new uses, appropriate uses, and unacceptable impacts listed in sections 8.1 and 8.2 must also be applied to determine whether off-road vehicle use may be allowed. As required by the executive order and the *Organic Act*, superintendents must immediately close a designated off-road vehicle route whenever the use is causing, or will cause, unacceptable impacts on the soil, vegetation, wildlife, wildlife habitat, or cultural and historic resources.

NPS administrative off-road motor vehicle use will be limited to what is necessary to manage the public use of designated off-road vehicle routes and areas; to conduct emergency operations; and to accomplish essential maintenance, construction, and resource protection activities that cannot be accomplished reasonably by other means.

Management policies relating to resource protection also were considered in developing this plan/EIS. For example, NPS *Management Policies 2006* instructs park units to maintain, as parts of the natural ecosystems of parks, all plants and animals native to park ecosystems, in part by minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them (NPS 2006c, sec. 4.4.1).

NPS *Management Policies 2006* directs park units to determine all management actions for the protection and perpetuation of federally, state, or locally listed species through the park management planning process, and to include consultation with lead federal and state agencies as appropriate. Section 4.4.2.3, Management of Threatened or Endangered Plants and Animals, specifically states:

The NPS will survey for, protect, and strive to recover all species native to national park system units that are listed under the *Endangered Species Act*. The NPS will fully meet its obligations under the *Organic Act* and the *Endangered Species Act* to both proactively conserve listed species and prevent detrimental effects on these species. To meet these obligations, the NPS will:

- Cooperate with both the USFWS and the National Marine Fisheries Service (NMFS) to ensure that NPS actions comply with both the written requirements and the spirit of the *Endangered Species Act*. This cooperation should include the full range of activities associated with the *Endangered Species Act*, including consultation, conferencing, informal discussions, and securing of all necessary scientific and/or recovery permits.
- Undertake active management programs to inventory, monitor, restore, and maintain listed species' habitats; control detrimental non-native species; control detrimental visitor access; and re-establish extirpated populations as necessary to maintain the species and the habitats upon which they depend.
- Manage designated critical habitat, essential habitat, and recovery areas to maintain and enhance their value for the recovery of threatened and endangered species.
- Cooperate with other agencies to ensure that the delineation of critical habitat, essential habitat, and/or recovery areas on park-managed lands provides needed conservation benefits to the total recovery efforts being conducted by all the participating agencies.
- Participate in the recovery planning process, including the provision of members on recovery teams and recovery implementation teams where appropriate.

- Cooperate with other agencies, states, and private entities to promote candidate conservation agreements aimed at precluding the need to list species.
- Conduct actions and allocate funding to address endangered, threatened, proposed, and candidate species.

Section 4.4.2.3 of the *NPS Management Policies 2006* also states, “NPS will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species, to the greatest extent possible. In addition, the Service will inventory other native species that are of special management concern to parks (such as rare, declining, sensitive, or unique species and their habitats) and will manage them to maintain their natural distribution and abundance” (NPS 2006c, sec. 4.4.2.3).

### **Cape Hatteras National Seashore Enabling Legislation, 1937**

This legislation was an act of Congress that provided for the authorization of the Cape Hatteras National Seashore. Section 3 of the Seashore’s enabling legislation (the Act) states, “the administration, protection, and development of the aforesaid national seashore shall be exercised under the direction of the Secretary of the Interior by the National Park Service, subject to the provisions of the Act of August 25, 1916 (39 Stat. 535),” which is more commonly known as the *Organic Act*. Section 3 continues by stating, “that the legal residents of villages...shall have a right to earn a livelihood by fishing within the boundaries to be designated by the Secretary of the Interior, subject to such rules and regulations as the said Secretary may deem necessary in order to protect the area for recreational use as provided for in this Act.” Section 4 of this legislation states, “Except for certain portions of the area, deemed to be especially adaptable for recreational uses, particularly swimming, boating, sailing, fishing, and other recreational activities of similar nature, which shall be developed for such uses as needed, the said areas shall be permanently reserved as a primitive wilderness and no development of the project or plan for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing in this area.”

### **Code of Federal Regulations Title 36, Section 7.58, Commercial Fishing**

Section 7.58 contains the regulations governing commercial fishing at the Seashore. This section includes details on the requirements for commercial fishing permits, sport fishing zones, beach sanitation, and conservation of aquatic life.

### **Code of Federal Regulations Title 36, Section 2.2, Wildlife Protection**

Section 2.2 address the protection of wildlife at the Seashore and prohibits the following: the taking of wildlife, except by authorized hunting and trapping activities conducted in accordance with paragraph (b) of Section 2.2; the feeding, touching, teasing, frightening or intentional disturbing of wildlife nesting, breeding or other activities; and possessing unlawfully taken wildlife or portions thereof.

### **NPS Director’s Order 12: Conservation Planning, Environmental Impact Analysis, and Decision Making and Handbook**

Director’s Order 12 and its accompanying handbook (NPS 2001a) lay the groundwork for how the NPS complies with NEPA. Director’s Order 12 and handbook set forth a planning process for incorporating scientific and technical information and establishing a solid administrative record for NPS projects.

Director’s Order 12 requires that impacts to park resources be analyzed in terms of their context, duration, and intensity. It is crucial for the public and decision makers to understand the implications of those

impacts in the short and long term, cumulatively, and within context, based on an understanding and interpretation by resource professionals and specialists.

### **NPS Director’s Order 28: Cultural Resource Management**

Director’s Order 28 sets forth the guidelines for management of cultural resources, including cultural landscapes, archeological resources, historic and prehistoric structures, museum objects, and ethnographic resources. This order calls for the NPS to protect and manage cultural resources in its custody through effective research, planning, and stewardship in accordance with the policies and principles contained in the *NPS Management Policies 2006*.

### **NPS Director’s Order 77: Natural Resource Protection**

Director’s Order 77 addresses natural resource protection, with specific guidance provided in Reference Manual 77: Natural Resource Management. Natural Resource Management Reference Manual 77 offers comprehensive guidance to NPS employees responsible for managing, conserving, and protecting the natural resources found in National Park System units. The Reference Manual serves as the primary guidance on natural resource management in units of the National Park System. Reference Manual chapters that are particularly relevant to this plan/EIS include endangered, threatened, and rare species management; geologic resources management; native animal management; shoreline management; vegetation management; special use permitting; wetland protection (Director’s Order 77-1); and floodplain management (Director’s Order 77-2).

## **RELATIONSHIP TO OTHER CAPE HATTERAS NATIONAL SEASHORE PLANNING DOCUMENTS, POLICIES AND ACTIONS**

The following plans, policies, and actions occurring at the Seashore were considered during the development of this plan/EIS.

### **Past Off-Road Vehicle Planning Efforts**

As described under “Summary of Off-Road Vehicle Use and Management at Cape Hatteras National Seashore” earlier in this chapter, the Seashore has engaged in various ORV management activities since it was established. All of these past planning efforts were taken into consideration during the development of this plan/EIS.

### **General Management Plan**

The 1984 General Management Plan / Development Concept Plan / Environmental Assessment for Cape Hatteras National Seashore was developed to guide the preservation, use, development, and operation of the Seashore for a 5- to 10-year period. The relationship of the General Management Plan to ORV use at the Seashore is described in greater detail under “Summary of Off-Road Vehicle Use and Management at Cape Hatteras National Seashore” earlier in this chapter.

### **Resource Management Plan**

The 1997 resource management plan states that the use of ORVs at the Seashore is a matter of growing controversy, and impacts from these vehicles on natural resources and pedestrian visitors are informally monitored on a continual basis. The plan noted, but did not cite, a study examining the effects of human-related disturbances, including vehicles, on migrating shorebirds and waterbirds, and stated that more detailed studies would be required to establish effective ORV management.

### **Visitor Services Project Report**

The visitor services project report, or the Outer Banks Group Parks Visitor Study Cape Hatteras National Seashore Visitors, resulted from a visitor study conducted at the Seashore July 12 through 18, 2002. The study found that the most popular activities for current and past visitors were sunbathing/swimming and visiting historic sites. The three most important reasons for visiting the Seashore were the lighthouses, swimming, and uncrowded / solitude / low population. Also, when asked about crowding, 27% of visitors said they felt “crowded” to “extremely crowded” while 43% of visitors felt “somewhat crowded.” Many visitor groups (49%) felt that crowding “detracted from their park experience” (NPS 2002a).

### **Long-Range Interpretation Plan**

A long-range interpretation plan for the Seashore was completed in September 2007. The Long-Range Interpretation Plan recommends actions to be taken over the next five to seven years to improve the Seashore’s personal services program and interpretive media, and provides an achievable implementation strategy (NPS 2007d). Because the plan addresses exhibits, interpretive information, outreach, and education, it was considered in the development of this plan/EIS.

### **RELATIONSHIP TO OTHER FEDERAL PLANNING DOCUMENTS AND ACTIONS**

In addition to the laws and policies above, other federal planning documents exist that directly or indirectly relate to ORV use at the Seashore, and were taken into consideration during the development of this plan/EIS.

### **Piping Plover Atlantic Coast Population Recovery Plan**

ORV management activities described in this plan/EIS considered the 1996 USFWS Piping Plover Atlantic Coast Population Recovery Plan (USFWS 1996a). This population of piping plovers was listed as threatened in 1986 and has increased from approximately 800 pairs to almost 1,350 pairs in 1995. However, pressure on Atlantic Coast beach habitat from development and human disturbance is pervasive and unrelenting, and the species is sparsely distributed. Increased human activity in Atlantic Coast parks, which includes increased ORV use, is cited as one of the many reasons the piping plover was listed.

### **Recovery Plan for the Great Lakes Piping Plover**

This plan/EIS considered the USFWS Recovery Plan for the Great Lakes Piping Plover. The Great Lakes population, members of which are believed to overwinter at the Seashore, was listed as endangered under provisions of the ESA on January 10, 1986. The Great Lakes population had declined from a historic size of several hundred breeding pairs to 17 at the time of listing. From 1986 through 2002, the population fluctuated between 12 and 51 breeding pairs, with breeding areas remaining largely confined to Michigan. The restricted breeding range of this population creates a gap in the distribution of piping plovers across North America, with the Great Lakes population isolated from the two other breeding populations (Atlantic and Northern Great Plains) (USFWS 2003).

### **Atlantic Green, Hawksbill, Leatherback, Kemp’s Ridley, and Loggerhead Turtle Recovery Plans**

The USFWS and the NMFS recovery plans for the U.S. population of Atlantic green, hawksbill, leatherback, Kemp’s ridley, and loggerhead sea turtles were considered when developing this plan/EIS. Each of these species is federally listed and the Seashore considered the individual recovery plans (NMFS and USFWS 1991, 1992a, 1992b, 1993, 2008).

### **Marine Mammal Recovery Efforts by the National Marine Fisheries Service**

This plan/EIS considered the Marine Mammal Recovery Efforts of the NMFS. The NMFS Office of Protected Resources is charged with implementing the MMPA and the ESA with respect to marine mammal species under the NOAA Fisheries jurisdiction which includes whales, dolphins, porpoises, seals, and sea lions. These efforts are relevant to this plan/EIS because ORVs are often used to respond to stranded marine mammals, and can be essential for quick and humane response. These actions are coordinated by NOAA and/or the Seashore with government vehicles, and are considered beneficial for the protection and management of marine mammals on the Seashore. ORVs also have the potential to impact resting or stranded marine mammals due to the fact that ORVs facilitate access to and increase visitor presence in relatively remote sections of the beach, which could bring people and vehicles into direct, short-term contact with resting or stranded marine mammals. This increases the potential for resting or stranded marine mammals to be disturbed or harassed. For example, harassment of resting seals has been documented numerous times on the Seashore, and ORVs will most likely continue to contribute to this as the area's winter seal population continues to increase.

### **Cape Lookout National Seashore Interim Protected Species Management Plan / Environmental Assessment and Off-Road Vehicle Management Plan / Environmental Impact Statement**

Located south of Ocracoke Inlet, Cape Lookout National Seashore also developed an interim protected species management plan / environmental assessment. The Cape Lookout National Seashore Interim Protected Species Management Plan / Environmental Assessment will guide management practices for the protection of special status species occurring at Cape Lookout National Seashore until a long-term ORV management plan/EIS and regulation is developed. Prior to the implementation of the interim protected species management plan in 2007, Cape Lookout conducted a range of species management activities that were less protective, but still provided a level of protection to the Seashore's federally listed species, state-listed species, and species of special concern through species monitoring and management and protective buffers. Cape Lookout National Seashore is developing a long-term ORV management plan/EIS. The Cape Lookout National Seashore ORV Management Plan/EIS is being developed during the same timeframe as the Cape Hatteras National Seashore ORV management plan/EIS, and will cover similar issues.

### **RELATIONSHIP TO OTHER STATE AND LOCAL PLANNING DOCUMENTS, POLICIES, ACTIONS, LAWS, AND REGULATIONS**

The following state and local documents, policies, actions, laws, and regulations are directly or indirectly related to ORV use, and were therefore considered during the development of this plan/EIS.

#### **North Carolina Division of Marine Fisheries Regulations**

Recreational fishing at the Seashore is guided by the North Carolina Division of Marine Fisheries regulations. The North Carolina Division of Marine Fisheries manages all marine and estuarine resources in the state. As part of this function, the division publishes an annual recreational fishing guide that sets minimum lengths and bag limits for various species. Beginning January 1, 2007, the State of North Carolina required recreational anglers to have a license for saltwater fishing.

#### **North Carolina Wildlife Resources Commission Nongame and Endangered Wildlife Program**

The Nongame and Endangered Wildlife Program, established in North Carolina in 1983, aims to prevent species from becoming endangered through maintaining viable, self-sustaining populations of all native wildlife, with an emphasis on species in decline. The NCWRC has a Comprehensive Wildlife Strategy to

protect state-listed species. This strategy includes securing funding for state fish and wildlife agencies to take preventative actions that help keep rare species from becoming endangered, and keep common species common (NCWRC 2005). Species listed through this program as state threatened, endangered, or of special concern were taken into consideration during the development of this plan/EIS. Endangered and threatened wildlife and wildlife species of special concern are protected under Article 25 of chapter 113 of the *North Carolina General Statutes*.

### **North Carolina Wildlife Resource Commission Handbook for Sea Turtle Volunteers in North Carolina**

The NCWRC published the Handbook for Sea Turtle Volunteers in North Carolina (NCWRC 2006). The handbook provides guidance to volunteers in conducting biologically sound management projects to benefit sea turtles and to help ensure compliance with laws pertaining to rare and endangered species at all levels of government. An annual permit is issued to the Seashore by the NCWRC under the authority of the USFWS. This handbook was considered in the development of this plan/EIS because turtle management is guided by this document.

### **North Carolina Natural Heritage Program**

Among other responsibilities, the North Carolina Natural Heritage Program (NCNHP) identifies the most important places for the conservation of rare species and high quality natural communities in the state. As of January 2008, the NCNHP had identified more than 2,400 of these places, officially referred to as Significant Natural Heritage Areas (SNHAs). If a natural area cannot be purchased by NCNHP, its ecological significance can be recognized through a registry agreement, which is a voluntary agreement with the landowner that provides limited protection but recognizes the owner's commitment to conservation of the area. There are 10 SNHAs located within the boundaries of the Seashore. The NPS signed two agreements with NCNHP for the formal protection of nine of these areas. The Buxton Woods SNHA was registered in 1979 and eight other SNHAs were registered in the 1987 agreement. The purpose of the agreements was to "express the sincere intentions of the National Park Service to refrain from making or permitting changes that negatively affect the natural values for which this area was registered within the boundaries outlined." It specifically stated, "Vehicular traffic on beach locations will be regulated to prevent damage to nesting colonies of water birds." The registered SNHAs potentially relevant to this plan/EIS are Turtle Pond and Cape Hatteras Lighthouse Pond, Cape Hatteras Point, Hatteras Sand Flats, Ocracoke Island - Eastern End, and Ocracoke Island - Western End Sand Flats. The unregistered Hatteras Island - Middle Section SNHAs is also in the Seashore. The significance of these SNHAs is primarily the habitat that they provide for shorebirds such as piping plover, American oystercatchers, and several species of colonial waterbirds, although several sensitive plant communities are also identified as part of these ecological communities. All of the action alternatives in this EIS provide increased levels of shorebird protection than what was occurring at the time the NPS and NCNHP signed the agreement to register and protect these natural areas. However, at this time, the exact on-the-ground location of any proposed improvements is not known, although general locations have been identified for each alternative in chapter 2 of this document. The NPS will consult with NCNHP when the Seashore begins the process to identify exact locations for constructing or relocating ramps, interdunal roads, or parking lots that are in an SNHA to ensure that the construction avoids impacts to any sensitive species.

### **North Carolina Department of Transportation**

The North Carolina Department of Transportation (NCDOT) has various projects related to NC-12 and other Outer Banks access issues. The NCDOT is considering some long-term projects in response to the changing physical landscape of the area such as a bridge from Avon to Buxton, which is a possible area

for a future inlet. The Outer Banks Task Force has developed a long-term management plan for NC-12 that was considered during the development of this plan/EIS. NC-12 connects the communities located within Cape Hatteras National Seashore to the mainland of North Carolina. Island residents depend on the roadway for off-island community services, such as hospitals, emergency response, and waste collection. NC-12 is also the primary evacuation route for all permanent and temporary residents on the island when severe weather is approaching. Storms frequently cause the ocean to overwash NC-12 and deposit large quantities of sand over portions of the roadway. The storms sometimes damage NC-12, which interrupts access and services to the island and causes hardships for island residents. NC-12 must be continually repaired and maintained to prevent permanent loss of access on Hatteras Island. To address these issues a task force was formed comprising the NCDOT, NPS, U.S. Army Corps of Engineers (Corps), USFWS, NMFS, Federal Highway Administration (FHWA), Dare and Hyde counties, and the NCDENR. The mission of this task force is to develop a long-range protection and maintenance plan for the transportation system on the Outer Banks. As part of this task force, hot spots for erosion have been identified and include Northern Pea Island, Sandbag area, Rodanthe “S” curves, Buxton / Canadian Hole, Hatteras Village, and Ocracoke (OBTF 2009).

The NCDOT is proposing to build a new bridge to replace the existing Herbert C. Bonner Bridge, originally built in the 1960s, over Oregon Inlet before the end of the bridge’s reasonable service life. The NCDOT and the FHWA released a supplemental draft EIS regarding this replacement, and a supplement to the EIS was released in 2007 (OBTF 2007; FHWA 2007). In September 2008, NCDOT announced its preferred alternative, known as the Parallel Bridge with Phased Approach / Rodanthe Bridge Alternative. This alternative includes constructing a new Oregon Inlet bridge (Phase I) west of the existing structure, and later elevating NC-12 onto a series of bridges during Phases II-IV. Replacement of the Oregon Inlet bridge is expected to be complete in 2014 (NCDOT 2008).

#### **North Carolina Coastal Area Management Act**

Details regarding the CAMA were presented earlier in this document under the CZMA description on page 40.

#### **Dare and Hyde County Planning Documents**

The development and implementation of this plan/EIS considered the planning efforts of Dare and Hyde counties, primarily with respect to the cumulative impacts analysis and consistency determination. Since 1974, when the North Carolina General Assembly ratified the CAMA, each of the local governments in the twenty-county coastal region have been developing and updating land use plans. These land use plans have directed development in these areas and are responsible for the pattern of development we see today in Dare and Hyde counties. Both of these plans recognize the development that has occurred and the corresponding need for an increase in services as a result. These past patterns of land use development have influenced the amount of land available for habitat throughout the county, including portions of the counties located within the Seashore.

In Dare County, the County Planning Board serves as an advisory board to the Dare County Board of Commissioners. In compliance with the CAMA, Dare County prepared guidance and policies for land use development, known as the Land Use Plan (Dare County 2003), which provides local elected officials with a set of guidelines for development patterns and other land use issues that are important to the community. The Land Use Plan includes policies on various topics and implementation activities such as policies on water quality, residential and commercial development patterns, beach access, oceanfront and estuarine development, stormwater management, wastewater, and transportation. The latest version of the Dare County Land Use Plan was certified by the North Carolina Coastal Resources Commission in July 2003, and must be updated every five years. The 2008 plan update was submitted to the state for review



in mid-January 2009 and as of February 1, 2010, was still under review (Owens pers. comm. 2010). The Land Use Plan applies to the unincorporated portions of Dare County, while each of the municipalities in Dare County adopts its own plans for its respective planning jurisdiction. The Dare County Land Use Plan works in conjunction with the zoning ordinance, as well as the CAMA. Except for the mainland villages and Wanchese, the remainder of unincorporated Dare County is zoned. Detailed zoning maps have been adopted for the villages of Duck, Collington, Roanoke Island, Avon, Buxton, and Hatteras. The villages of Rodanthe, Waves, Salvo, and Frisco are zoned S-1, which is a minimal zoning district that allows all uses but does establish some building setbacks and height limitations. In addition, the county adopted a Special Environmental District (SED-1) for the Buxton Woods maritime forest. This zoning district establishes special standards for land clearing and vegetation removal that are intended to protect the vegetative canopy of the Buxton Woods forest (Dare County 2003).

The Hyde County Land Use Plan, written in 1986, was updated in 1992, 1997, and 2006. Hyde County Land Use Plan, in compliance with the CAMA, analyzes land development in the area to plan for future uses. The plan sets forth the following vision for the Island of Ocracoke (Hyde County 2006).

The vision of Ocracoke Island in the 21st century is a community that ensures livability and economic viability by offering the discerning vacationer a preferable alternative to the over commercialized beach destinations while providing improved attention to Ocracoke residents. The mission of county government should be to facilitate and support:

- Efforts to maintain the historic village assets.
- Efforts to preserve traditional native occupations and crafts including hunting and commercial fishing.
- Efforts to enhance the Island shopping opportunities with small locally owned shops and businesses.
- Efforts to provide affordable housing.
- Cooperative efforts with the community, NPS, and DOT to maintain access to the Island and provide necessary amenities. Ocracoke and Mainland should emphasize access.
- Support village craftsmen.

### **Outer Banks Scenic Byway**

In the early 1990s, the NCDOT declared the Outer Banks corridor a state scenic byway. In September 2003, NCDOT completed an Outer Banks Scenic Byway Corridor Management Plan in preparation for seeking National Scenic Byway status. The Corridor Management Plan, updated in 2008, explored the “six intrinsic qualities” of the byway – scenic, natural, cultural, historic, archaeological, and recreational. The corridor management plan recognized the Seashore as one of the important natural components of the byway. The 2008 plan included recommendations for stewardship of the natural and cultural resources at the Seashore. Based on these planning efforts, the Outer Banks road corridor was officially designated as a National Scenic Byway on October 16, 2009.

### Off-Road Vehicle Regulations for Duck, Kill Devil Hills, Nags Head, Kitty Hawk, and Southern Shores

Each municipality on the Outer Banks has its own individual rules for ORV use. Generally all municipalities that allow beach driving share the following rules:

- ORV users are requested to observe a suggested speed limit of 15 miles per hour;
- ORVs users must enter and leave the beach only at designated ramps (never between ramps or on the dunes);
- ORVs should be driven only on the portion of beach that lies between the foot of the dunes and the ocean;
- ORV users are requested to proceed with caution and consideration of other beach visitors;
- ORVs must have a state road registration and valid license plate; and
- ORV operators must have a current driver's license.

In addition to these general guidelines, the surrounding municipalities have individual ORV regulations, as shown in table 6.

**TABLE 6. ORV REGULATIONS FOR OUTER BANKS MUNICIPALITIES**

Regulation/Guideline	Duck	Kill Devil Hills	Nags Head	Kitty Hawk and Southern Shores <sup>a</sup>
Observe 15 miles-per-hour (mph) speed limit	X	X	X	
Use designated ramps to enter/exit the beach	X	X	X	
Drive only between foot of dunes and ocean	X	X	X	
Be cautious/considerate of other visitors	X	X	X	
Vehicle must be registered with valid license plate	X	X	X	
Operator must have current license	X	X	X	
No permit is required between October 1 and April 30	X	X		
Vehicle must have 4-wheel drive		X		
Night driving is permitted		X		
Government, law enforcement, emergency, rescue services exempt	X	X	X	X
Commercial fishermen exempt				X
ORV must be permitted by regulations governing ORVs			X	

<sup>a</sup> No motorized vehicles are allowed on beaches at Kitty Hawk and Southern Shores except for commercial fishermen and government/emergency vehicles.

## CHAPTER 2: ALTERNATIVES

NEPA requires federal agencies to explore a range of reasonable alternatives that address the purpose of and need for the action. The alternatives under consideration must include the “no-action” alternative as prescribed by 40 CFR 1502.14. Two no-action alternatives are included for analysis in this plan/EIS, because management changed partway through the planning process in May 2008, after the consent decree was signed (see chapter 1 of this document for more information). Action alternatives may originate from the proponent agency, local government officials, or members of the public at public meetings or during the early stages of project development. Alternatives may also be developed in response to comments from coordinating or cooperating agencies.

The alternatives analyzed in this document, in accordance with NEPA, are the result of internal scoping, public scoping meetings, and information developed during the negotiated rulemaking process. Public and agency comments on the draft plan/EIS were analyzed and considered. As a response to these comments, NPS has made changes to the alternatives, where appropriate, which are reflected in this final plan/EIS. A copy of the original draft plan/EIS showing all additions, deletions, and other changes that have been made in the preparation of this final /EIS, including changes to the alternatives, is available electronically at <http://parkplanning.gov/caha>.

The action alternatives meet the management objectives of the Seashore, while also meeting the overall purpose of and need for proposed action. Alternative elements that were considered but were not technically or economically feasible, did not meet the purpose of and need for the project, created unnecessary or excessive adverse impacts to resources, and/or conflicted with the overall management of the Seashore or its resources were dismissed from further analysis.

The NPS explored and evaluated six alternatives in this plan/EIS, as follows:

- **Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy.** Under this no-action alternative, management of ORV use and access at the Seashore would be a continuation of management based on the 2007 Cape Hatteras National Seashore Interim Protected Species Management Strategy/EA and the Superintendent’s Compendium 2007, as well as elements from the 1978 draft interim ORV management plan that were incorporated in Superintendent’s Order 7.
- **Alternative B: No Action—Continuation of Terms of Consent Decree Signed April 30, 2008, and amended June 4, 2009.** Under alternative B, management of ORV use would follow the terms described under alternative A, except as modified by the provisions of the consent decree, as amended. Modifications in the consent decree include changes to resource protection buffers and closures for various species at the Seashore and added restrictions related to night driving.
- **Alternative C: Seasonal Management.** Alternative C would provide visitors to the Seashore with a degree of predictability regarding areas available for ORV use, as well as vehicle-free areas, based largely on the seasonal resource and visitor use characteristics of various areas in the Seashore.
- **Alternative D: Increased Predictability and Simplified Management.** Under alternative D, visitors to the Seashore would have the maximum amount of predictability regarding areas available for ORV use and vehicle-free areas for pedestrian use. Restrictions would be applied to larger areas over longer periods of time to minimize changes in designated ORV and vehicle-free areas over the course of the year.

- **Alternative E: Variable Access and Maximum Management.** Alternative E would provide use areas for all types of visitors to the Seashore with a wide variety of access for both ORV and pedestrian users, but often with controls or restrictions in place to limit impacts on sensitive resources. Interdunal road and ramp access would be improved, and more pedestrian access would be provided through substantial additions to parking capacity at various key locations that lend themselves to walking on the beach.
- **Alternative F: The NPS Preferred Alternative.** The NPS considered a variety of concepts and measures that either originated during the negotiated rulemaking process from members of the negotiated rulemaking advisory committee (Committee) or were discussed during Committee, subcommittee, or work group sessions. Although the Committee as a whole did not reach a consensus on a recommended alternative, in creating this action alternative the NPS made management judgments as to which combination of concepts and measures would make an effective overall ORV management strategy. This alternative is designed to provide visitors to the Seashore with a wide variety of access opportunities for both ORV and pedestrian users. Alternative F would provide a reasonably balanced approach to designating ORV routes and vehicle-free areas, while providing for the protection of park resources. To support access to both vehicle-free areas and designated ORV routes, alternative F would involve the construction of new parking areas, pedestrian access trails, ORV ramps, and improvements and additions to the interdunal road system. Based in part on public and agency comments on the draft plan/EIS, this alternative has been modified within the range of alternatives described in the draft plan/EIS.

## ELEMENTS COMMON TO ALL ALTERNATIVES

The following describes elements of the alternatives that are common to all alternatives, including the no-action alternatives.

### Vehicle/Operator Requirements

- **Vehicle Requirements.** All vehicles operating in any area of the Seashore must comply with the following:
  - Meet all requirements to operate legally on state highways where the vehicle is registered, including any required vehicle equipment.
  - Have a valid vehicle registration, insurance, and license plate.
- **Operator Requirements.** Any person operating a vehicle in any area of the Seashore must comply with the following:
  - Observe any law applicable to vehicle use on a paved road in the state of North Carolina.
  - Hold a current driver's license (Superintendent's Compendium, Section 4.2(a)).
  - Use a seatbelt.
- **Operator and Passenger Requirements.** Any vehicle operator and/or passenger in a vehicle operating in any area of the Seashore must comply with the following:
  - Open containers of any type of alcoholic beverage are prohibited in vehicles.
  - ORV drivers and/or passengers are prohibited from sitting on the tailgate or roof or hanging outside of moving vehicles. Those in truck beds must be seated on the floor with the tailgate closed; children in truck beds must be accompanied by an adult.

- **Right-of-Way Requirements.** Right-of-way between vehicles is not defined by the Seashore, and the standard driving rules must be followed.

### **Ramp Configuration**

- If Bonner Bridge construction closes ramp 4, a new ramp 3 would be constructed north of the Oregon Inlet campground and day-use parking would be provided.

### **Boat Access**

- Launch sites, as designated under 36 CFR 3.8(a)(2), are identified in the Superintendent's Compendium. Launching or recovery of vessels is prohibited within resource closures.

### **National Park Service Regulations**

Title 36: Parks, Forests, and Public Properties of the U.S. Code of Federal Regulations is applicable in all national parks, including Cape Hatteras National Seashore. These regulations include those in Title 36 applicable to the operation of ORVs in the Seashore and those applicable to individuals recreating at the Seashore. Of particular note are the provisions of 36 CFR 1.5 and 1.6, which state that the superintendent may impose public use limits, or close all or a portion of a park area to all public use or to a specific use or activity; designate areas for a specific use or activity; or impose conditions or restrictions on a use or activity, and may establish a permit, registration, or reservation system.

### **Enforcement**

Violations could result in fines or mandatory court appearances as defined in the Collateral Schedule, Eastern District of North Carolina, National Park Service.

### **Areas of Vehicle Operation**

During the shorebird and turtle breeding seasons, standard resource protection buffers would apply, which could restrict ORV access to certain areas of the Seashore. Refer to table 37-2 on page 295 of this document for a description of access closures that occurred during the 2007-2010 seasons.

Visitors accessing the Seashore by ORV must drive only on marked ORV routes, comply with posted restrictions, and adhere to the following:

- Driving or parking outside of marked and maintained ORV routes is prohibited.
- Operating a vehicle of any type within safety or resource closures is prohibited.
- Accessing the beach and designated ORV routes is allowed only via designated beach access ramps and soundside access roads.
- Reckless driving—for example, cutting circles or defacing the beach—is prohibited.
- Observing pedestrian right-of-way is required.

### **Commercial Fishing / Permitted Uses**

- Commercial fishing permit holders with ORVs would be allowed to enter administrative and safety closures, but not resource closures or lifeguarded beaches. Two designated commercial

fishing access points exist on the soundside of Ocracoke Island, where only vehicular access for commercial fishing is allowed.

- Kite flying, kiteboards, and ball and Frisbee tossing are prohibited within or above all bird closures.

### Protected Species Management

- In general, because of the dynamic nature of the Seashore beaches and inlets, protected species management could change by location and time; new sites (bars, islands) could require additional management, or management actions may become inapplicable for certain sites (e.g., habitat changes with vegetation growth, new overwash areas).
- Areas with symbolic fencing (string between posts) would be closed to recreational access.
- Data collection would continue to document breeding and nest locations.
- Essential vehicles could enter restricted areas subject to the guidelines in the Essential Vehicles section of the USFWS Piping Plover (*Charadrius melodus*), Atlantic Coast Population, Revised Recovery Plan (USFWS 1996a). Due to the soft sand conditions of the Seashore, essential vehicles would be allowed to travel up to 10 mph.

### Accessibility for Visitors with Disabilities

The Seashore would provide access to visitors with disabilities as follows:

- Beach access points and boardwalks would be provided at Coquina Beach, the Frisco Boathouse, the Ocracoke Pony Pen, and the Ocracoke day use area.
- Beach access would be provided through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.
- Beach wheelchairs could be checked out at each District on a first-come, first-served basis.

### Infrastructure

- The Seashore has four campgrounds at Oregon Inlet, Frisco, Cape Point, and Ocracoke. The campgrounds would be open seasonally. Dates the campgrounds open or close would be subject to change.
- Fishing piers are located near Frisco and at Avon and Rodanthe on Cape Hatteras Island, and a marina is located at Oregon Inlet on Bodie Island. These would continue to be available to the public.<sup>4</sup>

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<sup>4</sup> The Frisco pier was closed for public safety reasons due to deteriorating conditions, and then further damaged by Hurricane Earl in September 2010. The future of this pier is not known at this time.

## Education and Outreach

Under all alternatives, the Seashore would continue to

- Post signage in the Seashore so information on beach closures and Seashore resources is readily available and presented in a clear manner to the public.
- Post signs regarding applicable ORV regulations at ORV access ramps, beach routes, and soundside areas.
- Notify the public of species management closures and beach access status through weekly resource and beach access reports, press releases, email updates, and postings at the Seashore visitor centers and other NPS visitor facilities and on the Seashore website.
- Provide education and outreach materials regarding protected species (including seabeach amaranth) and measures taken by the Seashore to protect nesting birds and sea turtles at Seashore visitor centers and other NPS visitor facilities, on ORV access ramp bulletin boards, in the Seashore newspaper, and on the Seashore website. These materials include regulations regarding trash disposal, wildlife feeding, fireworks, and pets, and the impacts of such activities on sensitive Seashore species.
- Provide education and outreach materials regarding visitor safety at Seashore's visitor centers and other NPS visitor facilities, on ORV access ramp bulletin boards, in the Seashore newspaper, and on the Seashore website.
- Provide education and outreach materials regarding ORV-driving requirements at Seashore visitor centers and other NPS visitor facilities, on ORV access ramp bulletin boards, in the Seashore newspaper, and on the Seashore website.
- Solicit input from interested parties regarding how to convey information about the species management program.
- Conduct educational programs during the bird and sea turtle hatching season, such as having public school students participate in post-hatching sea turtle nest examinations in order to learn about sea turtles.
- Publish annual protected species reports on the Seashore website regarding the previous breeding season.

## NO-ACTION ALTERNATIVES

The no-action alternative is developed for two reasons. First, a no-action alternative may represent the agency's past and current actions or inaction on an issue continued into the future, which may represent a viable alternative for meeting the agency's purpose and need. Second, a no-action alternative may serve to set a baseline of existing impacts continued into the future against which to compare the impacts of action alternatives. For most agency decisions, one no-action alternative can serve both of these purposes. Here, however, the situation is more complex.

As stated in chapter 1, "in order to provide continued visitor access through the use of ORVs, NPS must promulgate a special regulation authorizing ORV use at the Seashore," and the purpose of this plan is to develop such a regulation. Without a special regulation, continued ORV use would conflict with NPS regulations (36 CFR 4.10). The consent decree recognizes this and sets a deadline of April 1, 2011, for the promulgation of a final special regulation. As the district court has recognized in another case, absent an ORV plan and regulation, as a legal matter ORV use is "prohibited." The NPS acknowledges that if it

does not promulgate a special regulation to authorize ORV use, then ORV use would, in fact, be prohibited at the Seashore.

“No ORV use” thus could represent a result of NPS past inaction continued into the future, and thus might satisfy the first purpose of a no-action alternative. It is not, however, a viable alternative for meeting the purpose and need for this action. It was considered but dismissed in the broader range of alternatives that were identified. See page 82 for a discussion of the reasons that, for this plan/EIS, “Prohibit the Use of Off-Road Vehicles” is not considered a reasonable alternative.

NPS also does not believe that a “no ORV use” alternative would fully serve the function of a no-action alternative, because it would not satisfy the second purpose. It would not serve as an environmental baseline of existing impacts continued into the future against which to compare the impacts of action alternatives. ORV use has occurred continuously before and since the Seashore was authorized and established. Given this history, a complete ORV prohibition cannot be considered as the “current management direction or level of management intensity” or as “continuing with the present course of action,” which is how CEQ describes this role of the “no-action” alternative under NEPA.

Because there is no history of prohibition at the Seashore, there is also no Seashore monitoring data for an analysis of its effects. Extrapolation from other sites that prohibit ORV use, and from experience with resource closures in limited locations and limited times at the Seashore, indicates that prohibition would likely benefit the Seashore’s wildlife more than the other alternatives, though benefits could be similar to those from alternative D. Prohibition would be easier for the Seashore to administer than the other alternatives, though it might increase the need for additional parking areas, with their attendant costs and effects. It would detract from the experience of those visitors who prefer ORVs for access, while enhancing the experience of other visitors who prefer beaches without the presence of vehicles. Prohibition would adversely affect the economies of the villages in the Seashore more than the other alternatives because ORV users would not have the opportunity to shift their visits to different areas of the Seashore or to different dates or times of day when driving would be allowed. These conclusions, however, are largely speculative and cannot substitute for a baseline of existing impacts.

Similarly, using the management measures enforced in 2004 (which were adopted from the 1978 draft plan) as a no-action alternative would fail to meet the agency’s purpose and need to regulate ORVs in a manner that is consistent with applicable law, and would not appropriately address resource protection (including protected, threatened, or endangered species), potential conflicts among the various Seashore users, and visitor safety. In addition, it would neither bring the Seashore into compliance with the criteria of Executive Orders 11644 and 11989 for designation of ORV routes nor meet the second purpose of a “no-action” alternative to serve as a baseline of existing impacts continued into the future against which to compare the impacts of action alternatives.

For this plan/EIS the range of alternatives includes two no-action alternatives. Alternative A represents continuing management as described in the Interim Strategy. This management strategy was challenged in court and subsequently modified by the consent decree that was signed on April 30, 2008. Alternative B represents continuing management as described in the consent decree. These two no-action alternatives are analyzed to capture the full range of management actions that occurred and are currently occurring during the planning process for this plan/EIS. Tables 7 and 8 at the end of this chapter compare the actions that would be taken under each alternative, and figure 2 includes the maps of all alternatives.



## **ALTERNATIVE A: NO ACTION—CONTINUATION OF MANAGEMENT UNDER THE INTERIM PROTECTED SPECIES MANAGEMENT STRATEGY**

Under this no-action alternative, management of ORV use and access at the Seashore would be a continuation of management based on the selected alternative identified in the July 2007 Finding of No Significant Impact (FONSI) for the 2006 Interim Strategy and the 2007 Superintendent's Compendium, as well as elements from the 1978 draft interim ORV management plan that were incorporated in Superintendent's Order 7, as amended in 2006. These actions would include providing ORV access throughout the Seashore, except in areas of temporary resource, safety, or administrative closures. Under alternative A, all the ocean and inlet shoreline and existing soundside routes would be designated as a route or area and would be open 24 hours a day year-round, but subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures. As described in the FONSI, the Interim Strategy provides for the use, if feasible and if alternative routes are not available, of short-term bypasses when resource closures for shorebirds block the ORV corridor at Cape Point and the spits, and when a turtle nest hatching could lead to the blocking of access to the spits, Cape Point, or South Beach. The FONSI describes the following criteria for bypasses:

- a. The bypass area will be routed around dunes and vegetation if possible. If necessary, ground leveling, consistent with the state coastal management program, may be considered if dune fields do not exceed 36 inches in height. Leveling will be done by hand (no machinery will be used).
- b. The bypass will take advantage of natural terrain (e.g., blowouts) to minimize ground altering disturbance to the natural areas and avoid impacts to wetlands.
- c. The bypass will be at a minimum wide enough to allow one ORV to safely pass, and a maximum of two lanes if "line of sight" vision is compromised.
- d. Natural area disturbance to accommodate avoidance of turtle or bird nesting will not exceed 6,000 square feet.
- e. Minimal vegetation impact will be allowed.
  - Federal or state-listed plants or plants falling under the category of special concern (e.g., seabeach amaranth, dune blue curls) will not be compromised.
  - Vegetation in altered areas will be expected to recover within the following growing season. If vegetation does not recover within one growing season, or by other natural process (such as overwash creating habitat), the Seashore will initiate restoration of vegetation.
  - Any vegetation removal will be performed with hand tools (no machinery will be used).

Areas will be restored if predicted recovery period exceeds one season. Bypass routes will not infringe upon or fragment an adjacent resource/safety closure. Bypass routes will not disturb or impact any cultural resource (i.e., shipwrecks).

Vehicles would be allowed on the beach overnight only if someone associated with the vehicle is actively fishing. The ORV corridor would be marked by posts placed approximately 150 feet landward from the average, normal high tide line, or if less than 150 feet of space is available, at the vegetation or the toe of the remnant dune line, except during breeding season in protected species areas. Existing ORV safety closures would be maintained and new closures established as needed to address safety conditions such as debris on the beach or narrow beaches. Narrow beaches would be reopened as the beach widens. The beach in front of Cape Hatteras Lighthouse and Buxton Woods Road would remain closed to ORV access

for administrative purposes. Suitable interior habitats for piping plovers at spits and at Cape Point would be closed year-round to all recreational users to provide for resting and foraging for all species.

This no-action alternative would not require vehicles to have permits and would not involve any carrying-capacity restrictions. The speed limit would be 25 mph (unless otherwise posted) on Seashore beaches for public and private vehicles, although the speed limit in front of villages from September 16 to May 14 would be 10 mph. There would be no increase in parking facilities associated with this alternative. Under this no-action alternative, all the ocean and inlet shoreline and existing soundside routes would, for purposes of the rulemaking process, be a designated route or area, subject to temporary closures. Alternative A is analyzed as a baseline for comparison with the other alternatives in the plan/EIS following the requirements in 40 CFR 1502.14(d). Details of the management actions under this alternative are described in tables 8 and 9.

### **ALTERNATIVE B: NO ACTION—CONTINUATION OF TERMS OF THE CONSENT DECREE SIGNED APRIL 30, 2008, AND AMENDED JUNE 4, 2009**

A consent decree was signed on April 30, 2008, in U.S. District Court, whereby the parties involved in the lawsuit challenging NPS's management of beach driving under the Interim Strategy along Cape Hatteras National Seashore agreed to a settlement of the case. Terms of the consent decree required the NPS to complete an ORV Management Plan for the Seashore by December 31, 2010, complete and promulgate the final Special Regulation by April 11, 2011, and provide details of specific species-protection measures to take place until the plan was completed. Under alternative B, management of ORV use and access at the Seashore would be based on the management under alternative A, but modified by specific species-protection measures from the consent decree that are required until the ORV plan and final Special Regulation are completed. These management modifications included increasing the size of the buffers provided to various species at the Seashore, as well as adding restrictions related to night driving. On June 4, 2009, the following changes were made to the consent decree, as approved by the courts and agreed to by the parties involved in the lawsuit and settlement:

- Commercial fishermen would be granted access to beaches at 5:00 a.m. instead of 6:00 a.m., provided certain conditions from the modified consent decree are met.
- After September 15, all unhatched turtle nests would only require full beach closures from sunset until 6:00 a.m., instead of 24 hours a day.
- The NPS would not be required to expand a buffer for vandalism if the violator is apprehended. If the buffer has been expanded and then the violator is caught, the NPS can retract the expansion.

All other provisions in the consent decree remain the same. Under alternative B, beaches would be closed to all ORV use between the hours of 10:00 p.m. and 6:00 a.m. from May 1 to September 15, and open to ORV use from 10:00 p.m. to 6:00 a.m. with a permit from September 16 to November 15. This permit could be obtained online or at NPS offices or local tackle shops. From March 15 to November 30, an ORV-free zone at least 10 meters wide would be located in the ocean backshore wherever there is sufficient beach width to allow an ORV corridor at least 20 meters wide above the mean high tide line. Under alternative B, buffers for protected species would be larger than those identified in alternative A, and would include a required 1,000-meter buffer for unfledged piping plover chicks. In addition to ORV use, this 1,000-meter buffer would also apply to pets, as well as to kite flying, Frisbee throwing, and similar activities. Under this alternative, beach fires would be prohibited within 100 yards of turtle nest protection areas, as specified in the Superintendent's compendium. As in alternative A, suitable interior habitats for piping plovers at spits and at Cape Point would be closed year-round to all recreational users to provide for resting and foraging for all species. In case of a conflict between the Interim Strategy and

the measures described in the consent decree, the consent decree would prevail. Details of the management actions under this alternative are described in tables 8 and 9.

## **ACTION ALTERNATIVES**

The action alternatives would establish areas that allow ORV use and vehicle-free areas where ORV use is prohibited. Although ORV areas are specifically identified, these areas do not prohibit other uses, in effect making both ORV and vehicle-free areas multi-use recreation areas.

### **ELEMENTS COMMON TO ALL ACTION ALTERNATIVES**

The action alternatives, alternatives C, D, E, and F, provide a range of reasonable alternatives. The following describes elements of the management actions common to all the action alternatives.

#### **Ramp Configuration**

- A new ramp would be constructed at mile 32.5.
- Ramp 2 would be relocated approximately 0.5 mile south of Coquina Beach.

#### **Off Road Vehicle Access and Routes**

The following would apply:

- Visitors accessing the Seashore by ORV must use only designated beach access ramps and soundside access routes to enter designated ORV routes and areas.
- ORV operators must drive only on designated and marked ORV routes and must comply with posted restrictions.

#### **Seashore Management and Operations**

- Based on experience with implementing ORV management since 2007, staffing at the Seashore would need to increase under any action alternative to address basic functions of implementing an ORV management program. Staff would be hired to accomplish the following functions: coordination/management of the ORV program, coordination of science and adaptive management and resource education, and assistance with public information.

#### **Education and Outreach**

The Seashore would

- Improve signage related to beach closures and Seashore resources so that it is more readily available and presented in a clear manner to the public.
- Work with local organizations and businesses, including real estate rental agencies and hotels/motels, to ensure wider distribution of ORV and resource protection educational information. This would include encouraging these businesses to provide information about removal of beach equipment from the beaches at night.
- Provide information about and encourage the use of turtle friendly lighting.

- Encourage the Visitors Bureau and local tackle shops to link their websites to the Seashore's website to ensure that different segments of the visiting public have up-to-date information on beach closures and, if an ORV permitting system is developed, ORV permitting information.
- Develop a user-friendly ORV educational program (e.g., video or DVD) that could be administered as part of the ORV permitting process.
- Implement more educational programs in local schools and expand the Junior Ranger program to include more web-based options to interest youth in Seashore resources and stewardship.

### **Vehicle Requirements**

The following requirements would apply:

- Four-wheel drive would be recommended, although two-wheel-drive vehicles would be allowed.
- When driving on designated routes, operators would be required to lower tire pressure sufficiently to maintain adequate traction within the posted speed limit (20 pounds per square inch (psi) is recommended for most vehicles).
- Motorcycles would be prohibited on the ocean beachfront.
- There would be a limit on the number of axles allowed for vehicles and trailers.
- Only U.S. Department of Transportation listed and/or approved tires would be allowed.

### **Equipment Requirements**

- Vehicles would be equipped with a jack, jack support, shovel, and low-pressure tire gauge.

### **Speed Limits**

- The speed limit would be 15 mph, unless otherwise posted. Emergency vehicles would be exempt when responding to a call.

### **Parking Areas for Pedestrian Access**

- Any new parking areas would be located near vehicle-free areas and away from eroding areas or potential inlet areas.
- New parking areas would implement environmentally appropriate design standards to minimize stormwater runoff.
- New or expanded parking areas for ocean-side locations are identified in table 7 and table 7-1.

### **Beach Fires**

- Beach fires would be prohibited year-round during hours specified for each alternative in table 8. A permit would be required for all beach fires to ensure that users are informed of basic safety and resource protection measures. Where fires are permitted, they would be prohibited within 100 yards of turtle nest protection areas.

### **Nighttime Beach Use**

- Camping, as defined in 36 CFR 1.4, would be prohibited on Seashore beaches.
- Unattended beach equipment (chairs, canopies, volleyball nets, watersport gear, etc.) would be prohibited on the Seashore at night. Turtle patrol and law enforcement would tag equipment found at night. Owners would have 24 hours to remove equipment before it is removed by NPS staff.

### **Temporary Emergency Beach Closures**

- A temporary emergency beach closure may be implemented if any of the following conditions are observed:
  - ORV traffic backing up on the beach access ramps, either on- or off-beach bound, which threatens to impede traffic flow.
  - ORV traffic on the beach is parked in such a way that two-way traffic is impeded.
  - Multiple incidents of disorderly behavior are observed or reported.

### **Accessibility for Visitors with Disabilities**

- Some existing boardwalks would be retrofitted with accessible ramps to the extent that funding allows so visitors with disabilities can have more opportunities to access or view the beach. When new parking areas are developed, additional handicap parking spaces would be included, as appropriate.

### **Construction Measures**

- Prior to any construction under the action alternatives, wetland delineations would occur and wetland habitats would be avoided.

### **Species Management**

- Management of protected shorebirds would be accomplished through the implementation of the species management measures described in tables 10 and 10-1 at the end of this chapter.
- Management activities during the breeding season would focus on beach-nesting bird species such as the piping plover, Wilson's plover, American oystercatcher, least tern, common tern, gull-billed tern, and black skimmer; however, there would be ongoing evaluation of the breeding shorebird species addressed by this plan as part of the periodic review process.
- Prenesting areas for piping plover, American oystercatcher, Wilson's plover, and colonial waterbirds would be established in areas of suitable habitat that have had concentrated and recurring use by multiple individuals and/or multiple species of protected shorebirds during the breeding season in two or more of the past five years. Alternatives C, D, and E would not allow for ORV use in CWB prenesting areas, while alternative F would allow for ORV use on the lower beach until nesting activity occurs. These areas would be managed to reduce or minimize human disturbance. These areas would be re-evaluated as part of the periodic review process as described in tables 10 and 10-1.
- Areas of suitable nonbreeding habitat would be managed to reduce human disturbance during the nonbreeding season. This may include portions of prenesting areas that provide suitable

nonbreeding habitat during periods of overlap between the breeding and migrating season; designated vehicle-free areas that are set aside to provide pedestrians with the opportunity for a natural beach experience; and resource closures at some points and spits, based on an annual nonbreeding habitat assessment conducted after the breeding season.

- Management and monitoring protocols are provided for turtles and seabeach amaranth. Details of all species management strategies can be found in tables 10 and 10-1 at the end of this chapter.
- Incorporation of the Piping Plover Recovery Plan, Appendix G: Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the ESA. Appendix G of the Piping Plover Recovery Plan was used as a basis for determining appropriate management measures under all of the action alternatives. This document provides guidance to beach managers and property owners seeking to avoid potential violations of Section 9 of the ESA (16 USC 1538) and its implementing regulations (50 CFR 17) that could occur as the result of recreational activities on beaches used by breeding piping plovers along the Atlantic Coast. These guidelines were developed by the Northeast Region, USFWS (or Service), with assistance from the U.S. Atlantic Coast Piping Plover Recovery Team. The guidelines are advisory, and failure to implement them does not, of itself, constitute a violation of the law. Rather, they represent the USFWS best professional advice to beach managers and landowners regarding the management options that will prevent direct mortality, harm, or harassment of piping plovers and their eggs due to recreational activities. Appendix G makes the following recommendations:

*Management of Nonmotorized Recreational Use* – On beaches where pedestrians, joggers, sunbathers, picnickers, fishermen, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating plovers, their eggs, or chicks, areas of at least 50 meter-radius around nests above the high tide line should be delineated with warning signs and symbolic fencing. Only persons engaged in rare species monitoring, management, or research activities should enter posted areas. These areas should remain fenced as long as viable eggs or unfledged chicks are present. Fencing is intended to prevent accidental crushing of nests and repeated flushing of incubating adults, and to provide an area where chicks can rest and seek shelter when large numbers of people are on the beach.

Available data indicate that a 50 meter buffer distance around nests will be adequate to prevent harassment of the majority of incubating piping plovers. However, fencing around nests should be expanded in cases where the standard 50 meter-radius is inadequate to protect incubating adults or unfledged chicks from harm or disturbance. Data from various sites distributed across the plover's Atlantic Coast range indicates that larger buffers may be needed in some locations. This may include situations where plovers are especially intolerant of human presence, or where a 50 meter-radius area provides insufficient escape cover or alternative foraging opportunities for plover chicks. In cases where the nest is located less than 50 meters above the high tide line, fencing should be situated at the high tide line, and a qualified biologist should monitor responses of the birds to passersby, documenting his/her observations in clearly recorded field notes. Providing that birds are not exhibiting signs of disturbance, this smaller buffer may be maintained in such cases. On portions of beaches that receive heavy human use, areas where territorial plovers are observed should be symbolically fenced to prevent disruption of territorial displays and courtship. Since nests can be difficult to locate, especially during egg-laying, this will also prevent accidental crushing of undetected nests. If nests are discovered outside fenced areas, fencing should be extended to create a sufficient buffer to prevent disturbance to incubating adults, eggs, or unfledged chicks. Pets should be leashed and under control of their owners at all times from April 1 to August 31 on beaches where piping plovers are present or have traditionally nested. Pets should be prohibited on these beaches from April 1 through August 31 if, based on observations and experience, pet owners fail to keep pets leashed and under control. Kite flying should be prohibited within 200 meters of nesting or territorial adult or unfledged juvenile piping plovers

between April 1 and August 31. Fireworks should be prohibited on beaches where plovers nest from April 1 until all chicks are fledged.

*Motor Vehicle Management* – The Fish and Wildlife Service recommends the following minimum protection measures to prevent direct mortality or harassment of piping plovers, their eggs, and chicks on beaches where vehicles are permitted. Since restrictions to protect unfledged chicks often impede vehicle access along a barrier spit, a number of management options affecting the timing and size of vehicle closures are presented here. Some of these options are contingent on implementation of intensive plover monitoring and management plans by qualified biologists. It is recommended that landowners seek concurrence with such monitoring plans from either the Service or the State wildlife agency.

*Protection of Nests* – All suitable piping plover nesting habitat should be identified by a qualified biologist and delineated with posts and warning signs or symbolic fencing on or before April 1 each year. All vehicular access into or through posted nesting habitat should be prohibited. However, prior to hatching, vehicles may pass by such areas along designated vehicle corridors established along the outside edge of plover nesting habitat. Vehicles may also park outside delineated nesting habitat, if beach width and configuration and tidal conditions allow. Vehicle corridors or parking areas should be moved, constricted, or temporarily closed if territorial, courting, or nesting plovers are disturbed by passing or parked vehicles, or if disturbance is anticipated because of unusual tides or expected increases in vehicle use during weekends, holidays, or special events.

If data from several years of plover monitoring suggests that significantly more habitat is available than the local plover population can occupy, some suitable habitat may be left unposted if the following conditions are met:

1. The Service OR a State wildlife agency that is party to an agreement under Section 6 of the ESA provides written concurrence with a plan that:
  - A. Estimates the number of pairs likely to nest on the site based on the past monitoring and regional population trends.

AND

  - B. Delineates the habitat that will be posted or fenced prior to April 1 to assure a high probability that territorial plovers will select protected areas in which to court and nest. Sites where nesting or courting plovers were observed during the last three seasons as well as other habitat deemed most likely to be pioneered by plovers should be included in the posted and/or fenced area.

AND

  - C. Provides for monitoring of piping plovers on the beach by a qualified biologist(s). Generally, the frequency of monitoring should be not less than twice per week prior to May 1 and not less than three times per week thereafter. Monitoring should occur daily whenever moderate to large numbers of vehicles are on the beach. Monitors should document locations of territorial or courting plovers, nest locations, and observations of any reactions of incubating birds to pedestrian or vehicular disturbance.

AND

  2. All unposted sites are posted immediately upon detection of territorial plovers.

*Protection of Chicks* – Sections of beaches where unfledged piping plover chicks are present should be temporarily closed to all vehicles not deemed essential. (See the provisions for essential vehicles below.) Areas where vehicles are prohibited should include all dune, beach, and intertidal habitat within the chicks' foraging range, to be determined by either of the following methods:

1. The vehicle-free area should extend 1,000 meters on each side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting 2000 meter-wide

area of protected habitat for plover chicks should extend from the ocean-side low water line to the bay-side low water line or to the farthest extent of dune habitat if no bay-side intertidal habitat exists. However, vehicles may be allowed to pass through portions of the protected area that are considered inaccessible to plover chicks because of steep topography, dense vegetation, or other naturally-occurring obstacles.

OR

2. The Service OR a State wildlife agency that is party to an agreement under Section 6 of the ESA provides written concurrence with a plan that:
  - A. Provides for monitoring of all broods during the chick-rearing phase of the breeding season and specifies the frequency of monitoring.

AND

- B. Specifies the minimum size of vehicle-free areas to be established in the vicinity of unfledged broods based on the mobility of broods observed on the site in past years and on the frequency of monitoring. Unless substantial data from past years show that broods on a site stay very close to their nest locations, vehicle-free areas should extend at least 200 meters on each side of the nest site during the first week following hatching. The size and location of the protected area should be adjusted in response to the observed mobility of the brood, but in no case should it be reduced to less than 100 meters on each side of the brood. In some cases, highly mobile broods may require protected areas up to 1000 meters, even where they are intensively monitored. Protected areas should extend from the ocean-side low water line to the bay-side low water line or to the farthest extent of dune habitat if no bay-side intertidal habitat exists. However, vehicles may be allowed to pass through portions of the protected area that are considered inaccessible to plover chicks because of steep topography, dense vegetation, or other naturally-occurring obstacles. In a few cases, where several years of data documents that piping plovers on a particular site feed in only certain habitat types, the Service or the State wildlife management agency may provide written concurrence that vehicles pose no danger to plovers in other specified habitats on that site.

*Timing of Vehicle Restrictions in Chick Habitat* – Restrictions on use of vehicles in areas where unfledged plover chicks are present should begin on or before the date that hatching begins and continue until chicks have fledged. For purposes of vehicle management, plover chicks are considered fledged at 35 days of age or when observed in sustained flight for at least 15 meters, whichever occurs first. When piping plover nests are found before the last egg is laid, restrictions on vehicles should begin on the 26th day after the last egg is laid. This assumes an average incubation period of 27 days, and provides a 1 day margin of error. When plover nests are found after the last egg has been laid, making it impossible to predict hatch date, restrictions on vehicles should begin on a date determined by one of the following scenarios:

1. With intensive monitoring: If the nest is monitored at least twice per day, at dawn and dusk (before 0600 hrs and after 1900 hrs) by a qualified biologist, vehicle use may continue until hatching begins. Nests should be monitored at dawn and dusk to minimize the time that hatching may go undetected if it occurs after dark. Whenever possible, nests should be monitored from a distance with spotting scope or binoculars to minimize disturbance to incubating plovers.

OR

2. Without intensive monitoring: Restrictions should begin on May 15 (the earliest probable hatch date). If the nest is discovered after May 15, then restrictions should start immediately.

If hatching occurs earlier than expected, or chicks are discovered from an unreported nest, restrictions on vehicles should begin immediately. If ruts are present that are deep enough to restrict movements of plover chicks, then restrictions on vehicles should begin at least 5 days prior



to the anticipated hatching date of plover nests. If a plover nest is found with a complete clutch, precluding estimation of hatching date, and deep ruts have been created that could reasonably be expected to impede chick movements, then restrictions on vehicles should begin immediately.

*Essential Vehicles* – Because it is impossible to completely eliminate the possibility that a vehicle will accidentally crush unfledged plover chicks, use of vehicles in the vicinity of broods should be avoided whenever possible. However, the Service recognizes that life-threatening situations on the beach may require emergency vehicle response. Furthermore, some “essential vehicles” may be required to provide for safety of pedestrian recreationists, law enforcement, maintenance of public property, or access to private dwellings not otherwise accessible. On large beaches, maintaining the frequency of plover monitoring required to minimize the size and duration of vehicle closures may necessitate the use of vehicles by plover monitors. Essential vehicles should only travel on sections of beaches where unfledged plover chicks are present if such travel is absolutely necessary and no other reasonable travel routes are available. All steps should be taken to minimize number of trips by essential vehicles through chick habitat areas. Homeowners should consider other means of access, e.g., by foot, water, or shuttle services, during periods when chicks are present. The following procedures should be followed to minimize the probability that chicks will be crushed by essential (non-emergency) vehicles:

1. Essential vehicles should travel through chick habitat areas only during daylight hours, and should be guided by a qualified monitor who has first determined the location of all unfledged plover chicks.
2. Speed of vehicles should not exceed five miles per hour.
3. Use of open 4-wheel motorized ATVs or nonmotorized all-terrain bicycles is recommended whenever possible for monitoring and law enforcement because of the improved visibility afforded operators.
4. A log should be maintained by the beach manager of the date, time, vehicle number and operator, and purpose of each trip through areas where unfledged chicks are present. Personnel monitoring plovers should maintain and regularly update a log of the numbers and locations of unfledged plover chicks on each beach. Drivers of essential vehicles should review the log each day to determine the most recent number and location of unfledged chicks.

Essential vehicles should avoid driving on the wrack line, and travel should be infrequent enough to avoid creating deep ruts that could impede chick movements. If essential vehicles are creating ruts that could impede chick movements, use of essential vehicles should be further reduced and, if necessary, restricted to emergency vehicles only.

- **Incorporation of the 2008 Loggerhead Sea Turtle Recovery Plan.** The following elements from the Loggerhead Sea Turtle Recovery Plan were considered in development of the action alternatives:

2225. Prohibit recreational equipment on nesting beaches at night. Sea turtles prefer to nest on the mid to upper beach, protecting their nests from repeated and prolonged high tides. Recreational equipment (e.g., beach furniture, umbrellas, marine craft, tents) that are left on the beach at night can prevent nesting turtles from reaching the mid to upper beach. Therefore, at night, all recreational equipment should be completely removed from the beach by hand and stored behind the primary dune. Regulations should be developed and enforced to ensure these types of impediments to nesting are managed or eliminated.

Maintain at least the current length and quality of protected nesting beach. As of 2007, 1,581 km of nesting beach in the U.S. were identified as being within conservation lands in public (Federal, state, or local government) ownership and privately owned conservation lands (e.g., non-profit conservation foundations). Most of these lands are generally managed in a way that benefits sea turtle conservation. Public lands that have lighted development, armoring, or other profound threats to sea turtle nesting have not been included. In compiling the list of conservation lands, human visitation was not considered a profound threat to sea turtle nesting.

Therefore, public lands designated for human recreation have been included. At a minimum, the amount of nesting beach in such protected status should be maintained.

251. Develop, fully implement, and effectively enforce light management plans to address direct and indirect (e.g., sky glow, uplighting) artificial lighting on nesting beaches.

2511. Implement and enforce lighting ordinances on lands under local government jurisdiction. Where lighting ordinances have been adopted and adequately enforced, hatchling disorientation has been managed at acceptable levels. All coastal counties and communities with nesting beaches should adopt and fully enforce ordinances from March through October in Brevard through Broward counties, Florida, and from May through October elsewhere. The State of Florida's Model Lighting Ordinance [<http://myfwc.com/seaturtle>] should be used as a template for developing new or revising existing lighting ordinances. In addition, Port Authorities should develop and enforce lighting management plans to ensure their direct and indirect lighting does not impact nesting and hatchling turtles on nearby beaches.

61. Minimize impacts to sea turtles on nesting beaches.

6113. Use the least manipulative method to protect nests. Until such time as a management plan for protecting nests is developed, the least manipulative method should be employed to protect nests. Because the incubation environment greatly influences the developing embryo, nest relocation can involve the transfer of eggs from an appropriate environment to an inappropriate one. As a general rule, nests should only be relocated if they are low enough on the beach to be washed daily by tides or if they are situated in well documented highrisk areas that routinely experience serious erosion and egg loss (e.g., nests laid near river mouths or beneath eroding sea walls).

Natural events, like storms, that accelerate beach erosion and accretion can sometimes reduce hatching success in existing nests. While damage from storm events can be severe, it is difficult to predict the precise areas where the storm is most likely to inflict damage. Because of the negative effects of relocating eggs and the unpredictability of storm events, nests should not be moved out of areas threatened by storms. Nests should not be relocated in areas where heavy foot traffic, lighting problems, or beach cleaning are a concern. Foot traffic generally is not a problem for nests, but depending on the nesting substrate, pedestrian traffic over nests near the time of emergence can cause the nests to collapse and result in hatchling mortality. Therefore, in areas where foot traffic is heavy, nests can be marked so pedestrians can avoid them. If a nest is made near a light that may misorient the hatchlings, efforts should focus on getting the light turned off or shielded (if protection is necessary, the nest should be caged). If nests are deposited on beaches that are periodically raked with mechanical equipment, beach raking should be discontinued or the nests should be marked clearly so they can be avoided by the beach cleaners.

6114. Discontinue the use of hatcheries as a nest management technique. Relocation of sea turtle nests to hatcheries located higher on the beach was once a common practice throughout the southeast U.S. to mitigate the effects of naturally occurring events, such as erosion and vegetation encroachment, predation, and a variety of human-induced factors. In some areas, the extent and type of coastal development have resulted in significant light pollution problems. As a result, a few hatcheries are still used to protect hatchlings from disorientation. However, relocating nests into hatcheries concentrates eggs in an area and makes them more susceptible to catastrophic events and predation from both land and marine predators. Therefore, in areas where hatcheries are still being used to protect nests and hatchlings from light pollution, management efforts should be shifted to eliminate the lighting problems and phase out the use of hatcheries. At Cape Romain [National Wildlife Refuge (NWR)] in South Carolina, hatcheries are being used as a last resort in response to severe erosion. In this case, the conservation benefits (i.e., embryo survivorship) are believed to outweigh the potential conservation risks (e.g., hatchling predation). Given these circumstances, the use of hatcheries at Cape Romain

NWR is currently considered appropriate until sufficient habitat for successful incubation is available. Continued use of hatcheries on the refuge should be based on periodic quantitative assessments of their effectiveness as a management tool.

6121. Prohibit nighttime driving on beaches during the loggerhead nesting season. Vehicles on the beach have the greatest potential to come into contact with nesting females and emerging hatchlings at night. In areas where beach driving is still allowed, nighttime vehicle use should be limited to essential vehicles (e.g., emergency or permitted research vehicles) only. When essential vehicles are allowed on the beach at night during the sea turtle nesting season, their potential for harming turtles should be minimized by driving at speeds of 5 miles per hour or less (except when higher speeds are necessary for law enforcement, human safety, or medical emergencies), and by driving seaward of the wrack or debris line or just above it during high tide conditions. In addition, regardless of the time of year, vehicles or equipment driven or used on the beach should be equal to or less than 10 pounds per square inch (psi) based on ground loading characteristics (e.g., all terrain vehicles) to minimize the potential for sand compaction.

6123. Manage daytime driving to minimize impacts to loggerheads. In addition to prohibiting nighttime driving of non-essential vehicles on the beach, other measures should be implemented to minimize the potential for impacts to sea turtles. Examples of minimization measures include the designation and enforcement of no-driving zones in areas where the greatest concentration of nests are typically located (e.g., conservation zones near the dunes), monitoring and marking of all sea turtle nests for avoidance, and developing and implementing a vehicle rut removal program seaward of nests during periods when hatchlings are expected to emerge.

614. Minimize harassment of nesting females and hatchlings. Resident and visitor use of nesting beaches can adversely affect nesting sea turtles, incubating egg clutches, and hatchlings. Intentional and unintentional disturbance and harassment of nesting females and hatchlings is an increasing problem on many beaches. Problem areas where repeated incidents of turtle harassment have been reported should be identified, and law enforcement efforts should be focused there.

6142. Conduct public education campaigns to minimize harassment of nesting females and hatchlings. Resident and visitor use of nesting beaches can adversely affect nesting sea turtles and hatchlings. The most serious threat caused by human presence on the beach is the disturbance of nesting females. Disturbance of nesting females can cause them to leave the beach without finishing nesting and thus delay egg laying, shift their nesting beaches, and select poor nesting sites. Hatchlings rely on a store of energy and nutrients within their retained yolk sac to make their way from the nest to their offshore developmental habitat. Any delays they encounter on the beach by pedestrians may impair their ability to migrate offshore. Beachgoers should be informed through presentations and educational materials about the potential impacts to sea turtles from pedestrians on the beach and how to avoid frightening or disorientating any nesting and hatchling turtles encountered. In addition, signage at access points to the beach is recommended to further inform residents and visitors about proper nesting beach etiquette.

6143. Increase the number of interpretive turtle walks to meet demand and minimize overall disturbance to nesting females and hatchlings. In the U.S., numerous state-permitted organizations conduct organized turtle walks to allow the public to view the nesting process. Thousands of coastal visitors and local residents attend these organized turtle watches each year; however, thousands more are turned away due to the limited number of walks available. As a result, numerous unsupervised individuals who were unable to get into a turtle walk often try to find turtles by themselves and inadvertently end up harassing them. Interpretive turtle walks also are a mechanism for garnering

support for sea turtle conservation through education and should be expanded to accommodate the high public demand for participation.

6144. Enforce laws to minimize harassment of nesting females and hatchlings. Intentional and unintentional disturbance and harassment of nesting turtles and hatchlings is an increasing problem on many beaches. Problem areas should be identified and law enforcement efforts should be focused in these areas to deter harassment of nesting turtles and hatchlings.

615. Develop and enforce guidelines for special events on the beach to minimize impacts on nesting females, nests, and hatchlings. A wide variety of special events (e.g., volleyball tournaments, concerts) take place on the beach. Some of these events considerably increase the number of people and equipment in a given area. Many events are scheduled outside of the sea turtle nesting period, but some do occur during the nesting season. State resource agencies and local governments should develop and enforce guidelines for special events that will occur during the nesting season to ensure there will be no direct or indirect impacts on nesting turtles, nests, and emerging hatchlings.

- Establishment of Buffer Distances.** The potential impacts of human disturbance on beach-nesting birds and their chicks are well documented and described in chapter 3 of this document. A buffer is an area surrounding a sensitive resource, such as bird nests or chicks, which is restricted (or closed) to visitor access during critical life cycle stages in order to reduce human disturbance and the risk of mortality due to pedestrians and ORVs. The sensitivity of beach-nesting birds to human disturbance varies by species and can vary among individual birds of the same species depending upon the circumstances. Buffer distances for managed species are detailed in table 11. The buffer distances identified in the action alternatives were developed after consideration of the best available science, which includes existing guidelines and recommendations, such as the Piping Plover Recovery Plan (USFWS 1996a) and the USGS Open-File Report 2009-1262 (2010) on the management of species of special concern at the Seashore, as well as relevant scientific literature (research, studies, reports, etc.) for the respective species. In addition, buffer distances were developed using the practical knowledge gained by NPS resources management staff during two years of implementing the Interim Strategy (2006–2007) and three years implementing the consent decree (2008–2010). In 2007 under the Interim Strategy, which identified the buffer distances that would be used under alternative A, NPS staff implemented a total of 126 shorebird management actions that involved establishing, modifying, or removing fencing around resource closures. In 2009 and 2010 under the consent decree, which identified the buffer distances that would be used under alternative B, NPS staff implemented a total of 202 and 164 shorebird management actions, respectively.

The buffer distances are intended to provide adequate protection to minimize the impacts of human disturbance on nesting birds and chicks in the majority of situations, given the level of visitation and recreational use in areas of sensitive wildlife habitat at the Seashore and issues related to non-compliance with posted resource protection areas. For example, under the action alternatives the buffer distance for nesting piping plovers is set at 75 meters, and would be expanded upon disturbance or when chicks are present. A 1992 study at Assateague Island National Seashore (Loegering 1992), a national seashore with a similar type of barrier island habitat and recreational use as Cape Hatteras, found that on average, incubating plovers flushed from their nests at a distance of 78 meters (256 feet), although some birds flushed when researchers were as far as 174 meters (571 feet) away. Researchers reported that the minimum agitation distance to nesting piping plover was 50 meters, and suggested a buffer radius of 225 meters. The recommended buffers for piping plover under this plan/EIS not only took into consideration the Piping Plover Recovery Plan, but also studies in similar environments such as Assateague Island. Buffers for the other bird species were developed in a similar manner, taking

into consideration the best available studies, combined with Seashore staff observations of how the species react in the specific environment of the Seashore. The action alternatives' buffers, when combined with the Species Management Areas (SMAs) under alternatives C, D, and E and the prenesting areas and vehicle-free areas for all action alternatives, are designed to be effective for species protection and operationally feasible to implement and sustain.

### **ORV Permits**

- Permits would be required for vehicular use on designated ORV routes.
- There would be no limit on the number of permits issued.
- Permits would be available at designated permit issuing stations.
- Permit stickers would be affixed to vehicles in a manner approved by the NPS.
- Permits could be revoked for violation of applicable Seashore regulations or terms and conditions of the permit.

## **ADAPTIVE MANAGEMENT APPROACHES INCLUDED IN THE ACTION ALTERNATIVES**

The Department of the Interior requires that its agencies “use adaptive management to fully comply” with CEQ guidance that requires “a monitoring and enforcement program to be adopted ... where applicable, for any mitigation” (516 DM 1.3 D (7); 40 CFR 1505.2). Adaptive management is based on the assumption that current resources and scientific knowledge are limited. Nevertheless, adaptive management attempts to apply available resources and knowledge and adjusts management techniques as new information becomes available.

Adaptive management incorporates scientific experimental methods into the management process while providing flexibility to adjust to changes in the natural environment. It is based on a continuing, iterative process of

- Applying management actions.
- Monitoring consequences.
- Evaluating monitoring results against plan objectives.
- Adjusting management.
- Using feedback to make future management decisions.

All action alternatives incorporate adaptive management initiatives (outlined in table 10 and table 10-1) that are designed to assist the Seashore in meeting the objectives of this plan/EIS and desired future conditions as outlined in chapter 1 of this document. These species-specific initiatives include implementing additional research and monitoring for piping plover, sea turtles, and seabeach amaranth, based on available funding. Information obtained from the implementation of adaptive management initiatives would be integrated into future decision making.

## **PERIODIC REVIEW UNDER THE ACTION ALTERNATIVES**

A systematic review of data, annual reports, and other information would be conducted by NPS every five years, after storms or events that Seashore management determines to be a major modification of habitat

quantity or quality, or if necessitated by a significant change in protected species status (e.g., listing or de-listing), in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives and desired future conditions (see chapter 1 of this document). Periodic review could result in changes to the management actions in order to improve effectiveness. When desired future conditions for resources are met or exceeded, periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remain stable. Where progress is not being made toward goals, periodic review and adaptive management may result in increased restrictions on recreational use. Components subject to periodic review vary among the action alternatives.

## **DISCUSSION OF ACTION ALTERNATIVES**

### **ALTERNATIVE C: SEASONAL MANAGEMENT**

This alternative is designed to provide visitors to the Seashore with a degree of predictability regarding areas available for ORV use, as well as vehicle-free areas, based largely on the seasonal resource- and visitor-use characteristics of various areas in the Seashore. This alternative would manage ORV use by identifying areas that historically do not support sensitive resources or that historically have lower visitor use. Many of these areas would generally be designated as ORV routes year-round. Areas of high resource sensitivity and high visitor use would generally be designated as seasonal ORV routes, with restrictions based on seasonal resource and visitor use or as year-round vehicle-free areas. Some areas would be designated as vehicle free year-round to provide opportunities for non-ORV users to experience the Seashore without the presence of vehicles. The establishment of ORV routes and vehicle-free areas would be based largely on seasonal resource requirements and year-round visitation patterns and would provide the public and the Seashore with a structured management approach that clearly states what areas are available for ORV use and when they are open. The public would have clear direction as to what would be open seasonally or year-round; however, it would require some effort on the public's part to be informed and to understand what areas are open and when use is permitted. Implementation would require an increase in Seashore staff and resources for public education and enforcement, but would provide for efficient Seashore operations with the identification of defined use areas.

Generally, most areas where there is a seasonally designated ORV route would be open to ORVs from October 15 to March 14, primarily due to concerns about resource protection for birds and turtles during breeding and hatching/fledging periods and to minimize conflicts with high visitor use periods. Areas that would be seasonally designated vehicle free would include SMAs and some village beaches. These seasonal vehicle-free areas would primarily occur during periods of high visitation and high resource sensitivity—the summer and shoulder season months. The spits and points would be closed to ORVs from March 15 to October 14 to provide resource protection. A pedestrian access corridor would be provided at Bodie Island Spit, Cape Point, and South Point although the corridor could close during the breeding season as resource protection buffers and closures are established. Existing soundside ORV access areas would be retained and designated as ORV routes, including existing primitive parking and designated boat launch areas. The Seashore would maintain posts and signage defining the location of the parking areas and ORV access routes on the soundside.

ORV routes under this alternative would still be subject to temporary resource closures established when protected species breeding behavior warrants and/or if new habitat is created. In addition to the breeding season measures, resource closures and/or vehicle-free areas would be established, based on an annual nonbreeding habitat assessment conducted after the breeding season, to provide areas of nonbreeding shorebird habitat with reduced human disturbance while still allowing a pedestrian or pedestrian/ORV access corridor in areas designated by the NPS (common to all alternatives).

Designated ORV routes would be established seasonally in areas with high visitation and/or sensitive resources and year-round in some areas that historically do not support sensitive resources or that have lower visitor use. To facilitate ORV access to the designated routes, existing ramps would be improved, reconfigured, and/or supplemented by new ramps, including the construction of ramps 47, 48, 62, and 64. (Note: All action alternatives involve relocating ramp 2 and building a new ramp at 32.5.) In addition, the interdunal road network would be maintained at its current level of access in most places, although an extension from ramp 45 west to ramp 49 would be provided. Pullouts or road widening would be provided where appropriate to provide safe ORV passage on the interdunal roads. Designated ORV routes would be open to ORV use 24 hours a day from November 16 through April 30, although SMAs would be closed to ORV use beginning on March 15. From May 1 through November 15, all potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 7:00 p.m. to 7:00 a.m. This alternative also involves the addition or expansion of parking areas at several locations.

ORV safety closures would be designated as conditions warrant and would be evaluated for reopening by NPS law enforcement staff on a weekly basis. ORV safety closures would be applicable only to ORV access; pedestrian and commercial fishing access would generally be maintained through ORV safety closures.

Alternative C would include a Seashore-wide carrying-capacity element (“peak use limit”), which would be based on a physical space requirement of an average of one vehicle per 20 linear feet for Bodie and Hatteras Island Districts and one vehicle per 30 linear feet for the Ocracoke Island District. The provision of a lower carrying-capacity on Ocracoke Island would provide for a less crowded visitor experience in this area, enhancing the types of experiences available throughout the Seashore. The carrying capacity could be implemented whenever overcrowding could cause safety concerns, such as peak use periods during major summer holidays and weekends. The allowable number of vehicles in each area subject to the carrying capacity would be determined by the space requirements and the beachfront length of the area.

Alternative C would include an ORV permit system, with no limit on the number of permits issued. Permit fees would be determined based on the recovery of NPS costs incurred in managing ORV use. Only annual permits would be available under this alternative, but these would be valid for 12 months from date of purchase so they could extend over the length of a season. To obtain the permit, ORV owners would be required to complete a short education program in person or online and pass a basic knowledge test demonstrating their understanding of the rules and regulations governing ORV use at the Seashore, beach-driving safety, and resource closure requirements. Following completion of the test, owners would need to sign for their permits to acknowledge that they understand the rules and that all drivers of the permitted vehicles will abide by the rules and regulations governing ORV use at the Seashore. A violation of the rules and regulations by the owner or driver of an ORV could result in revocation of the vehicle permit, and the owner/permittee would not be allowed to obtain another permit for any vehicle for a specified period of time.

Every five years the NPS would conduct a systematic review of the ORV and species management measures identified in this alternative as being subject to periodic review. This could result in changes to those management actions in order to improve effectiveness.

Designated routes and areas under alternative C are shown on figure 2 and described in table 7. Details of the management actions under this alternative are described in table 8 and species management strategies are described in table 10.

**ALTERNATIVE D: INCREASED PREDICTABILITY AND SIMPLIFIED MANAGEMENT**

This alternative is designed to provide visitors to the Seashore with the maximum amount of predictability regarding routes available for ORV use and vehicle-free areas for pedestrian use, which means establishing year-round ORV routes and vehicle-free areas. Under this alternative, ORV routes would be determined by identifying areas that historically do not support sensitive resources and areas of lower visitor use. These areas would be designated as ORV routes year-round. Areas of historically high resource sensitivity or high visitor use would not be designated as ORV routes. The establishment of ORV routes and vehicle-free areas on a year-round (rather than seasonal) basis would provide the public and the Seashore with a simplified management approach that would increase predictability and reduce confusion about what and when areas are available for ORV use, and reduce the need for staff resources on the beach. Because of the relative simplicity of the elements of this alternative, implementation would require a lower level of Seashore staff and resources than other action alternatives and would maximize the efficiency of Seashore operations.

Year-round vehicle-free areas would include lifeguarded beaches and the areas in front of villages, as well as designated SMAs. These vehicle-free areas would provide for visitor safety during periods of high visitation, particularly in the summer months, and would also provide a vehicle-free experience for visitors during the off-season. Soundside access would continue as currently provided under the no-action alternatives. Vehicle-free areas would also be established year-round at Cape Point and the spits to provide a simplified approach to sensitive species management for Seashore operations, maximizing contiguous protected areas and eliminating seasonal changes in designated ORV routes and the demands associated with enforcing those changes. Other uses would still be allowed in these vehicle-free areas outside any identified resource closures or SMAs. All SMAs would be managed using the ML1 strategy, which would involve larger and longer species protection buffers and would not allow pedestrian access once prenesting closures are established. Pedestrian access to these areas would be allowed once breeding activities are completed.

ORV routes under this alternative would still be subject to temporary resource closures established when protected species breeding behavior warrants and/or if new habitat is created. In addition to the breeding season measures, resource closures within some vehicle-free areas would be established, based on an annual nonbreeding habitat assessment conducted after the breeding season, to provide areas of nonbreeding shorebird habitat while still allowing a pedestrian or pedestrian/ORV access corridor in areas designated by the NPS (common to all alternatives).

To facilitate access to designated ORV routes, existing ORV ramps would be improved, reconfigured, and/or supplemented by new ramps at 62 and 64 (Note: All action alternatives involve relocating ramp 2 and building a new ramp at 32.5). No new or expanded parking areas would be provided under alternative D. Designated ORV routes would be open to ORV use 24 hours a day from November 16 through April 30. From May 1 through November 15, all potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 7:00 p.m. to 7:00 a.m. to provide for sea turtle protection and allow enforcement staff to concentrate their resources during the daytime hours.

ORV safety closures would not be designated; ORV users would drive at their own risk and would be expected to rely on their knowledge of beach driving to determine if an area is safe to access based on their assessment of current conditions.

Alternative D would not include a carrying-capacity requirement, but would limit vehicles to a one-vehicle-deep parking configuration so that areas would not become overcrowded such that a safety concern would occur.



Alternative D would include a simple vehicle permit system, with no limit on the number of permits issued. Permit fees would be based on the recovery of NPS costs incurred in managing ORV use, but the fee should be lower than fees under alternatives C, E, or F due to the decreased management costs under this alternative. Only annual (based on the calendar year, as opposed to a 12-month period) permits would be available under this alternative. To obtain a permit, ORV drivers would be required to read the rules and regulations governing ORV use at the Seashore, including beach-driving safety and resource closure requirements. Owners would need to sign for their permit to acknowledge that they understand the rules and that all drivers of the permitted vehicle will abide by the rules and regulations governing ORV use at the Seashore. Special consideration would be paid to providing beach safety information because of the lack of safety closures under this alternative. A violation of the rules and regulations by the owner or driver of the ORV could result in revocation of the vehicle permit, and the owner/permittee would not be allowed to obtain another permit for any vehicle for a specified period of time.

Every five years the NPS would conduct a systematic review of the species management measures identified in this alternative as being subject to periodic review. This could result in changes to those management actions in order to improve effectiveness.

Designated routes and areas under alternative D are shown on figure 2 and described in table 7. Details of the management actions under this alternative are described in table 8 and species management strategies are described in table 10.

#### **ALTERNATIVE E: VARIABLE ACCESS AND MAXIMUM MANAGEMENT**

This alternative is designed to provide visitors to the Seashore with a wide variety of access opportunities for both ORV and pedestrian users, including to the spits and points, but often with controls or restrictions in place to limit impacts on sensitive resources. During the shorebird breeding season, some ORV routes may be kept open to use for longer periods of time by providing ORV pass-through zones at some spits and points and by improving interdunal road and ramp access. More pedestrian access would be provided through substantial additions to parking capacity at various key locations that lend themselves to walking on the beach. Vehicle-free areas would be provided during all seasons for non-ORV users to experience the Seashore without the presence of vehicles. Like the other action alternatives, this alternative would manage ORV use by identifying areas that historically do not support sensitive resources and areas of lower visitor use. Most of these areas would be designated as ORV routes year-round. Areas of high resource sensitivity and high visitor use would either be designated as seasonal ORV routes, with restrictions based on seasonal resource and visitor use, or as year-round vehicle-free areas. In addition, the SMAs would be reopened to ORV use approximately six weeks earlier than under alternative C (September 1 versus October 15).

During the shorebird breeding season, ORV pass-through zones would be designated at Bodie Island Spit, Cape Point, and South Point. The pass-through zones would use standard resource protection buffers and would not allow pedestrians, pets, ORV stopping, parking, or disembarking of passengers. These pass-through zones would be established to provide an increased possibility of access during the prenesting and incubation periods only, and would be subject to resource closures. Once through the pass-through zone, recreation would be allowed outside any existing resource closures. Both Bodie Island Spit and South Point would have pedestrian-only areas, when conditions allow, extending access beyond the end of the ORV route. When unfledged chicks are present, the probability of being able to provide this access would decrease. Therefore, in addition to the pass-through zones, the Seashore would promote the use of water taxis as alternative transportation to Bodie Island Spit and South Point, subject to designated landing zones and resource closures. Alternative E also involves the development of an interdunal pedestrian trail on Bodie Island. The trail would begin at a new parking area near ramp 4 and would provide access to the inlet. This new trail would also be subject to resource protection closures.

The variety of access methods possible under alternative E, based on the establishment of ORV routes, seasonal vehicle-free areas, designation of ORV pass-through zones, and the promotion of water taxi service to designated points and spits, would provide the public with ORV and pedestrian access to a greater number of areas within the Seashore, even during portions of the shorebird breeding season. However, this alternative would afford less predictability than alternatives C and D regarding areas available for use and would require a greater amount of oversight and management. Implementation would perhaps be difficult for the public to understand and would require more Seashore staff and resources than the other alternatives.

Areas that would be seasonally designated vehicle free would include the areas in front of villages, except Frisco and Hatteras, and most of the SMAs. The ORV open season in front of the villages would be defined as November 1 to March 31 and in most SMAs from September 1 through March 14 (when a resource closure is not limiting access), with ORV access (via a pass-through zone) to Bodie Island Spit, Cape Point, and South Point from March 15 through August 31 via a pass-through zone, subject to resource closures. Soundside access would remain open at currently designated boat launch areas, on Hatteras Inlet Spit from the Pole Road to Cable Crossing and the Spur Road, and on Ocracoke Island soundside areas where commercial fishing access is currently allowed. Under this alternative, motorcycles would be allowed on all routes and areas open to ORVs on the soundside.

The remaining soundside access points would be closed to ORV use and small parking areas would be constructed to provide pedestrian access to the water. Signage/posts would be installed at the parking areas and boat launch areas to prevent damage to vegetation and other soundside resources.

ORV routes under this alternative would still be subject to temporary resource closures established when protected-species breeding behavior warrants and/or if new habitat is created. In addition to the breeding-season measures, resource closures and/or vehicle-free areas would be established, based on an annual nonbreeding habitat assessment conducted after the breeding season, to provide areas of nonbreeding shorebird habitat with reduced human disturbance while still allowing a pedestrian or pedestrian/ORV access corridor in areas designated by the NPS (common to all alternatives).

To facilitate access to ORV routes, this alternative would extend the existing interdunal road west of ramp 45 all the way to ramp 49, construct two new ramps (47 and 48), and build two new ramps at 62 and 64. (Note: All action alternatives involve relocating ramp 2 and building a new ramp at 32.5). A new ramp would be established at either 24 or 26, along with a new parking area at the selected location. Designated ORV routes would be open to ORV use 24 hours a day from November 16 through April 30. From May 1 through September 15, all potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 10:00 p.m. to 6:00 a.m. to provide for sea turtle protection and allow enforcement staff to concentrate their resources during the daytime hours. From May 1 through September 15, a limited number of ORV users would be permitted to park and stay overnight at selected spits and points, under the terms and conditions of a special use permit, when such areas are not otherwise closed to protect sensitive resources. From September 16 through November 15, ORV routes with no or a low density of turtle nests remaining (as determined by the NPS) would be open between 10:00 p.m. and 6:00 a.m., subject to the terms and conditions of a required permit (see table 8 for details). This alternative also involves the addition of parking spaces at several ramp locations.

ORV safety closures could be designated as conditions warrant and would be evaluated for reopening by NPS law enforcement staff on a weekly basis. ORV safety closures would be applicable only to ORV access; pedestrian and commercial fishing access would generally be maintained through ORV safety closures. For village beaches that are open to ORV use during the winter season, the village beaches must be at least 20 meters wide from the toe of the dune seaward to the mean high tide line in order to be open to ORV use.

Alternative E would include a carrying-capacity requirement for all areas based on a physical space requirement of one vehicle per 20 linear feet for Bodie and Hatteras Island Districts, except 400 vehicles would be allowed within a 1-mile area centered on Cape Point, and one vehicle per 30 linear feet for the Ocracoke Island District. The carrying capacity would be implemented whenever overcrowding could cause safety concerns, such as at peak use periods during major summer holidays and weekends. The allowable number of vehicles in each area would be determined by the space requirements and the beachfront length of the area.

Alternative E would include an ORV permit system, with no limit on the number of permits issued. Permit fees would be determined based on the recovery of NPS costs incurred in managing ORV use. Expected permit fees would be higher under this alternative due to the intense level of management required for implementation. Both annual and weekly permits would be available under this alternative. To obtain a permit, ORV owners would be required to complete a short education program in person or online and pass a basic knowledge test demonstrating their understanding of the rules and regulations governing ORV use at the Seashore, beach-driving safety, and resource-closure requirements. Following completion of the test, owners would need to sign for their permit to acknowledge that they understand the rules and that all drivers of the permitted vehicle will abide by the rules and regulations governing ORV use at the Seashore. A violation of the rules and regulations by the owner or driver of the ORV could result in revocation of the vehicle permit, and the owner/permittee would not be allowed to obtain another permit for any vehicle for a specified period of time. The park-and-stay provision would be managed under a separate special use permit. Alternative E would also include a self-contained vehicle (SCV) camping opportunity from November 1 to March 31 at three NPS campgrounds (one in each district), with a separate permit requirement and use limits.

Every five years the NPS would conduct a systematic review of the ORV and species management measures identified in this alternative as being subject to periodic review. This could result in changes to those management actions in order to improve effectiveness.

Designated routes and areas under alternative E are shown on figure 2 and described in table 7. Details of the management actions under this alternative are described in table 8 and species management strategies are described in table 10.

#### **ALTERNATIVE F: NPS PREFERRED ALTERNATIVE**

In December 2007, the Department of the Interior established a negotiated rulemaking advisory committee (Committee) to assist the NPS in the development of an ORV regulation for the Seashore. The Committee met 11 times from January 2007 through February 2009, and conducted numerous subcommittee and work group meetings and conference calls. The Committee discussed and explored options for the full spectrum of ORV management issues covered in this plan/EIS. As a result of these discussions, the NPS considered a variety of concepts and measures that either originated from Committee members or were discussed during Committee, subcommittee, or work group sessions. Although the Committee as a whole did not reach a consensus on a recommended alternative, in creating this action alternative the NPS has made management judgments as to which combination of concepts and measures would make an effective overall ORV management strategy. The NPS has also included under alternative E some ORV management approaches identified by the Committee that would require more intensive management (such as park-and-stay and SCV camping), in keeping with the maximum management theme of that alternative.

After reviewing public and agency comments, the NPS revised alternative F by adopting some of the simpler approaches from the other alternatives, e.g., instead of SMAs, using standard buffers with prenesting and nonbreeding closures; simpler and easier to understand hours for night-driving restrictions;

and using more consistent seasonal closure dates among the villages. Also in response to public and agency comments, the amount of construction was decreased and pedestrian access increased. The bypass provision and criteria from alternative A was incorporated in alternative F to mitigate effects of sea turtle closures that could block fall ORV access to Cape Point. Designation of ORV routes was adjusted to provide balance between ORV areas and vehicle-free areas.

This alternative is designed to provide visitors to the Seashore with a wide variety of access opportunities for both ORV and pedestrian users, including access to the spits and points, but often with controls or restrictions in place to limit impacts on sensitive resources. This means that some areas may be kept open to ORV users for longer periods of time by reopening some ORV corridors at the spits and points sooner after shorebird breeding activity is completed than in alternatives C or E, and by improving interdunal road and ORV ramp access. Pedestrian access would be enhanced by providing increased parking capacity at various points of access to vehicle-free areas. Such areas would be provided during all seasons so non-ORV users can experience the Seashore without the presence of vehicles. Like the other action alternatives, this alternative would manage ORV use by identifying areas that historically do not support sensitive resources and areas of lower visitor use. Some of these areas would be designated as ORV routes year-round. Areas of high resource sensitivity and high visitor use would generally be designated as vehicle-free areas year-round or as seasonal ORV routes, with restrictions based on seasonal resource and visitor use.

The year-round designation of vehicle-free areas and ORV routes, in conjunction with the species management strategies described in table 10-1, would provide for species protection during both the breeding season and the nonbreeding season. SMAs would not be designated under this alternative and one set of standard buffers, similar to the ML2 buffers in the other action alternatives, would be used. During the shorebird breeding season, pedestrian shoreline access along ocean and inlet shorelines below the high-tide line would be permitted in front of (i.e., seaward of) prenesting areas until breeding activity is observed, then standard buffers for breeding activity would apply. The NPS retains discretion at all times to enforce more proactive closures or take other measures, if considered necessary, consistent with its obligations under the law. Prenesting areas would generally be closed March 15 through July 31 (or August 15 if black skimmers are present), or until two weeks after all chicks have fledged and breeding activity has ceased, whichever comes later. For all species closures, including prenesting closures, the NPS would not reduce buffers to accommodate an ORV corridor or ORV ramp access.

Bodie Island Spit would be designated as a seasonal ORV route from September 15 through March 14 and would be vehicle free from March 15 through September 14. Like alternative E, alternative F also involves the development of an interdunal pedestrian trail on Bodie Island. The trail would begin at a new parking area near ramp 4 and would provide access to the inlet. This new trail would also be subject to resource-protection closures. Year-round ORV routes would be designated at Cape Point and South Point, with 35-meter-wide (115-foot-wide) ORV corridors during the breeding season. Standard resource-protection buffers would apply to these ORV corridors. When nests occur near the ORV corridor or unfledged chicks are present, the probability of being able to provide this access would decrease. The provision and criteria described in alternative A for creation of short-term bypasses would be incorporated in alternative F only for sea turtle nests and only between ramp 44 and Cape Point. Alternative F would include the construction of a short seasonal ORV route to provide pedestrian access to the sound on Ocracoke Island. In addition, the NPS would consider applications for commercial use authorizations to offer beach and water shuttle services and would apply for funding to conduct an alternative transportation study to evaluate the feasibility of alternative forms of transportation to popular sites, such as inlets and Cape Point.

The variety of access methods possible under alternative F, based on the establishment of year-round and seasonal ORV routes and vehicle-free areas, and increased interdunal roads and parking to support access,

would provide the public with ORV and pedestrian access to a greater number of areas within the Seashore. This alternative would afford less predictability than alternative C or D, but more predictability than alternative E, regarding areas available for use, and it would require a comparable level of oversight and management to alternative E.

Areas that would be seasonally designated as vehicle free would include the areas in front of Ocracoke Campground and villages, except for Rodanthe north of the pier and Buxton, which would be vehicle free year-round. The dates for ORV use in front of the seasonally designated villages and Ocracoke Campground would be November 1 to March 31 when visitation and rental occupancy is lowest. These areas would be vehicle free April 1 to October 31 when visitation and rental occupancy is highest. When these beaches are open to ORV use, a safety closure would be implemented on portions of the beach that are not consistently at least 20 meters (66 feet) wide during normal high tides.

To facilitate access to ORV routes, this alternative would add new ramp 25.5 approximately 2.5 miles south of ramp 23, relocate ramp 59 to 59.5, and add a new ramp 63 across from Scrag Cedar Road. (Note: All action alternatives involve relocating ramp 2 and building a new ramp at 32.5). New interdunal roads would facilitate access to locations that have either seasonal or year-round restrictions on ORV use. Locations for interdunal roads would include: inland of South Beach from ramp 45 to ramp 49, with one new ramp at 47.5 and on Hatteras Inlet Spit extending from the intersection of Pole and Spur Roads southwest toward the inlet, stopping at least 100 meters from the inlet. Existing soundside access points would remain open, with better maintenance than currently occurs. Signage/posts would be installed at the soundside parking areas and boat launch areas to prevent damage to vegetation and other soundside resources. This alternative also involves the addition of new parking areas with associated foot trails or boardwalks to facilitate pedestrian access at a number of locations.

ORV routes and vehicle-free areas under this alternative would still be subject to temporary resource closures established when protected-species breeding behavior warrants and/or if new habitat is created. Outside the breeding season, vehicle-free areas throughout the Seashore would provide relatively less-disturbed foraging, resting, and roosting habitat for migrating and wintering birds. These areas would be open to pedestrians for recreational use. In addition, resource closures at spits and points would also be established, based on an annual nonbreeding habitat assessment conducted after the breeding season, to provide areas of nonbreeding shorebird habitat with reduced human disturbance.

Designated ORV routes would be open to ORV use 24 hours a day from November 16 through April 30. From May 1 through November 15, all potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 9:00 p.m. until 7:00 a.m. to provide for sea turtle protection and allow enforcement staff to concentrate their resources during the daytime hours; however, from September 16 through November 15 selected ORV routes with no turtle nests remaining (as determined by the NPS) would reopen to night driving, subject to the terms and conditions established under the ORV permit.

ORV safety closures could be designated as conditions warrant and would be evaluated for reopening by NPS law enforcement staff on a weekly basis. ORV safety closures would be applicable only to ORV access; pedestrian and commercial fishing access would generally be maintained through safety closures. Alternative F provides specific guidelines for establishing and removing safety closures. Additional ORV-driving requirements would be implemented to provide for increased pedestrian safety in all areas open to ORV use, including the village beaches when open to ORV use. Under the carrying capacity requirement for alternative F, the maximum number of vehicles allowed on any particular ORV route during peak use periods would be the linear distance of the route divided by 6 meters (20 feet) per vehicle (i.e., the equivalent of 260 vehicles per mile). In addition, parking within ORV routes would be allowed,

but restricted to one vehicle deep. These measures would reduce safety concerns associated with overcrowding, such as at peak use periods during major summer holidays and weekends.

Alternative F would include an ORV permit system, with no limit on the number of permits issued. Permit fees would be determined based on the recovery of NPS costs incurred in implementing the ORV management plan that are not already covered by the Seashore's base operating funds. Expected permit fees would be similar to alternative E due to the level of management required for implementation. Both annual and 7-day permits would be available under this alternative. To obtain a permit, ORV owners would be required to complete a short education program in person at an NPS facility. Vehicle owners would need to sign for their permit to acknowledge that they understand the rules and that all drivers of the permitted vehicle will abide by the rules and regulations governing ORV use at the Seashore. A violation of the rules and regulations by the owner or driver of the ORV could result in revocation of the vehicle permit, and the owner/permittee would not be allowed to obtain another permit for any vehicle for a specified period of time. In addition to the mandatory education program for ORV users, the NPS would establish a voluntary resource-education program targeted toward non-ORV beach users.

Every five years the NPS would conduct a systematic review of the species management measures identified in this alternative as being subject to periodic review. This could result in changes to those management actions in order to improve effectiveness.

Designated ORV routes under alternative F are shown on figure 2 and described in table 7-1. Details of the management actions under this alternative are described in table 8 and species management strategies are described in table 10-1.

## **HOW ALTERNATIVES MEET OBJECTIVES**

As stated in chapter 1 of this document, all action alternatives selected for analysis must meet all objectives to a large degree. The action alternatives must also address the stated purpose of taking action and resolve the need for action; therefore, the alternatives were individually assessed in light of how well they would meet the objectives for this plan/EIS, which are stated in chapter 1 of this document. Alternatives that did not meet the objectives were not analyzed further (see the "Alternative Elements Considered but Dismissed from Further Consideration" section in this chapter).

Table 12 compares how each of the alternatives described in this chapter would meet the plan objectives. Chapter 4 of this document describes the effects of each alternative on each impact topic. These impacts are summarized in table 13. Tables 12 and 13 are included at the end of this chapter.

## **ALTERNATIVE ELEMENTS CONSIDERED BUT DISMISSED FROM FURTHER CONSIDERATION**

### **USE AREAS, ORV MANAGEMENT, AND VISITOR USE**

#### **Modify the ORV Management Plan in Accordance with Plans Proposed by Groups Outside the NPS**

During the public comment period for the draft plan/EIS, alternative plans for the management of ORVs and wildlife at the Seashore were submitted. Many of the elements in these proposals are already included in the range of alternatives considered, or have been incorporated into the revised alternative F (NPS preferred alternative). Those elements that are not included were considered but dismissed for the reasons discussed below under the headings: Implement Additional Vehicle Requirements, Additional

Requirements for Permit Holders, Alternative Methods for Determining ORV Carrying Capacity, Allow for a Greater Level of Night Driving at the Seashore, Provide an ORV Pass-through Corridor through All Species Closures/Buffers, Criteria for the Designation of SMAs, Relocate Bird and Turtle Nests, Modify the Turtle Program, Implement a Volunteer Program to Assist with Species Protection, Create an Oversight Committee with External Experts and Scientists, Create New Habitat, and Give Special Consideration only to Flora and Fauna Listed as Threatened or Endangered.

### **Consider Pea Island National Wildlife Refuge when Considering Use Areas**

Many commenters suggested that Pea Island NWR (refuge) should be considered when developing this plan/EIS. Suggestions included considering the refuge as a vehicle-free area, and conversely, as a potential area where ORVs could be used where there is not a resource conflict. Commenters felt that the refuge should be considered a part of the baseline for analysis, and should be considered when providing appropriate visitor use. Although the 5,880-acre Pea Island NWR is located at the northern end of Hatteras Island, and is within the boundary of the Seashore, the refuge is administered by the USFWS. The Seashore's 1978 draft interim ORV management plan affirmed that the refuge manager has management responsibility for posting closures on beaches within the refuge as he or she may find necessary to implement the regulations of the USFWS. The NPS recognizes that approximately 12.1 miles of beach within the refuge has been closed to ORVs for a number of years and at present provides an opportunity for visitors to the north end of Hatteras Island to walk on the beach in the absence of vehicles; however, because the refuge is not administered by the NPS, the Seashore cannot direct the management of visitor use at the refuge. The USFWS is responsible for making decisions about ORV and pedestrian access and has done so under a public planning process in the Pea Island National Wildlife Refuge Comprehensive Conservation Plan (USFWS 2006b), as mandated by the *National Wildlife Refuge Improvement Act of 1997*. Through this process, the USFWS has determined that ORV use would not be appropriate or compatible with the mission of the refuge.

NPS also recognizes that there are times and locations on Nags Head and Cape Lookout National Seashore beaches, where ORVs may and may not be driven, providing additional opportunity for recreation with and without vehicles. Under the *Organic Act*, the NPS is responsible for managing activities in the Seashore to conserve the natural resources unimpaired on NPS-managed lands within the Seashore, which includes protecting the wildlife and its habitat. Similarly, under the Seashore's enabling legislation, NPS is mandated to preserve the unique flora and fauna and physiographic conditions. The presence of a species outside the Seashore does not mitigate, eliminate, or affect the authority and responsibility of the NPS under both the *Organic Act* and the Seashore enabling legislation to preserve unimpaired the Seashore populations of wildlife.

### **Prohibit the Use of Off-Road Vehicles**

Prohibition of ORV use at the Seashore would not meet the purpose, need, and objectives of this plan/EIS. The purpose of this plan is to “develop regulations and procedures that carefully manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes, provide a variety of visitor use experiences while minimizing conflicts among various users, and promote the safety of all visitors...” ORV use, if effectively managed, provides convenient access for many appropriate visitor activities at some popular beach sites including, for example, activities that use vehicles to transport substantial amounts of gear for the activity. Prohibition, rather than management, of ORV use could substantially diminish such visitor experience opportunities. Therefore prohibition of all ORV use would not meet the plan need.

In addition to not meeting the purpose, need, and objectives of this plan/EIS, ORV use is a historical use at the Seashore that has been accounted for in Seashore planning documents. Management goals related to ORV use are included in the Seashore's General Management Plan, which states, “Selected beaches will

continue to be open for ORV recreational driving and in conjunction with surf fishing in accordance with the existing use restrictions” (NPS 1984). Providing for this use would occur in the context of the overall planning objective of preserving the cultural resources and the flora, fauna, and natural physiographic conditions, while providing for appropriate recreational use and public access to the oceanside and soundside shores in a manner that will minimize visitor use conflict, enhance visitor safety, and preserve Seashore resources. ORV use preceded the establishment of the Seashore and management of this use, rather than prohibition, continues to be the intent of the NPS. The NPS acknowledges that if it does not promulgate a special regulation to authorize ORV use, then ORV use would, in fact, be prohibited at the Seashore; however, because a complete prohibition of ORV use does not meet the purpose, need, and objectives of this plan/EIS and because ORV use is a use that is accounted for in Seashore plans and policies, elimination of all ORV use at the Seashore was not carried forward for further analysis.

### **Changes in Infrastructure and Regulations of Other Jurisdictions**

Commenters suggested elements that would involve jurisdictions outside the NPS, including:

- Provide NPS parking and beach access points throughout Dare County villages.
- Lower the speed limit on NC-12 between villages to 45 mph during peak use times to reduce the danger from vehicles with aired-down tires.
- Limit the use of bright lighting in oceanfront houses.
- Create a sound ordinance.
- Create guidelines for oceanfront structures, such as setbacks from the high-tide mark and rebuilding guidelines, to address damage to existing oceanfront structures.

These suggestions would require action by the county or state. Lowering the speed limit would require a change in current state regulations. The county would be responsible for changing building codes or adding more parking and access points. Creating sound or turtle friendly lighting ordinances or occupancy restrictions for rental homes would require action of the respective counties. The NPS does not have the authority to require these jurisdictions to undertake such action. However, the NPS has worked with the communities within the Seashore on many issues, including those related to ORV management, and under all alternatives would continue to work cooperatively to encourage actions such as turtle-friendly lighting and education. Although the NPS cannot require Dare County to provide more parking or beach access, some of the alternatives evaluated in this plan/EIS address additional parking areas on Seashore land.

### **Implement Additional Vehicle Requirements**

During public comment on the draft plan/EIS, commenters recommended additional vehicle requirements such as requiring vehicles to be oil leak free, permitting only electric vehicles, and requiring that license plates be displayed properly. The Seashore does not have the capability to efficiently inspect each vehicle that enters the beach to determine if it is leaking oil. Individual vehicle inspections for leaking fluids could cause substantial traffic backups, which would adversely affect visitor experience and safety. However, all vehicles operated in the Seashore must comply with state inspection requirements, which include regulations on leaking fluids. If the NPS were to observe a vehicle leaking oil, it would be removed from the beach. The NPS is not proposing to allow only electric vehicles in the Seashore due to the limited availability of these vehicles to the general public. Obstruction of the rear license plate is a violation of North Carolina law, which is enforced by NPS law enforcement staff under 36 CFR 4.2(b). In developing the details of the ORV permit program, the Seashore would consider whether this violation would be a basis for permit revocation.



### **Provide All-Terrain Vehicle/Utility Terrain Vehicle Access and Remove the Helmet Requirement**

Commenters suggested that ATVs and utility terrain vehicles (UTVs) should be allowed on the beach and that ATV users should not be required to use helmets. The NPS only allows street-legal vehicles on the beach under the North Carolina Motor Vehicle Code, which does not include ATVs or UTVs.

Alternatives in this plan/EIS do not include changing the requirement for street-legal vehicles. The Seashore considers ATV and UTV use at the Seashore to be incompatible with visitor use and resource protection goals and objectives due to the damage they could cause. Further, street-legal vehicles are used for transportation, but the majority of ATVs and UTVs are used primarily for recreational or utility purposes, although they may secondarily serve a transportation function. Since ATVs and UTVs would not be permitted, the issue of requiring helmets is not applicable.

### **Assign Permits to Users Instead of Vehicles**

For the alternatives that include a permit system, permits would be assigned to a particular vehicle through issuance to the registered owners of vehicles. A permit sticker would then be affixed to the vehicle, where it would be easily visible by law enforcement personnel. Another option of assigning permits to the person only, not the vehicle, was considered, but eliminated. Verifying that people have permits that are movable between multiple vehicles would require substantially more effort by law enforcement staff, who would have to stop each driver visitor and ask to see their permit. Therefore, to assist in enforcing the permit system, permits are assigned to the registered owners and affixed to the vehicles under all alternatives.

### **Require a Permit for All Users of the Seashore**

The idea of an entrance or admission fee for the Seashore was discussed thoroughly during the negotiated rulemaking process, and was dismissed primarily due to administrative and financial obstacles. The establishment of an entrance fee would require the NPS to install manned entrance gates in the Seashore to collect visitor fees. However, there are thousands of local residents who have to travel through the Seashore to gain access to their property. The logistics of collecting entrance fees from all visitors would result in delays at entrances and would impede efficient travel along NC-12.

In addition, parking and access fees are managed under the *Federal Lands Recreation Enhancement Act* (FLREA), which does not provide for a cost recovery program. Therefore, the Seashore would be able to retain only a portion of the entrance or parking fees collected and could not use those funds to support key functions associated with an ORV management program, such as law enforcement, maintenance of routes or parking lots, or resource management. As a result, the collection of admission and parking fees was not carried forward for further analysis.

### **Provide Separate Permits for Different Areas of the Seashore as a Means of Limiting Congestion**

The ORV permit system is an enforcement and education tool to reduce adverse impacts to park resources and visitor experience. It is not intended to limit the number of ORVs on Seashore beaches. During internal and public scoping as well as the negotiated rulemaking process, the NPS considered various methods for establishing an ORV permit system. A common theme among the alternatives for ORV permits was that fees should be kept reasonable so that all visitors, regardless of income level, would be able to afford to purchase an ORV permit. The most logical method of implementing an ORV permit system would be to use the special park uses authority under 16 USC 3a which would allow the Seashore to recover the cost of implementing the ORV management program. A permit system that required a

different permit for different locations in the Seashore would be complex to implement, resulting in increases in NPS management costs. Such costs would ultimately be passed along to ORV users because the permit fees would be based on cost recovery. Therefore, more complex permitting systems were considered but not carried forward for analysis. As a result, the concept of establishing vehicle limits in certain areas through an ORV permit system was not carried forward for further analysis.

### **Additional Requirements for Permit Holders**

During public comment on the draft plan/EIS, commenters recommended a range of requirements that could be included in a permit system such as having permit holders report turtle crawl activity. Although the Seashore encourages the public to report certain species activities, including turtle crawls, *requiring* the public to report turtle crawls would not be appropriate as part of an ORV permit program and was dismissed from further analysis. However, suggestions made for various educational components, such as watching an educational video, are included in the range of alternatives.

### **Provide Night Parking at the End of Access Ramps on the Beach Side and Along the Sandy Road Behind the Dunes at Cape Point and the Spits**

Night parking (but not camping) for pedestrian beach access would be allowed at roadside parking areas identified on the maps for alternative F. Allowing vehicles to park overnight on interdunal roads or ORV ramps immediately adjacent to resource sensitive locations would be difficult to patrol and enforce. Additionally, it could place an unrealistic expectation on visitors in such locations to strictly comply with the applicable resource protection restrictions. The NPS does not have the resources to patrol the entire Seashore at night to enforce compliance. The placement of more parked vehicles on ORV routes adjacent to the beach at night would potentially result in additional compliance problems, and was not carried forward for further analysis.

### **Locate ORV Routes Behind the Dunes, Away from Pedestrian Users**

Routes behind the dunes would be more damaging to the environment in some cases because the land there is not hard, bare beach sand but instead is loose sand, and the area contains vegetation and other wildlife. Additionally, interdunal roads would not allow the same degree of access that designated ORV routes would provide to visitors that use ORVs for access to recreational activities. Some interdunal roads would be provided to allow for ORV access around designated vehicle-free areas. As a result, locating ORV routes behind dunes as a general practice was not carried forward for further analysis.

### **Alternative Methods for Determining ORV Carrying Capacity**

During public comment on the draft plan/EIS, commenters provided a range of suggestions for determining the ORV carrying capacity at the Seashore. This includes extending carrying capacity limits to all areas of the Seashore, allowing vehicles to stack more than one deep, implementing limits on pedestrian use, and increasing or decreasing the proposed vehicle limits. Overall, the NPS established carrying capacity limitations primarily as a visitor safety mechanism to reduce the potential for vehicle-vehicle and pedestrian-vehicle conflicts that can occur in areas where vehicles and pedestrians coexist. The NPS considered various options for determining carrying capacity limits which are included in the range of the alternatives in this plan/EIS. For more information please see “Appendix C: Concern Response Report” (response to Concern ID 24129).

### **Use a Different Term for “Requirement” in Law Enforcement Text**

Commenters suggested using the words “courtesy,” “guidelines,” or “rule” instead of “requirements.” Where the word “requirements” is used in an alternative, it implies a level of regulatory enforcement authority. In these areas, changing the word to “guidelines” or “courtesy” would not imply enforcement capability; therefore, this suggestion was not carried forward in the alternatives.

### **Provide Around-the-Clock Enforcement**

Commenters suggested that around-the-clock enforcement would ensure resource protection. The Seashore has no source of funding capable of supporting around-the-clock enforcement in all areas at all times. This suggested level of enforcement is not the norm for any national seashore. The action alternatives provide for increased outreach and education to help improve voluntary compliance, but around-the-clock enforcement would not be feasible and was therefore not included in any alternatives.

### **Designate a “Backcountry Zone” Where Pedestrians Can Walk**

Designation of a backcountry zone is not within the scope of this project. However, the Seashore will address park management zones in the revision of the General Management Plan (GMP) for the Seashore.

### **Establish Two Marked Travel Paths on the Beach**

Marking travel lanes in ORV routes along the length of the Seashore would not be possible nor desirable because of the visual impact. However, alternative F requires that two-way traffic remain unimpeded within ORV routes and also provides the Seashore with the authority to close down a section of beach if two-way traffic is impeded.

### **Construct an “Access Trail” to Hatteras Spit**

Over the past several years, the Seashore has provided ORV access to the back side of Hatteras spit whenever it would not result in human safety or resource impacts. Some of the sound shoreline area is very narrow; having a small strip of sand that is subject to flooding at high tide unless one drives on the vegetation. This includes wetland vegetation that bounds it on the land side. Because it is problematic to access the sound from Pole Road at other points, alternative F provides for ORV access to the sound behind the Coast Guard Station, at Cable Crossing and at Spur Road, and did not carry an access trail to Hatteras Spit forward for further analysis.

### **Add a Public Soundside Beach on Ocracoke**

NPS believes that the suggestion to provide a soundside beach on Ocracoke has merit. However, it is outside the scope of the ORV plan/EIS and was not included in the alternatives carried forward for further analysis. The NPS believes that it would be an appropriate topic for the Seashore’s upcoming GMP revision process.

### **Divide the Seashore by Different Recreational Uses**

The purpose of the plan is to develop regulations and procedures that carefully manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes; to provide a variety of visitor use experiences while minimizing conflicts among various users; and to promote the safety of all visitors. While it is recognized that individuals who use ORVs do so for a variety of purposes or to pursue different recreational interests, developing a nuanced approach to designating ORV areas

based on the different individual interests would be extremely difficult and is beyond the scope of this plan. Therefore, this approach was not carried forward as an element of the alternatives evaluated. The NPS believes that the range of alternatives evaluated in this plan/EIS provide various ORV routes and vehicle-free areas, which offer visitors the opportunity to select the locations best suited for pursuing their respective interests, whether it be fishing, swimming, shell collecting, bird watching, or other uses.

### **Allow for a Greater Level of Night Driving at the Seashore**

During public comment on the draft plan/EIS, commenters requested that night driving only be restricted between May 27 and August 25, and requested that some level of nighttime access be maintained between these dates. NPS considered a range of dates for night driving from unrestricted night driving, 365 days per year in alternative A to the dates for nighttime restrictions in alternatives B – F. These dates were identified based on the sea turtle nesting season to reduce the chance for direct or indirect impacts to nesting sea turtles from ORV use. Since 2000, three nests were found prior to May 15 (two of which were leatherback nests) and four nests have been found after September 1. It is important to note that prior to 2008, nest patrols were conducted only from June 1 through August 31 (2001–2005), or May 15 through September 15 (2006 and 2007). Any nests laid outside of that timeframe had a greater likelihood of not being found, recorded, and protected by resource management staff.

Direct adverse impacts of nighttime driving were documented during the 2010 nesting season when an ORV driving on the beach at night – in violation of the consent decree – struck and killed a nesting female loggerhead turtle during the nighttime hours between June 23 and June 24. The turtle had crawled out of the ocean and attempted to lay a nest between ramps 70 and 72 on Ocracoke Island. The ORV hit the turtle and dragged her approximately 12 feet, causing fatal injuries. The turtle was found dead by NPS turtle patrol at 6:10 a.m. on June 24. This particular incident is the first documented time a nesting sea turtle has been killed by an ORV at the Seashore (NPS 2010b).

The NPS believes that nighttime restrictions from May 1 until November 15 provide the proper level of protection for sea turtles. Further, the NPS believes that providing exceptions to this would have unacceptable adverse impacts to sea turtles at the Seashore. For these reasons, the NPS did not specifically analyze a May 27 to August 25 nighttime driving restriction period.

### **No Restrictions on ORV Use**

Unrestricted ORV use at the Seashore would not meet the purpose, need, and objectives of this plan/EIS. The purpose of this plan/EIS is to “develop regulations and procedures that carefully manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors.” Unrestricted ORV use would not provide for a variety of appropriate uses and, therefore, not meet the plan/EIS need. Also, the need of the plan/EIS, including providing consistent management of ORV use, would not be addressed. Unrestricted ORV use would not meet many of the plan/EIS objectives that relate to managing ORV use. For example, the following three Visitor Use and Experience objectives would not be met if unrestricted ORV use was allowed:

- Ensure that ORV operators are informed about the rules and regulations regarding ORV use at the Seashore.
- Manage ORV use to allow for a variety of visitor use experiences.
- Minimize conflicts between ORV use and other uses.

Therefore, because it would not meet the purpose, need, and objectives of this plan/EIS, unrestricted ORV use was not carried forward for further analysis.

## **SPECIES PROTECTION**

### **Implement an Escort Program**

During development of the Interim Strategy, some alternative elements were considered but not carried forward because they would be reevaluated in this plan/EIS. One of these elements was the implementation of an escort program, whereby vehicles would be escorted around resource closures by Seashore staff.

This program would be similar to the situation in 2005, where at Hatteras Inlet Spit, ORV traffic was permitted only in the ORV corridor once per hour in convoys escorted by bird monitors, to reduce the risk of mortality to an American oystercatcher brood and to reduce disturbance to an incubating plover nest. ORVs were permitted to park at the tip of the spit, west of the escort corridor. The spit was closed to recreation at night. Once the piping plover eggs hatched, Hatteras Inlet Spit was closed to ORV traffic until the chicks fledged.

This type of escort system was considered for this plan/EIS, but, as stated in the Interim Strategy, the escort system would be extremely labor intensive to initiate, and providing the staffing levels necessary to adequately implement an escort program would likely not be feasible. This was demonstrated during the 2005 season when the Seashore had to transfer personnel from other NPS units to implement the escort system. Due to the intensive staffing required for this effort, it was determined that this element would not meet the plan/EIS objectives related to Seashore operations.

### **Provide an ORV Pass-through Corridor through All Species Closures/Buffers**

During public comment on the draft plan/EIS, commenters recommended providing a corridor through all species resource closures and buffers. A buffer or resource closure is an area surrounding a sensitive resource, such as bird nests or chicks, which is closed to visitor access during critical life cycle stages to reduce human disturbance and the risk of mortality due to pedestrians and ORVs. Any passages, corridors, or pass-throughs that cut directly across/through a resource closure would essentially undermine the biological function of the closure and could render it compromised, perhaps even useless to the species it is meant to protect if all buffers include ORV corridors. Therefore, the element of including an ORV corridor in all buffers was not included in the range of alternatives, but a more limited concept of a pass-through was included in alternative E.

### **Criteria for the Designation of Species Management Areas**

During public comment on the draft plan/EIS, commenters recommended additional criteria for the designation of SMAs. Such criteria included areas of high quality habitat (even if there has not been recent breeding activity), how SMAs should be established and expanded, and the use of 10 years (rather than 5 years) of nesting history to designate these areas. The concept of including high quality habitat was incorporated in the range of alternatives by the use of prenesting surveys that would result in prenesting closures of suitable habitat. Although the SMA would not be designated based on the "high quality habitat" criteria, these areas would still be offered protection through the prenesting survey and closure. This would also apply to expanding SMAs; although the SMA itself would not expand habitat, outside the SMA would be protected through prenesting closures or breeding/nesting buffers. For these reasons, these elements were not carried forward for further analysis.

The use of 10 years, rather than 5 years, of nesting history to designate SMAs was not considered a reasonable alternative because so much potential nesting substrate is impacted and rearranged on an annual basis, especially during fall and winter storms. Since this area is frequently changing, it is believed that it is sufficient to use breeding and nesting location data from the five previous years in conjunction with an annual pre-season habitat assessment. Given how much annual change there is in suitable nesting substrates on barrier islands, 10 years of nesting/breeding data would very likely capture many sites that do not presently have sufficient potential to support breeding populations. As a result, the use of 10 years of nesting data was not carried forward for detailed analysis.

### **Move Hatched Chicks to Pea Island National Wildlife Refuge or Other Area**

Commenters suggested moving hatched bird chicks from the beach to other areas where they would be protected. This conflicts with NPS responsibilities under the ESA, MBTA, *Organic Act* (as described in the turtle hatcheries section below), and the NPS *Management Policies 2006*. Further, moving chicks is not feasible because until they fledge, chicks must remain with their parents for foraging and protection. Relocating chicks would not meet the plan/EIS objective of minimizing adverse impacts to threatened, endangered, and other protected species.

### **Provide Captive Rearing of Piping Plovers and Turtles**

Commenters suggested rearing endangered species in captivity. Wildlife managers use captive breeding/rearing of threatened or endangered species in the following circumstances: (1) to provide an opportunity to restore populations where direct translocation may risk the persistence of the donor population; or (2) as a last resort in cases where most or all of the entire remaining wild population are brought to a captive breeding facility with the goal of avoiding extinction and breeding enough individuals for eventual reintroduction into the wild (e.g., California condor) (Gilpin and Soulé 1986). The Kemp's ridley sea turtle hatchery at Padre Island National Seashore is an example of a last-resort captive rearing facility used to restore a population. None of these situations apply to piping plover or nesting loggerhead, leatherback, or green sea turtles at Cape Hatteras National Seashore, so this suggestion was not included in any of the alternatives. Furthermore, the revised Loggerhead Sea Turtle Recovery Plan (NMFS and USFWS 2008) recommends the use of the least manipulative method to protect nests and the discontinuance of the use of hatcheries as a nest management technique.

### **Relocate Bird and Turtle Nests**

Commenters suggested that the Seashore relocate bird or turtle nests to areas of the beach already closed to ORV use or relocate nests to smaller, more compact areas to facilitate management. These alternatives have been considered but are not carried forward, as discussed below.

**Birds.** Some species of birds, such as the burrowing owl, adapt well to nest relocation, but others do not. Birds that do not relocate well typically are those that demonstrate higher levels of nest abandonment. Nest abandonment by piping plovers and American oystercatchers is a documented source of nest failure at the Seashore. Therefore, relocating nests would likely result in increased nest abandonment and failure. In addition, moving nests into one area would not be feasible. Plovers and oystercatchers are solitary rather than colonial nesters (i.e., they nest away from others of their species). Plovers sometimes nest near tern colonies to benefit from the aggressive behavior of terns protecting their colonies; however, they typically do not nest with other plovers. Since the purpose of the strategy is species protection, and moving nests would reduce these species' ability to reproduce, moving nests was eliminated from further analysis.

**Turtles – Routinely Relocate Turtle Nests.** Turtles do not face the same nest-abandonment issues as those described for birds. Parental investment in the young ends with the laying and burying of eggs. However, the eggs, subsequent hatchlings, and overall species may face additional problems related to nest relocation. Studies indicate that the determination of the hatchling sex ratio depends on the temperature at which the eggs incubate. Changes in these temperatures due to moving eggs may result in changes to the sex ratio, which would have implications for the species as a whole.

Other hatchling characteristics can be altered by relocating nests as well. Sea turtles naturally distribute their nests both temporally (nest several times throughout the nesting season) and spatially (locate nests low or high on the beach and in different sections along the beach). This not only helps to avoid completely losing their reproductive effort in case environmental factors (such as storms, temperature, and sand conditions) or other incubation factors preclude development of the embryos, but it also varies the incubation environment of the eggs. In addition to sex ratio, the incubation environment has also been shown to influence among other things size, early swimming behavior, and early growth in hatchlings (Foley et al. 2006). Because the characteristics of hatchlings vary with incubation environments, a scattered nesting pattern also increases the variation of hatchling characteristics. This variation ensures that, at all times, at least some hatchlings have characteristics that are appropriate for survival. The exact characteristics that are best suited for survival vary unpredictably over space and time (Carthy et al. 2003). Relocating nests and/or concentrating them in one area of a beach (e.g., hatchery or corral areas) may very well reduce the variety of incubation environments that could influence the development of hatchling characteristics that increase survival rates (Foley et al. 2006).

In addition, handling eggs can result in increased hatch failure. When relocating nests, there is always a risk of disrupting the membranes inside the eggs, which can kill the embryos. Typically, a blanket policy of routinely relocating all or most turtle nests is seen as part of an intensive management effort to keep the species from going extinct, whereas allowing for natural breeding and nesting is the preferred option whenever available. The revised Loggerhead Sea Turtle Recovery Plan (NMFS and USFWS 2008) recommends the use of the least manipulative method to protect nests and states that as a general rule, nests should only be relocated if they are low enough on the beach to be washed daily by tide or if they are situated in well documented high-risk areas that routinely experience serious erosion and egg loss. Currently in North Carolina, the state permits sea turtle nest relocations for research or when there is an imminent threat and potential loss of the nest due to erosion or frequent flooding, but not to accommodate recreational uses. Nests in some states may be moved to avoid damage from beach nourishment or in highly developed urban areas (e.g., along some urban areas of Florida's Atlantic Coast). None of these special conditions apply at the Seashore. Consequently, routine relocation of all nests to allow for recreational access is not considered in this plan/EIS. However, the NPS would continue its current practice of coordinating with the State of North Carolina to consider relocating an individual nest facing inundation or other adverse factors.

**Turtles – Use Turtle Hatcheries.** Moving all nests or all relocated nests into one hatchery area is not fully analyzed as part of any alternative. Sea turtle nests may be moved to a guarded hatchery to provide needed protection from poaching in developing countries where participation in hatchery operations may be used as an eco-tourism opportunity. Some county or privately owned beaches in Florida or Georgia may use hatcheries for sea turtle eggs in some circumstances, such as to allow beach nourishment. However, county responsibilities for endangered or threatened species differ from federal, and particularly from NPS, responsibilities for these protected species. As a federal agency, the NPS has responsibilities under the ESA to protect the ecosystem as well as the species that depend on it. The purpose of the ESA is to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved” (sec. 2(b)). Protecting the ecosystem is also necessary to meet the requirements of the *Organic Act*, which mandates the NPS to conserve Seashore wildlife (refer

to the “Other Applicable Federal Laws, Policies, Regulations and Plans” section in chapter 1 of this document).

Loggerhead sea turtles, the predominant nester at the Seashore, as well as leatherback and green sea turtles are all currently listed pursuant to the ESA. Any actions that would likely reduce productivity and cause a decline in the species would not be consistent with the purpose of the Act. The revised Loggerhead Sea Turtle Recovery Plan (NMFS and USFWS 2008) recommends the discontinuance of the use of hatcheries as a nest management technique and states that relocating nets into hatcheries concentrates eggs in an area and makes them more susceptible to catastrophic events and predation from both land and marine predators. It also can increase the potential for disease, such as fungal problems, to spread to all nests and result in egg mortality. Using corrals also usually results in hatchlings being released in the same location. This has the potential to increase predation in the ocean area surrounding the release site after the hatchlings reach the water. Therefore, use of hatcheries was not considered in this plan/EIS.

### **Modify the Turtle Program**

During public comment on the draft plan/EIS, commenters recommended modifying the turtle program to include nest relocation (discussed above), the use of volunteers (discussed below), different predator management techniques, varying buffer sizes, and varying the type of data collected for sea turtles. Under alternative F, sea turtle management procedures at the Seashore are based on the latest scientific research, and are consistent with the most current USFWS Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle (NMFS and USFWS 2008) and NCWRC guidelines (NCWRC 2006). Both documents have been developed by scientific experts in the field of loggerhead sea turtle biology and conservation. Additional information on why these elements were not carried forward can be found in “Appendix C: Concern Response Report” (see response to Concern ID 24193, 24143, and 24233).

### **Additions to the Shorebird Monitoring Program and Data Collection**

During public comment on the draft plan/EIS, commenters recommended additions to the Seashore’s bird monitoring and data gathering procedures including recording the GPS location for banded birds, that scopes be used rather than binoculars, use of experimental design comparing bird populations in areas open or closed to vehicles, and discontinuing use of the Southeast Coast Network (SECN) protocol for monitoring. A suggestion was also made that nonbreeding surveys be designed to occur at multiple distinct tidal stages. For the following reasons, NPS would continue to do what it has been doing for the nonbreeding shorebird surveys. First, SECN is the NPS Southeast Regional Office Inventory and Monitoring Program data collection arm, and it is appropriate for the Seashore to follow their technical guidance on monitoring methodology. Second, data collection techniques do not include larger transects because the counts are not meant to count every single bird, but are designed to show trends over time. Trends over time can be monitored without counting every bird. Third, the current transects are timed transects, which means they cannot be interrupted to obtain band data. Finally, the recently signed MOU between the USFWS and the NPS (<http://www.fws.gov/migratorybirds/Partnerships/NPSEO13186Signed%204.12.10.pdf>) commits NPS to working with its Inventory and Monitoring Program, of which SECN is a part, for migratory bird data collection.



### **Implement a Volunteer Program to Assist with Species Protection**

During public comment on the draft plan/EIS, some commenters recommended the Seashore use volunteers to implement a range of species management measures such as monitoring nesting activity, a beach watch program, and vehicle escorts. The primary purpose of the NPS volunteers in parks program is to use volunteer help that is mutually beneficial to the NPS and the volunteer. The NPS recognizes the importance of encouraging stewardship through volunteer opportunities and will use volunteers when deemed appropriate and resources are available to run such a program. The NPS will work at integrating volunteers back into the less sensitive aspects of the species monitoring program. At this time, NPS believes that the best use of volunteers for species protection activities would be in a trained volunteer program for watching sea turtle nests that have reached their hatch windows to monitor hatchling emergence and success reaching the water, and to inform the public on ways to minimize negative impacts from artificial lighting, predation, and human disturbance. This program should enhance protection and encourage ownership/stewardship of resources among the public, and provide a beneficial situation for both the NPS and the volunteers. However, at this time, with the current controversy over ORV and protected species management, using volunteers to act as vehicle escorts or to monitor nesting activity (such as the morning sea turtle patrol) is not feasible as an alternative element because actions taken by trained park staff are so closely scrutinized and criticized and the NPS would not want to ask volunteers to be responsible for implementing controversial on-site activities or decisions.

### **Create an Oversight Committee with External Experts and Scientists**

Creating an oversight committee with external experts and scientists under the *Federal Advisory Committee Act* (FACA) has been considered but dismissed as a reasonable alternative for further analysis. FACA restricts the establishment of such committees to situations “when they are determined to be essential” (FACA sec 2(b)(2)). The creation of the suggested oversight committee is not “essential.” In its practical application, a FACA committee would be mostly redundant with the current NPS process of seeking scientific and technical consultation or advice as required or appropriate from species scientific experts in other agencies, organizations, and academia. Additionally, the significant administrative costs in staff time and money incurred in establishing and maintaining a FACA committee are not warranted when the needed scientific advice can be obtained less expensively and more efficiently. Based on the recent NPS experience with the negotiated rulemaking committee, established under FACA, the suggested oversight committee would not be likely to provide the NPS with clear and consistent, actionable advice, and managing the committee would require a commitment of staff time that could not be sustained over the life of the plan.

### **Open All Closed Areas after Breeding Season Is Over**

Commenters suggested that all closed areas should be reopened after the breeding season ends. Most closed areas would likely be reopened after the breeding season if the areas do not provide important migrating and wintering habitat for Seashore populations of protected species. Therefore, some areas may be reopened, but automatically opening all closed areas after the breeding season would be inconsistent with the Seashore’s responsibility under various statutes, including its enabling legislation, the *Organic Act*, the ESA, the MBTA, and the *NPS Management Policies 2006*, section 4.4.2.3. The alternatives in the plan/EIS do consider various ways to address resource-based closures, but the alternatives do not allow for automatic opening after the breeding season is over if species are still present.

### **Create New Habitat**

Commenters suggested various ways that habitat could be created to provide alternative areas for bird species at the Seashore. Some of these suggestions included letting ORVs drive on the vegetation to

create habitat or physically creating habitat using dredge material in the sound or by other means. These suggestions were considered by the Seashore but are not carried forward in this plan/EIS for the following reasons:

- **Allow visitors in ORVs to enhance habitat by driving over vegetated areas.** It has long been documented that even a low level of ORV use can cause severe degradation of coastal vegetation (Leatherman and Godfrey 1979). The Seashore recognizes that ORV use at certain locations could be an effective way to manage the encroachment of vegetation into existing shorebird nesting habitat. However, use of ORVs to create new habitat implies a large-scale use of vehicles to remove vegetation, which is typically protected under various NPS regulations and under the Executive Orders on ORV use. While removal of vegetation by any means to create new habitat may be appropriate and beneficial in certain circumstances, such a project would need to be planned, implemented, and studied by scientists or resource managers with the appropriate expertise. Therefore, allowing visitors in ORVs to create habitat was not considered in this plan/EIS.
- **Create habitat through physical alteration or the creation of dredge islands.** The NPS considered creating habitat through various methods. Based on the experience of staff at the NCWRC, habitat-creation projects tend to be short-lived and labor intensive. Based on experience with hand pulling, herbicides, fires, and bulldozing, it was found that most of these techniques are effective for only one season before the vegetation returns. Covering areas with new dredge material has been shown to last longer, with vegetation returning after four to seven years (Cameron pers. comm. 2007). Although the NPS recognizes that creation of habitat may be viable under certain circumstances, it is not an appropriate substitute for providing adequate protection of existing habitat. If this method is employed, it would occur outside the scope of the plan/EIS and therefore was not included in the alternatives.

### **Fence Chicks Away from the ORV Corridor**

Commenters suggested using barrier fencing, rather than symbolic fencing, to keep chicks away from the ORV corridors. Unfledged piping plover and American oystercatcher chicks need access to the intertidal zone and moist substrate habitat for foraging and chicks of all beach nesting bird species may utilize those same areas for thermal regulation. Fencing chicks away from these areas would essentially reduce their chances of survival; therefore, this was not considered a reasonable alternative.

### **Do Not Provide Protection to the Seabeach Amaranth**

Commenters suggested that seabeach amaranth is a “farmed” plant and should not be offered special protection. However, the seabeach amaranth is protected as a federally listed threatened plant species. Under the ESA, federal agencies are required to use their authority in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species and to ensure that any agency action authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat. Further, NPS *Management Policies 2006* state that “the Service will survey for, protect, and strive to recover all species native to national park system units that are listed under the *Endangered Species Act*” (NPS 2006c). The management policies also state that the NPS will “successfully maintain native plants and animals by preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur; restoring native plant and animal populations in parks when they have been extirpated by past human-caused actions; and minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes

that sustain them.” Not providing protection to a federally listed threatened species would be out of compliance with the ESA and contrary to the NPS *Management Policies 2006*, and was therefore not included in the alternatives of this plan/EIS.

### **Give Special Consideration only to Flora and Fauna Listed as Threatened or Endangered**

Commenters suggested that only those species listed as threatened or endangered under the federal ESA should be considered in this plan/EIS. As stated above, the NPS has legal responsibilities under the ESA and its own policies to protect threatened and endangered species. Further, a number of laws, regulations, and policies, in addition to the ESA, guide species management at the Seashore, including the *Organic Act*, the MBTA, NPS regulations and policies, Executive Orders 11644 and 11989: Use of Off-Road Vehicles on the Public Lands (see chapter 1), Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, and others (see chapter 1). Executive Order 11644 provides that areas designated for ORV use shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. NPS *Management Policies 2006* section 4.4.2.3 states, in part, that the NPS will inventory, monitor, and manage state- and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible. In addition, the NPS will inventory other native species that are of special management concern to parks (such as rare, declining, sensitive, or unique species and their habitats) and will manage them to maintain their natural distribution and abundance. The combination of laws, regulations, and policies included in this section of the plan/EIS create the framework in which the alternatives are developed, which includes the need to manage species that are considered to be of special concern, such as state-listed species, or those addressed by the MBTA. Because of these responsibilities, only considering flora and fauna listed as federally threatened or endangered was not included in the plan/EIS alternatives.

## **OTHER ISSUES**

### **Rebuild the Dunes**

One commenter suggested the NPS rebuild the dunes in front of NC-12. While the NPS had engaged in dune rebuilding activities in the past, such as to protect NPS structures on Bodie Island, this activity is beyond the scope of this plan/EIS and could be addressed later in the general management plan process that the Seashore will undertake in the future.

### **Prohibit Gill Net Fishing**

Some commenters asked that the Seashore prohibit gill net fishing. Fishing activities, both commercial and recreational, require a Standard Commercial Fishing License or a Recreational Commercial Gear License from the state of North Carolina. The license and related state fishing regulations specify the type of nets that commercial fishermen are allowed to use, which includes the use of gill nets that conform to requirements for mesh size, yardage, and marking (NCDMF 2009). The type of gear used by commercial fisherman is outside the scope of this plan; therefore, it was not included as an element of the plan/EIS.

### **Provide an Area for Off-Leash Dogs**

Commenters suggested that dogs be allowed off leash at the Seashore, either seasonally, in certain areas of the Seashore under voice control, or through the creation of a dog-training area. Currently, pets at the Seashore are regulated under 36 CFR 2.15, which applies to all units of the national park system and prohibits pet owners from “failing to crate, cage, restrain on a leash which shall not exceed 6 feet in length, or otherwise physically confine a pet at all times.” Creation of off-leash areas would not be

consistent with 36 CFR 2.135 and would require its own planning process and promulgation of a special regulation allowing off-leash dog use, which is outside the scope of the plan/EIS.

## **CONSISTENCY WITH THE PURPOSES OF NEPA**

The NPS requirements for implementing NEPA include an analysis of how each alternative meets or achieves the purposes of NEPA, as stated in sections 101(b) and 102(1). Each alternative analyzed in an EIS must be assessed as to how it meets the following purposes:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
2. Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

CEQ Regulation 1500.2 establishes policy for federal agencies' implementation of NEPA. Federal agencies shall, to the fullest extent possible, interpret and administer the policies, regulations, and public laws of the United States in accordance with the policies set forth in NEPA (sections 101(b) and 102(1)); therefore, other acts and NPS policies are referenced as applicable in the following discussion.

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

As noted in the analysis, alternatives B, C, D, E, and F provide increased protection for sensitive species at the Seashore, through increased resource protection buffers and limitations on recreational access. Limitations on access would not only benefit threatened, endangered, and special status species, but would also provide protection to other physical resources at the Seashore such as wetlands, vegetation, and other wildlife.

Alternative D would provide year-round SMAs that would limit recreational access in these areas, particularly during the breeding season, and would offer the greatest level of species protection among the action alternatives. Through these access limitations, as well as other provisions such as seasonal night-driving restrictions and the implementation of a permit system that would provide user education and increase awareness alternative D would fully meet the purpose of fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations, by providing the greatest potential for the survival of sensitive species in the long term, while at the same time protecting other physical resources of the Seashore. Alternatives C, E, and F would meet this purpose to a large degree but not fully because of greater potential for impacts to sensitive species from human disturbance as shorebird breeding habitat in some locations would include pedestrian or ORV access corridors, thereby increasing recreational

access to these sensitive areas. Alternatives E and F would not offer the same level of seasonal night-driving restrictions, with less hours closed each night, providing a somewhat lesser level of protection than alternatives C and D. Further, providing opportunities for access either through park-and-stay or SCV camping under alternative E would also increase recreational access, introducing potential disturbance to protected species, as well as other physical resources at the Seashore.

Alternative B would only meet this purpose to a moderate degree, as seasonal night-driving restrictions would offer the species additional protection, but without the SMAs, the proactive restriction of recreation would not be in place and could result in long-term threats to sensitive species from recreational use. Alternative A would only meet this purpose to some degree as there would be no seasonal night-driving restrictions and buffers would require frequent adjustments to provide adequate protection, thereby not providing optimal protection for the species.

2. Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.

All alternatives meet this purpose to some degree because the Seashore is a safe visitor destination that is both esthetically and culturally pleasing. The action alternatives (alternatives C, D, E, and F) increase safety by establishing a 15 mph speed limit within the entire Seashore. For pedestrian user groups, the establishment of vehicle-free areas, particularly under alternative D, may provide the greatest safety and esthetic benefits as pedestrian and vehicular uses would be separated. However, alternative D does not establish any safety closures although most areas historically closed for safety reasons would be closed under alternative D. Alternative F would provide additional safety benefits by establishing right-of-way requirements and additional speed limit reductions when pedestrians are present. Also under the action alternatives, the designation of ORV routes and vehicle-free areas would reduce the potential for, as well as the perception of, visitor conflict issues. Although actual visitor conflicts may not always happen when these two uses occur in the same area, providing vehicle-free areas would eliminate the potential for conflicts in those areas and address the feeling of those who perceive there could be a conflict or other safety issue. Of all the alternatives, alternative A would meet this purpose to the least degree, as it would not separate vehicular and pedestrian uses to the degree that the action alternatives would, and off-season speed limits would remain at 25 mph. Likewise, alternative B lowers speed limits, but still does not provide separation of uses and would not address any perceived safety or conflict issues associated with having ORV and non-ORV use in the same area. Although alternatives C, D, and E would meet this purpose to a large degree, alternative F would fully meet this purpose by establishing a reduced speed limit, providing some level of pedestrian and vehicular separation, and establishing right of way requirements not present in the other alternatives.

3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

All alternatives offer a wide range of visitor use opportunities, including vehicular use, recreational fishing, swimming, walking, sunbathing, other general beach recreation, and commercial fishing. However, the intensity of recreational use allowed under a particular alternative could lead to resource degradation or risks to health and safety. Alternative A allows the most intense levels of ORV and pedestrian use that could potentially lead to environmental degradation and safety concerns and only meets this purpose to some degree. Alternative B provides additional protection of natural resources through the establishment of larger buffers and

restrictions on night driving for sea turtle protection. However, this alternative does not directly address the level of recreational use and any safety or environmental concerns that may be associated with increasing visitor use patterns. Under alternative B, which bases closures on species behavior, there is the potential for large areas of the Seashore to be closed and these areas would vary from season to season based on protected species breeding behavior. Therefore, alternative B meets this purpose to a moderate degree due to added protection for sensitive species, but does not meet it to a larger degree because the provision of other uses of the Seashore would be unpredictable. Action alternatives C, D, and E include the establishment of SMAs, while alternative F relies on prenesting closures and standard buffers when breeding activity is observed, to reduce the disturbance of sensitive species habitat. These measures, combined with increased resource protection buffers, reduced speed limits, some measure of separation of vehicular and pedestrian uses, and methods for establishing a carrying capacity to reduce the environmental and safety concerns associated with large numbers of vehicles and pedestrians in one area. Therefore, all action alternatives would meet the intent of this purpose to a moderate or large degree. However, alternative D would reduce the potential for environmental impacts and visitor conflicts by prohibiting vehicles in all SMAs year-round. Therefore, alternative D would fully meet this purpose.

4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.

Because none of the alternatives would result in impacts to cultural or historic resources that would exceed minor, these topics were dismissed from further analysis in this plan/EIS. Overall, since any impacts to cultural or historic resources would not exceed minor, all alternatives would preserve important historic and cultural aspects of our national heritage in the long term and would meet this purpose to a large degree, with alternatives that restrict recreational access seasonally and at night (alternatives B, C, D, E, and F), meeting it for natural resources to a larger degree than alternative A. As discussed under criteria 1 and 2, due to use restrictions, alternatives C, D, E, and F would better protect resources, which would in turn support diversity, and due to the separation of visitor uses and addition of visitor amenities, would better support a variety of individual choices than alternatives A and B.

5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.

Balancing population and resource use under the plan/EIS would include protecting the resources unimpaired for the enjoyment of present and future generations and providing access for visitors to experience the natural resources of the Seashore. NPS *Management Policies 2006* states that the enjoyment that is contemplated by the *Organic Act* is broad; it is the enjoyment of all the people of the United States and includes enjoyment both by people who visit parks and by those who appreciate them from afar. It also includes deriving benefit (including scientific knowledge) and inspiration from parks, as well as other forms of enjoyment and inspiration. Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. As discussed above, alternatives C, D, E, and F would provide species management strategies that include prenesting areas, standardized buffers when breeding activities are observed, and seasonal night-driving restrictions, as well as implementation of a permit system, all of which are expected to benefit the natural resources at the Seashore and would provide an amenity (resources) for visitors to experience that would permit a high standard of living. All of the alternatives evaluated would allow some level of access to the Seashore that

would contribute to the sharing of these amenities. As visitation to the Seashore increases and the population of the area continues to increase, having areas with designated resource closures under the action alternatives would contribute to the protection of the Seashore's natural resources.

Given this, alternatives A and B would meet this purpose to some degree because they would provide the public access to share these amenities, but would not offer a high level of protection to natural resources. Without a higher level of protection, these amenities may not be available for the enjoyment of future generations.

Alternatives C and E would provide access to the Seashore and the amenities therein, and offer protection of these amenities by establishing SMAs and by implementing seasonal night-driving restrictions. In alternatives C and E, some of the SMAs would be under ML2 management measures, which would provide a higher level of access and use to those areas (including ORV and pedestrian corridors). Alternative F would provide access to the Seashore and the amenities therein, and would protect sensitive wildlife habitat through the designation of year-round ORV routes and vehicle-free areas, the use of prenesting closures in some locations, and standard buffers (similar to ML2) in all locations, and by implementing seasonal night-driving restrictions. Under alternatives C, E, or F, allowing this level of use, particularly as the population grows, may not fully protect the natural resources at the Seashore. As access to certain areas of the Seashore may adversely impact some of the Seashore's natural resources, especially in light of population growth, alternatives C, E, and F would only meet this purpose to a moderate degree.

Alternative D would meet this purpose to a large degree by establishing SMAs that are closed to ORV use and pets year-round, and pedestrians during the breeding season. Establishing these areas, year after year, would ensure a level of protection that would allow the natural resources to remain amenities that contribute to a high standard of living, while providing a level of access to the Seashore beaches that would ensure that the visiting public would be able to share these amenities.

6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

For reasons discussed above, in varying degrees the action alternatives (alternatives C, D, E, and F) would enhance the quality of the Seashore's biological and physical resources. Alternative B also provides a greater level of protection for these resources than alternative A. The second purpose, "approach the maximum attainable recycling of depletable resources," is less relevant to an ORV management plan, as it is geared toward a discussion of "green" building or management practices. There would be no construction related to the no-action alternatives, so this purpose would not apply. The action alternatives would involve the construction of new ramps and parking areas using environmentally appropriate design standards to minimize stormwater runoff. Ramps would be constructed of a semi-permeable natural clay/shell base.

However, as discussed in chapter 1 of this document, each of the alternatives would require that the Seashore continue to operate under the wise energy use guidelines and requirements stated in the *NPS Management Policies 2006*; Executive Order 13123, *Greening the Government Through Effective Energy Management*; Executive Order 13031, *Federal Alternative Fueled Vehicle Leadership*; Executive Order 13149, *Greening the Government Through Federal Fleet and Transportation Efficiency*; and the 1993 NPS *Guiding Principles of Sustainable Design* and therefore would fully meet this purpose.

## ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment. The NPS, in accordance with the U.S. Department of the Interior policies contained in the Department Manual (515 DM 4.10) and CEQ's Forty Questions, defines the environmentally preferable alternative (or alternatives) as the alternative that best promotes the national environmental policy expressed in NEPA (section 101(b)) (516 DM 4.10). The CEQ's Forty Questions (Q6a) further clarifies the identification of the environmentally preferable alternative stating, "this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources."

Alternative D was identified as the environmentally preferable alternative because it best protects the biological and physical environment by

- Providing SMAs in known breeding/nesting areas throughout the Seashore, all under ML1 management. Specifically, these SMAs would provide the following:
  - A proactive way to protect large areas of the Seashore where protected species are known to breed and nest by prohibiting ORV use and pets in these areas year-round and only allowing pedestrian access outside of the breeding season.
  - The greatest level of spatial and temporal protection through the establishment of SMAs that are all managed under ML1 procedures year-round.
  - A benefit to wintering bird populations at the Seashore that would also utilize the large vehicle-free areas provided under the SMAs for alternative D.
  - Buffers around those species found breeding/nesting outside the SMAs, further offering protection to protected species and species of concern at the Seashore.
  - Large, year-round ORV-free areas that would benefit other protected species, including sea turtles and seabeach amaranth.
  - A level of predictability to ORV users at the Seashore that would be expected to decrease the level of non-compliance with species management measures.
- Including seasonal night-driving restrictions in areas where ORVs are permitted that would restrict nighttime use from 7:00 p.m. to 7:00 a.m. from May 1 to November 15. The seasonal duration of the closures, as well as the length of the nightly closure, would offer protection to sea turtles nesting and hatching during that time, and allow Seashore staff the time to record and document nests each morning, decreasing the possibility of undiscovered nests.
- Minimizing the extent and location of interdunal roads, ramps, or parking lots that would be added, further minimizing disturbance under this alternative, when compared to alternatives C, E, and F.
- Implementing a permit system to provide ORV users with education that is expected to decrease the level of non-compliance related to resource closure areas.

Overall, establishing SMAs that are closed year-round to ORVs and pets, and closed to pedestrians during the breeding season, along with seasonal night-driving restrictions beginning at 7:00 p.m., the least amount of construction of all the alternatives, and required buffers for all protected species found outside the SMAs, would best protect, preserve, and enhance the Seashore's resources.



## NATIONAL PARK SERVICE PREFERRED ALTERNATIVE

To identify the preferred alternative, the planning team evaluated each alternative based on its ability to meet the plan objectives (see table 12) and the potential impacts on the environment (see chapter 4 of this document). Alternative F was identified as the NPS preferred alternative. Based on public and agency comments received on the draft plan/EIS, the NPS has revised the preferred alternative as described in this document (the final plan/EIS).

Both alternatives D and F would meet most of the plan objectives either fully or to a large degree. In terms of species protection, both alternatives would provide the necessary buffers, as well as the proactive establishment of prenesting areas and protection of breeding and nonbreeding shorebird habitat. Seasonal night-driving restrictions would be similar under both of these alternatives, offering comparable protection to sea turtles and foraging bird species. However, alternative F was chosen as the preferred alternative because it would provide not only effective resource protection but also would provide Seashore visitors with more diverse options for access and recreational use. Providing approximately 26 miles of the Seashore that are designated vehicle-free areas year-round, while 28 miles are open to ORV use year-round (subject to resources closures), would provide for a greater diversity of visitor use. Although designation of all SMAs as year-round ORV closures under alternative D would provide the necessary resource protection, the use of ML1 buffers in all SMAs would preclude all visitor access in these areas during the breeding season. If protected species do not use portions of the SMAs or if conditions of the Seashore change and habitat changes, alternative D does not provide as much flexibility for the Seashore to manage visitor access as alternative F, which provides for designated ORV routes that would remain open unless protected species activity results in a resource closure. In addition to providing species protection both during the breeding and nonbreeding seasons, alternative F would also provide more flexibility and range of experience for visitor use and would enhance access to both vehicle-free areas and designated ORV routes by establishing strategically located new parking areas, pedestrian trails, interdunal routes, and ORV ramps. Because alternative F provides for a greater variety of uses throughout the Seashore, it would have less of an impact on the socioeconomics of the area as well. As detailed in the impact analysis in chapter 4, alternative D would have greater impacts to the economy of the villages within the Seashore. In addition, alternative F also would mitigate the potential economic and visitor impacts by encouraging alternative forms of access (water taxi and beach shuttle) to certain popular areas during times when they may be open for pedestrian use, but the access to the area may be closed due to a resource closure. By providing an alternate means for accessing these areas, beneficial economic impacts would be expected. Alternative F is also selected as the NPS preferred alternative because it incorporates some concepts and measures that originated in or were discussed during the negotiated rulemaking process, providing more public input. For these reasons, alternative F was selected as the preferred alternative.

Alternatives C and E would meet the objectives from a moderate to a large degree, but to a lesser degree when compared to alternative D because of the larger areas of recreational access allowed. By allowing more access to various areas of the Seashore during the breeding season of threatened, endangered, and species of special concern, the level of protection offered to these species would be less than alternative D.

Alternatives A and B, on the whole, would meet the objectives from some degree to a moderate degree. These alternatives would not meet key objectives (such as those related to providing protection for threatened and endangered species and minimizing impacts to other natural resources at the Seashore) as well as the action alternatives. Because these alternatives would not meet the objectives to a large degree, they were not selected as the preferred alternative.

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TABLE 7. OFF-ROAD VEHICLE ROUTES AND AREAS – ALTERNATIVES A, B, C, D, AND E

Oceanside Location	Mileage <sup>a</sup>	Alternatives A and B: No Action	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management
<b>Bodie Island (north to south)</b> Ramp 1 to north end of Coquina Beach	0.9	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	ORV route—Mar 15 to Oct 14 VFA—Oct 15 to Mar 14	X	X Parking at ramp 1 expanded.
North end of Coquina Beach to 0.5 mile south of Coquina	0.8	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure). South of ramp 2 at Coquina Beach open seasonally.	X Ramp 2 relocated approx. 0.5 mile south of Coquina Beach.	X Ramp 2 relocated approx. 0.5 mile south of Coquina Beach.	X Ramp 2 relocated approx. 0.5 mile south of Coquina Beach. Parking at Coquina Beach expanded.
0.5 mile south of Coquina to 0.2 mile south of ramp 4 (Includes beach in front of Oregon Inlet Campground. If Bonner Bridge construction closes ramp 4, new ramp 3 will be constructed north of campground and day-use parking and trailhead near campground will be provided.)	2.1	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR ORV pass-through zone established on upper beach in front of campground when campground is open.
0.2 mile south of ramp 4 to inlet to southwest edge of Bait Pond (Species Management Area)	1.9	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 Area closed to ORVs from March 15 to October 14. When prenesting area is established, a pedestrian access corridor would be allowed along ocean shoreline to the inlet. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. (ML2)	X (ML1)	ORV route YR With expected limited access Mar 15 to Aug 31 When prenesting area is established, ORV corridor with pass-through zone would be allowed along ocean shoreline to the inlet. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. Pedestrian trail to inlet from new parking near campground established. Trail subject to resource closures. NPS would allow water taxi service to spit from Oregon Inlet Fishing Center, subject to designated landing zone and to resource closures. (ML2)
<b>Hatteras Island (north to south)</b> Rodanthe–Waves–Salvo to ramp 23 (includes Tri-Village beaches)	5.3	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15.	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 Parking at ramp 23 expanded.	X	ORV route—Nov 1 to Mar 31 VFA—Apr 1 to Oct 31 Parking at ramp 23 expanded.
Ramp 23 to ramp 27	4.3	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR One new ramp with parking established at 24 or 26.
Ramp 27 to ramp 30 (Species Management Area)	2.2	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	X (ML1)
Ramp 30 to (new) ramp 32.5	2.5	OPEN YR <sup>b</sup>	ORV route YR New ramp with parking established at 32.5.	ORV route YR New ramp established at 32.5.	ORV route YR New ramp with parking established at 32.5.
(New) ramp 32.5 to ramp 34 (Species Management Area)	1.8	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 (ML1)
Ramp 34 to ramp 38 (includes Avon Village Beach)	3.9	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15.	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	ORV route—Nov 1 to Mar 31 VFA—Apr 1 to Oct 31 Parking at ramp 34 expanded.
Ramp 38 to approx. 1.7 miles south	1.7	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR Parking at ramp 38 expanded.
Approximately 1.7 miles south of ramp 38 (i.e., Haulover) to Buxton line (Species Management Area)	2.0	OPEN YR <sup>b</sup> (Current 3.8-mile safety closure from 1.8 miles south of ramp 38 to 0.4 mile north of ramp 43.)	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 (ML1)

Oceanside Location	Mileage <sup>a</sup>	Alternatives A and B: No Action	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management
Buxton Village Beach to 0.4 mile north of ramp 43	1.9	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	X NPS or Dare County to establish new parking at old Coast Guard Station site (following Coast Guard clean-up of the site).	X	ORV route—Nov 1 to Mar 31 VFA—Apr 1 to Oct 31 NPS or Dare County to establish new parking at old Coast Guard Station site (following Coast Guard clean-up of the site).
0.4 mile north of ramp 43 to ramp 43	0.4	OPEN <sup>b</sup> Subject to seasonal closure May 15 to Sep 15.	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	ORV route—Mar 15 to Aug 31 VFA—Sep 1 to Mar 14 Open to ORVs only when east side of Cape Point is closed.
Ramp 43 to 0.2 mile south of ramp 44	0.6	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
0.2 mile south of ramp 44 to Cape Point to approx. 0.2 mile west of the hook (Species Management Area)	1.0	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 When prenesting area is established, a pedestrian access corridor would be allowed along ocean shoreline to the point. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. (ML2)	X (ML1)	ORV route YR With expected limited access Mar 15 to Aug 31 When prenesting area is established, ORV access corridor with pass-through zone would be allowed along ocean shoreline to the point. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. (ML2)
Cape Point 0.2 mile west of the hook to ramp 45 (Species Management Area)	1.2	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 (ML1)
Ramp 45 to (new) ramp 47 (Species Management Area)	1.7	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 Interdunal road extended and new ramp 47 established. (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 Interdunal road extended and new ramp 47 established. (ML1)
(New) ramp 47 to ramp 49 (includes beach in front of Frisco Campground)	1.7	OPEN YR <sup>b</sup>	ORV route YR Interdunal road extended to ramp 49 and new ramp 48 established.	ORV route YR	ORV route YR ORV pass-through zone established on upper beach in front of campground (or bypass beach in front of campground via new interdunal road) when campground is open. Interdunal road extended west of new ramp 47 to ramp 49 and new ramp 48 established.
Ramp 49 to East Frisco boundary	1.2	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
Frisco Village Beach (east village boundary to west boundary)	1.1	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	X Parking at day use area expanded.
Sandy Bay / Frisco day use area (west Frisco boundary to east Hatteras Village boundary)	1.4	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	X
Hatteras Village Beach (east boundary to ramp 55)	2.2	OPEN <sup>b</sup> Seasonally closed May 15 to Sep 15 (longstanding safety closure).	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14	X	X
Ramp 55 along ocean beach to 0.2 mile southwest of Bone Road	1.8	OPEN YR <sup>b</sup>	ORV route YR Parking expanded at ramp 55.	ORV route YR	ORV route YR Parking expanded at ramp 55.
Pole Road from NC-12 past Cable Crossing access to Spur Road	2.3	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
Cable Crossing along sound shoreline to Spur Road	0.8	Varies	X	X	X
Spur Road along sound shoreline to Hatteras Inlet	0.2	OPEN YR <sup>b</sup>	ORV route YR Pedestrian access to the “rip” permitted from soundside during breeding season, subject to resource closures.	X	ORV route YR Pedestrian access to the “rip” permitted from soundside during breeding season, subject to resource closures.

Table 7. Off-Road Vehicle Routes and Areas – Alternatives A, B, C, D, and E

Oceanside Location	Mileage <sup>a</sup>	Alternatives A and B: No Action	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management
Ocean shoreline from 0.2 mile southwest of Bone Road (a.k.a. Fort Clark Spur) to inlet (Species Management Area)	1.0	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	ORV route—Sep 1 to Mar 14 VFA—Mar 15 to Aug 31 (ML1)
Ocracoke Island (north to south) Inlet to 0.25 mile northeast of ramp 59 (Species Management Area)	1.1	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 Parking area at ramp 59 expanded. (ML1)	X (ML1)	X Parking area at ramp 59 expanded. Pedestrian access corridor(s) provided, subject to resource closures during breeding season. Pedestrian boardwalk access from ferry terminal parking developed. (ML1)
0.25 mile northeast of ramp 59 to 0.25 mile southwest of ramp 59	0.5	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
0.25 mile southwest of ramp 59 to new ramp 62 at 3.0 miles northeast of Pony Pen area	2.4	OPEN YR <sup>b</sup> (Longstanding safety closure.)	ORV route YR	ORV route YR	ORV route YR
New ramp 62 to new ramp 64 at 1.0 mile northeast of Pony Pen	2.0	OPEN YR <sup>b</sup> (Longstanding safety closure.)	ORV route YR New ramps 62 and 64 established. Parking established at ramp 64.	ORV route YR New ramps 62 and 64 established.	ORV route YR New ramps 62 and 64 established. Parking established at ramp 64.
New ramp 64 at 1.0 mile northeast of Pony Pen to 0.75 mile northeast of ramp 67	2.3	OPEN YR <sup>b</sup> (Longstanding safety closure.)	X Parking at Pony Pen expanded.	X	X Parking at Pony Pen expanded.
0.75 mile northeast of ramp 67 to 0.5 mile northeast of ramp 68	1.4	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
0.5 mile northeast of ramp 68 to 0.5 mile southwest of ramp 68 (Ocracoke Campground area)	1.0	OPEN YR <sup>b</sup> Seasonally closed when campground open.	Seasonal ORV route Open when campground closed.	X	ORV route—Nov 1 to Mar 31 VFA—Apr 1 to Oct 31
0.5 mile southwest of ramp 68 to 1.2 miles northeast of ramp 70 (Species Management Area)	0.9	OPEN YR <sup>b</sup> Seasonally closed when campground open.	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 (ML1)	X (ML1)	X (ML1)
1.2 miles northeast of ramp 70 to 0.5 mile northeast of ramp 70 (includes Ocracoke day use area)	0.8	OPEN YR <sup>b</sup> Seasonally closed when campground open.	X	X	X
0.5 mile northeast of ramp 70 to 0.5 mile southwest of ramp 72	2.7	OPEN YR <sup>b</sup>	ORV route YR	ORV route YR	ORV route YR
0.5 mile southwest of ramp 72 to inlet (Species Management Area)	1.3	OPEN YR <sup>b</sup>	ORV route—Oct 15 to Mar 14 VFA—Mar 15 to Oct 14 When prenesting area is established, a pedestrian access corridor would be allowed along ocean shoreline to the inlet. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. (ML2)	X (ML1)	ORV route YR With expected limited access Mar 15 to Aug 31 When prenesting area is established, ORV access corridor with pass-through zone would be allowed along ocean shoreline to the inlet. When shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor. NPS would also allow water taxi service to spit from Silver Lake, subject to designated landing zone and resource closures. (ML2)
Inlet shoreline along South Point	1.0	OPEN YR <sup>b</sup>	X	X	X

Oceanside Location	Mileage <sup>a</sup>	Alternatives A and B: No Action	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management
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NOTES: Details on soundside access provided in table 8. Due to updated base mapping, the shape of the inlets and spits was updated for alternative F maps, resulting in a slight difference in mileage between alternative F and the other alternatives (see table 7-1).

<sup>a</sup> All mileages are approximate.

<sup>b</sup> Area(s) open to ORV use, except when resource, seasonal, or safety closures are in effect.

Designated ORV routes and areas (ORV route = ORV permitted, X = VFA (vehicle-free area); YR = year-round).

All ORV routes and areas subject to temporary resource closures.

**Species Management Areas (SMAs):** ML1 and ML2 are the two proposed strategies for species management. See table 10 for a detailed description of these strategies. All areas outside of designated SMAs would be managed under ML1 protocols.

(ML1) Once prenesting closures are established, ORV and pedestrian access would be prohibited until breeding activity is completed.

(ML2) Once prenesting closures are established, ORV or pedestrian access corridor(s) and/or boat landing areas (as indicated in the respective alternatives) would be permitted. Upon the first observation of breeding activity, standard ML2 buffers would apply, which depending upon the circumstances may close the access corridor.

Designated ORV Route Mileage (Approximate) <sup>f</sup>	Alternative A <sup>c</sup>	Alternative B <sup>c</sup>	Alternative C	Alternative D	Alternative E
Designated as ORV route YR	49.4	50.1	27.4	27.2	31.6
Designated for seasonal ORV use	17.9	16.2	27.0	0	20.2
Designated as Vehicle Free Area YR (X) <sup>e</sup>	0 <sup>d</sup>	1.0	12.9	40.1	15.5
Total	67.3	67.3	67.3	67.3	67.3

<sup>c</sup> Routes under alternatives A and B have not been officially designated for ORV use. The mileages shown in this table are based on areas open to ORV use under the Interim Protected Species Management Strategy and the consent decree.

<sup>d</sup> Does not include mileage closed for safety reasons.

<sup>e</sup> Miles designated as closed to ORV year-round do not include the 12 miles at Pea Island National Wildlife Refuge where vehicles are not permitted. Including the mileage of Pea Island, areas designated closed to ORVs year-round would be as follows: Alternative C = 24.9; Alternative D = 52.1; Alternative E = 27.5

TABLE 7-1. OFF-ROAD VEHICLE ROUTES AND AREAS – ALTERNATIVE F

Oceanside Location	Mileage	Alternative F: Preferred Alternative
<b>Bodie Island (north to south)</b> Ramp 1 to 0.5 miles south of Coquina Beach	1.7	X Parking at old Bodie Island Coast Guard Station site (use existing asphalt-paved parking area, or resurface using pervious material after site is used as a potential staging area for proposed widening and repaving of NC12)
0.5 mile south of Coquina to 0.2 mile south of ramp 4	2.1	ORV route YR New ramp with parking at 2.5.
0.2 mile south of ramp 4 to southeast corner of Bodie Island spit	1.1	ORV route—Sep 15 to Mar 14 X—Mar 15 to Sep 14 New parking area and trailhead near ramp 4, with pedestrian trail to the “flats” on the northeast side of the Bait Pond.
Southeast corner of Bodie Island spit along inlet shoreline to southwest edge of Bait Pond (near bridge)	0.8	X
<b>Hatteras Island (north to south)</b> Rodanthe boundary to 0.1 mile south of Rodanthe pier	1.6	X
0.1 mile south of Rodanthe Pier—Waves—Salvo to ramp 23	3.7	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Ramp 23 to 1.5 miles south of ramp 23	1.5	X New parking 1.0 mile south of ramp 23.
1.5 miles south of ramp 23 to ramp 27	2.8	ORV route YR. New ramp with parking at 25.5.
Ramp 27 to ramp 30	2.2	X New parking near soundside ramp 48.
Ramp 30 to (new) ramp 32.5	2.3	ORV route YR
(New) ramp 32.5 to ramp 34	2.0	X New parking near soundside ramp 52.
Ramp 34 to ramp 38 (includes Avon Village Beach)	3.9	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Ramp 38 to 1.5 miles south of ramp 38 (i.e., Haulover)	1.5	ORV route YR
1.5 miles south of ramp 38 (i.e., Haulover) to 0.4 mile north of ramp 43 (includes Buxton)	4.1	X New parking area on west side of highway at or near Kite Point New parking area on west side of highway at or near soundside ramp 60 NPS or Dare County to establish new parking at old Coast Guard Station site (following Coast Guard clean-up of the site) New parking area at Loran Road
0.4 mile north of ramp 43 to Cape Point to 0.3 miles west of the hook	2.1	ORV route YR Existing interdunal road Cape Point south of Salt Pond at the narrows
0.3 mile west of the hook (Cape Point) to 1.7 miles west of ramp 45	2.8	X
1.7 miles west of ramp 45 to the east Frisco boundary (includes ramp 49)	2.9	ORV route YR Interdunal road extended from ramp 45 to ramp 49, with new ramp 47.5.
Frisco Village Beach (east village boundary to west boundary)	1.1	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Sandy Bay / Frisco day use area (west Frisco boundary to east Hatteras Village boundary)	1.4	X

Oceanside Location	Mileage	Alternative F: Preferred Alternative
Hatteras Village Beach (east boundary to ramp 55)	2.2	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Ramp 55 along ocean beach to Bone Road	1.6	ORV route YR
Bone Road to Hatteras Inlet, along inlet shoreline to Spur Road	1.0	X
Pole Road from NC-12 to Spur Road	2.3	ORV route YR
Cable Crossing route (from Pole Road to sound)	0.2	ORV route YR
Spur Road route (from Pole Road to sound)	0.4	ORV route YR
(New) interdunal road from eastern portion of Spur Road west toward inlet	0.2	ORV route—Sep 15 to Mar 14 X—Mar 15 to Sep 14
<b>Ocracoke Island (north to south)</b> Inlet to (new) ramp 59.5	1.6	X
(New) ramp 59.5 to (new) ramp 63	3.9	ORV route YR New parking area on west/north side of the highway at or near the entrance to Barrow Pit Road
(New) ramp 63 to 1.0 mile northeast of ramp 67	2.5	X
1.0 mile northeast of ramp 67 to 0.5 mile northeast of ramp 68	1.7	ORV route YR
0.5 mile northeast of ramp 68 to ramp 68 (Ocracoke Campground area)	0.5	ORV route—Nov 1 to Mar 31 X—Apr 1 to Oct 31
Ramp 68 to 0.4 miles northeast of ramp 70 (includes Ocracoke Day Use area)	2.2	X
0.4 mile northeast of ramp 70 to Ocracoke Inlet (includes ramp 72)	4.1	ORV route YR
Inlet shoreline along South Point	1.0	X

NOTES: Details on soundside access provided in table 8. Parking areas indicated above would be accessible to 2-wheel drive vehicles.

All mileages are approximate.

Designated ORV routes and areas (ORV route = ORV use permitted; X = VFA (vehicle-free area); YR = year-round).

ORV routes are subject to safety closures and temporary resource closures. VFAs are subject to temporary resource closures.

Designated ORV Route Mileage (Approximate <sup>a</sup> )	Alternative F
Designated as ORV Route YR	27.9
Designated for seasonal ORV use	12.7
Designated as vehicle-free area YR (X) <sup>b</sup>	26.4
Total	67 <sup>c</sup>

<sup>a</sup> All mileages are approximate

<sup>b</sup> Miles designated as vehicle-free area year-round does not include the 12-miles at Pea Island National Wildlife Refuge where vehicles are not permitted. Including the mileage of Pea Island, areas designated closed to ORVs year-round would equal 38.4 miles under alternative F.

<sup>c</sup> Due to updated base mapping, the shapes of the inlets and spits were updated for maps of alternative F, resulting in a slight difference in mileage between alternative F and the other alternatives.



**TABLE 8. SUMMARY OF ALTERNATIVE ELEMENTS**

This matrix is designed to display differences among alternatives; therefore, actions common to all alternatives are not included in it. Refer to the “Elements Common to All Alternatives” section, which begins on page 56 of chapter 2.

Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>ORV Routes, Use Areas, and Corridors</b>					
<p><b>ORV use areas:</b> All areas of the Seashore are potentially open to ORV access, except when closed as described in Superintendent’s Order 7. Visitors accessing the Seashore by ORV must drive only on marked ORV routes and must comply with posted restrictions. Refer to table 7.</p> <p><b>ORV corridors:</b> The ORV corridor on the ocean beach is marked by posts placed approx. 150 feet landward from the average, normal high tide line, or if less than 150 feet of space is available, at the vegetation or the toe of the remnant dune line, except as noted in the Interim Strategy. The corridor width will fluctuate over time due to the dynamic nature of beach and surf.</p>	<p><b>ORV use areas:</b> Same as alternative A.</p> <p><b>ORV corridors:</b> Same as alternative A, except: Mar 15 to Nov 30: In all locations not in front of the villages that are open to ORV use, NPS shall provide an ORV-free zone in the ocean backshore at least 10 meters wide, wherever there is sufficient beach width to allow an ORV corridor of at least 20 meters above the mean high tide line.</p>	<p><b>ORV routes:</b> ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. An <i>ORV route</i> is a designated location, typically linear in nature (e.g., from point A to point B), where ORV travel may be authorized by the Superintendent, but which may be temporarily closed to ORV use to protect Seashore resources, provide for visitor safety, or prevent user conflicts. Refer to table 7.</p> <p><b>ORV corridors:</b> An <i>ORV corridor</i> is the actual physical demarcation of the ORV route in the field. The ORV corridor on the ocean beach would be marked by posts seaward of the toe of dune or vegetation line to the high tide line (the seaward side of the corridor would not be posted). ORV routes through vegetated areas, such as interdunal roads and ramps, would be posted on both sides of the corridor.</p> <p><b>Seasonally designated ORV routes:</b> These would occur as indicated in table 7.</p>	<p><b>ORV routes:</b> ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. The definition of ORV route is same as for alternative C.</p> <p><b>ORV corridors:</b> Same as alternative C.</p> <p><b>Seasonally designated ORV routes:</b> No seasonal designations under this alternative.</p>	<p><b>ORV routes:</b> ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. The definition of ORV route is same as for alternative C.</p> <p><b>ORV corridors:</b> Same as alternative C, except: Mar 15 to Aug 31: Where the ocean beach is at least 30 meters wide above the high tide line, the corridor would be posted 10 meters seaward of the toe of the dune to provide an ocean backshore closure.</p> <p><b>Seasonally designated ORV routes:</b> These would occur as indicated in table 7.</p>	<p><b>ORV routes:</b> ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. The definition of ORV route is same as for alternative C.</p> <p><b>ORV corridors:</b> Same as alternative C, except: Year-round: Where the ocean beach is at least 30 meters wide above the high tide line, the corridor would be posted 10 meters seaward of the toe of the dune to provide an ocean backshore closure.</p> <p><b>Seasonally designated ORV routes:</b> These would occur as indicated in table 7-1.</p>

Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>VFAs and ORV Routes around Village, Campground, and Day Use Area Beaches</b>					
<p><b>Village beaches</b>, as identified below, are seasonally closed to ORV use from May 15 through Sep 15:</p> <ul style="list-style-type: none"> <li>• Bodie Island from ramp 1 to 0.5 mile south of Coquina Beach.</li> <li>• Beaches fronting the villages of Rodanthe, Waves, Salvo, and Avon.</li> <li>• The beach fronting Buxton south to ramp 43.</li> <li>• Beaches fronting the villages of Frisco and Hatteras.</li> </ul> <p>Ocracoke day use area and campground beaches:</p> <p>Ocracoke Island from 0.5 mile south of ramp 67 to 0.25 mile north of ramp 70 closed to ORVs when campground is open (approx. Apr 1 to Oct 31).</p>	<p>Same as alternative A, except: The beach from ramp 43 to 0.4 mile north is open to ORVs year-round.</p>	<p>Village, campground, and day-use beaches would be managed as follows (also described in table 7):</p> <p><b>Seasonally restricted ORV routes:</b> (closed to ORVs Mar 15 to Oct 14, unless otherwise indicated)</p> <ul style="list-style-type: none"> <li>• Rodanthe, Waves, Salvo, Avon, Frisco, and Hatteras Village beaches.</li> <li>• Ocracoke campground beach, from 0.5 mile northeast to 0.5 mile southwest of ramp 68 (closed to ORVs when campground is open, which is approx. Apr 1 to Oct 31).</li> </ul> <p><b>VFAs year-round:</b></p> <ul style="list-style-type: none"> <li>• Buxton beach S to 0.4 mile north of ramp 43.</li> </ul> <p>Ocracoke day use area beach, from 1.2 miles northeast to 0.5 mile northeast of ramp 70.</p>	<p>Village beaches would be managed as follows (also described in table 7):</p> <p><b>VFAs year-round:</b></p> <ul style="list-style-type: none"> <li>• All village beaches would be vehicle free year-round.</li> </ul>	<p>Village beaches would be managed as follows (also described in table 7):</p> <p><b>Seasonally restricted ORV routes:</b> (closed to ORVs Apr 1 to Oct 31)</p> <ul style="list-style-type: none"> <li>• Rodanthe, Waves, Salvo, and Avon beaches, and Buxton Beach south to 0.4 mile north of ramp 43.</li> <li>• Ocracoke Campground Beach, from 0.5 mile northeast to 0.5 mile southwest of ramp 68.</li> </ul> <p><b>VFAs year-round:</b></p> <ul style="list-style-type: none"> <li>• Bodie Island from ramp 1 to approx. 0.5 mile south of Coquina Beach.</li> <li>• Frisco and Hatteras Village beaches.</li> </ul> <p>Ocracoke day use area beach, from 1.2 miles northeast (of ramp 70) to 0.5 mile northeast of ramp 70.</p>	<p>Village beaches would be managed as follows (also described in table 7-1):</p> <p><b>Seasonally restricted ORV routes:</b> (closed to ORVs as indicated below)</p> <ul style="list-style-type: none"> <li>• Rodanthe (south of the pier), Waves, Salvo, Avon, Frisco, and Hatteras Village beaches, and Ocracoke Campground Beach from 0.5 mile northeast to ramp 68 (closed to ORVs Apr 1 to Oct 31).</li> <li>• When village beaches are open to ORV use from November 1 through March 31, a safety closure would be implemented on portions of a village beach that are not consistently at least 20 meters (66 feet) wide during normal high tides.</li> </ul> <p><b>VFAs year-round:</b></p> <ul style="list-style-type: none"> <li>• Bodie Island from ramp 1 to approx. 0.5 mile south of Coquina Beach.</li> <li>• Rodanthe (north of the pier)</li> <li>• Buxton Beach south to 0.4 mile north of ramp 43.</li> <li>• Ocracoke day use area beach from ramp 68 to 0.4 mile northeast of ramp 70.</li> </ul>

Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>ORV Access</b>					
<p><b>Oceanside access:</b> ORV access is provided via 17 oceanside ramps and access points located off NC-12. Ramps are numbered and identified on the Seashore’s ORV route map as official vehicle access routes. Seashore staff maintains ramps and signage.</p>	<p><b>Oceanside access:</b> Same as alternative A.</p>	<p><b>Oceanside access:</b> To provide access to the designated ORV routes and VFAs in addition to the existing ramps, which would be maintained, new or improved ramps would be developed as identified in table 7. Toilet facilities and trash receptacles would be provided at high use locations.</p>	<p><b>Oceanside access:</b> Same as alternative C.</p>	<p><b>Oceanside access:</b> Same as alternative C.</p>	<p><b>Oceanside access:</b> To provide access to designated ORV routes, VFAs, and existing ramps, new ramps would be developed as identified in table 7-1.</p>
<p><b>Soundside access:</b> ORV access is provided via 18 soundside access points located off NC-12. Seashore staff maintains ramps and signage.</p>	<p><b>Soundside access:</b> Same as alternative A.</p>	<p><b>Soundside access:</b> Existing soundside ramps would be designated as ORV routes and would remain open with sufficient maintenance to provide clear passage. Signage/posts would be installed at the primitive parking areas and boat launch areas to prevent damage to vegetation and other soundside resources.</p>	<p><b>Soundside access:</b> Same as alternative A.</p>	<p><b>Soundside access:</b> Soundside ramps to designated boat launch areas and Pole Road access to the sound via Cable Crossing and Spur Road would remain open. The remaining soundside ramps would be closed to ORV use and small parking areas would be constructed to provide pedestrian access to the water, except:</p> <ul style="list-style-type: none"> <li>Existing Ocracoke Island access points north of village would remain open to commercial fishermen.</li> </ul> <p>Signage/posts would be installed at the parking areas and boat launch areas to prevent damage to vegetation and other soundside resources.</p>	<p><b>Soundside access:</b> Existing off-road soundside areas would be designated as ORV routes and would remain open with sufficient maintenance to provide clear passage. Signage/posts would be installed at the primitive parking areas and boat launch areas to prevent damage to vegetation and other soundside resources. Seasonal soundside access on Ocracoke Island (open Sept 15 – March 14):</p> <ul style="list-style-type: none"> <li>ORV route 0.6 mile south of ramp 72 from the beach route to a pedestrian trail to Pamlico Sound.</li> </ul> <p>ORV route at the north end of South Point spit from the beach route to Pamlico Sound.</p>

Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<p><b>Interdunal roads:</b> One-lane, interdunal routes have been designated as follows:</p> <p><b>Bodie Island District:</b> None.</p> <p><b>Hatteras Island District:</b></p> <ul style="list-style-type: none"> <li>• Cape Point between ramp 44 and ramp 45.</li> <li>• Hatteras Inlet from ramp 55 to the inlet (includes Pole Road, Cable Crossing, and Spur Road).</li> </ul> <p><b>Ocracoke Island District:</b> None.</p>	<p><b>Interdunal roads:</b> Same as alternative A.</p> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> Same as alternative A, plus: Cape Point south of Salt Pond at the narrows.</p> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>	<p><b>Interdunal roads:</b> Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Existing interdunal roads would be better maintained as needed to provide access to ORV areas. Pullouts or road widening would be provided where appropriate to provide safe passage.</li> </ul> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Cape Point south of Salt Pond at the narrows.</li> <li>• South Beach: Extend interdunal road W of ramp 45 to ramp 49. Establish new ramps 47 and 48 off of interdunal road.</li> </ul> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>	<p><b>Interdunal roads:</b> Same as alternative A.</p> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> From ramp 55 to Bone Road (a.k.a. Fort Clark Spur); includes Pole Road, Cable Crossing, and Spur Road.</p> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>	<p><b>Interdunal roads:</b> Same as alternative C.</p> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> Same as alternative C.</p> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>	<p><b>Interdunal roads:</b> Existing interdunal roads would be designated as ORV routes and be better maintained as needed to provide access to ORV areas. Pullouts or road widening would be provided where appropriate to provide safe passage.</p> <p><b>Bodie Island District:</b> Same as alternative A.</p> <p><b>Hatteras Island District:</b> Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Cape Point south of Salt Pond at the narrows.</li> <li>• South Beach: Extend interdunal road W of ramp 45 to ramp 49. Establish new ramp 47.5 off of interdunal road.</li> <li>• Hatteras Inlet Spit: Establish new interdunal road from the intersection of Pole and Spur Roads southwest towards the inlet, stopping at least 100 meters from the inlet.</li> </ul> <p><b>Ocracoke Island District:</b> Same as alternative A.</p>

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<b>Hours of Allowable ORV Operation on Beach (Please refer to tables 7 and 7-1 to determine when routes and areas are open to ORV use.)</b>					
All areas of the Seashore open 24 hours a day year-round.	Nov 16 to Apr 30: All beaches open to ORV use 24 hours a day. May 1 to Nov 15: All potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) closed to non-essential ORV use from 10:00 p.m. to 6:00 a.m., except that from Sep 16 to Nov 15 ORV use is allowed from 10:00 p.m. to 6:00 a.m. subject to terms and conditions of a permit.	Nov 16 to Apr 30: Designated ORV routes would be open to ORV use 24 hours a day. May 1 to Nov 15: Designated ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 7:00 p.m. to 7:00 a.m. Hours of night-driving prohibition would be established in the Superintendent's Compendium and subject to periodic review.	Same as alternative C, except: • No periodic review.	Nov 16 to Apr 30: Designated ORV routes would be open to ORV use 24 hours a day. May 1 to Nov 15: Designated ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 10:00 p.m. to 6:00 a.m. Sep 16 to Nov 15: ORV routes with no or low density of turtle nests would reopen to ORV use between 10:00 p.m. and 6:00 a.m., subject to terms and conditions of permit. Hours of night-driving prohibition would be established in the Superintendent's Compendium and subject to periodic review.	Nov 16 to Apr 30: Designated ORV routes would be open to ORV use 24 hours a day. May 1 to Nov 15: Designated ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 9:00 p.m. until 7:00 a.m. Sep 16 to Nov 15: ORV routes with no turtle nests remaining would reopen for night driving, subject to terms and conditions of the standard ORV permit.

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<b>ORV Safety Closures</b>					
<p>ORV safety closures are established as needed to address safety conditions such as debris on the beach or narrow beaches. Narrow beaches are reopened as the beach widens. Safety closures are applicable only to ORV access; pedestrian access is maintained.</p> <p>Existing ORV safety closures include:</p> <ul style="list-style-type: none"> <li>• Ramp 1 to ramp 2</li> <li>• 1.8 mile south of ramp 38 to 0.4 mile north of ramp 43.</li> <li>• Buxton to Lighthouse Beach.</li> <li>• Northern boundary of Frisco to Hatteras Village.</li> <li>• Hatteras Village Beach.</li> </ul> <p>1.5 mile north of ramp 67 to 1 mile south of ramp 59.</p>	<p>Same as alternative A.</p>	<p>ORV safety closures would be established on designated ORV routes as needed to address ORV and pedestrian safety considerations, including the following:</p> <ul style="list-style-type: none"> <li>• Debris on the beach.</li> <li>• Narrow beaches.</li> <li>• Congested areas.</li> </ul> <p>Safety closures would preclude ORV access, while pedestrian and commercial fishing access would generally be maintained through safety closures.</p> <p>NPS law enforcement staff would monitor ORV safety closures on a weekly basis. Sufficient reduction or elimination of the conditions prompting the closure, so there is no longer an imminent hazard, would constitute the trigger for reopening an ORV safety closure.</p>	<p>ORV safety closures would not be established. ORV drivers would be responsible for recognizing and avoiding ORV safety hazards and would drive at own risk.</p>	<p>Same as alternative C.</p>	<p>ORV safety closures would be implemented in the event of a threat of significant bodily injury or death, and/or damage to personal property, including vehicles and their contents. ORV safety closures would preclude ORV access, while pedestrian and commercial fishing access would be maintained through most safety closures.</p> <p>Triggers that could justify an ORV safety closure include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Deep beach cuts that block the beach from dune to surf with no obvious way around.</li> <li>• Obstacles, such as exposed stumps, shipwrecks, or debris, that cannot be safely bypassed or that block the entire width of the beach and cannot be easily removed.</li> <li>• Severe beach slope that puts vehicles in an unsafe gradient position and increases the chances of the loss of vehicular control.</li> <li>• A high concentration of pedestrian users coupled with a narrow beach.</li> <li>• A narrow beach where there is insufficient width to safely exit the beach in the vehicle corridor during normal (non-storm) high tides.</li> <li>• Between November 1 and March 31 portions of a village beach that are not consistently at least 20 meters (66 feet) wide during normal high tides.</li> </ul> <p>Triggers do not include:</p> <ul style="list-style-type: none"> <li>• Hazards blocking only a portion of the beach, where safe passage is available around the hazard.</li> </ul> <p>NPS law enforcement staff will monitor ORV safety closures on a weekly basis. Sufficient reduction or elimination of the conditions prompting the closure, so there is no longer an imminent hazard, would constitute the trigger for reopening a closure.</p>

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<b>Pedestrian Safety</b>					
<p>36 CFR 4.20, Right-of-Way: An operator of a motor vehicle shall yield the right of way to pedestrians (as well as saddle and pack animals, and vehicles drawn by animals). Failure to yield the right of way is prohibited.</p> <p>36 CFR 4.22, Unsafe Operation: (b) The following are prohibited:</p> <p>(3) Failing to maintain that degree of control of a motor vehicle necessary to avoid danger to persons, property, or wildlife.</p> <p>No additional measures apply.</p>	Same as alternative A.	Same as alternative A.	Same as alternative A.	Same as alternative A, plus: <ul style="list-style-type: none"> <li>For village beaches that are open to ORV use during the winter season, the village beaches must be at least 20 meters (66 feet) wide from the toe of the dune seaward to mean high tide line in order to be open to ORV use.</li> </ul>	Same as alternative A, plus: <ul style="list-style-type: none"> <li>Vehicles must yield to pedestrians on all ORV routes.</li> <li>When approaching or passing a pedestrian on the beach, ORVs shall move to the landward side of the available ORV corridor in order to yield the wider portion of the beach corridor to the pedestrian.</li> <li>ORVs shall slow to 5 mph when traveling within 30.5 meters (100 feet) or less of pedestrians at any location on the beach at any time of year.</li> <li>Pedestrians should not block access ramps and should use pedestrian ramps/boardwalks where available. If a pedestrian walkover is not available, pedestrians should walk to the side of ORV ramps, not in the tire tracks.</li> </ul>
<b>Administrative ORV Closures</b>					
The beach in front of the former site of Cape Hatteras Lighthouse is closed to ORV access.  Buxton Woods Road is closed to ORV access.	Same as alternative A.	No administrative closures would be established. ORV routes and VFAs would be designated as described in table 7.	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Temporary Emergency ORV Closures</b>					
Temporary emergency ORV closures established per Superintendent's Compendium and NPS policy.	Same as alternative A, plus: <ul style="list-style-type: none"> <li>NPS retains the authority to implement a temporary emergency ORV closure if any of the following conditions are observed:</li> <li>ORV traffic is backing up on the beach access ramps, either on- or off-beach bound, which threatens to impede traffic flow.</li> <li>ORV traffic on the beach is parked in such a way that two-way traffic is impeded.</li> </ul> Multiple incidents of disorderly behavior are observed or reported.	Same as alternative B, plus: <ul style="list-style-type: none"> <li>Beaches would be temporarily closed to additional ORV use if/when carrying capacity is reached or exceeded.</li> </ul>	Same as alternative B.	Same as alternative C.	Same as alternative B, plus: <ul style="list-style-type: none"> <li>Beaches would be temporarily closed to additional ORV use if/when carrying capacity or one-vehicle-deep beach parking limit is reached or exceeded.</li> </ul>

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<b>Ramp Characteristics</b>					
Ramp width and construction details vary. Current practice is to use shell/clay base material to provide firm driving surface where ramps cross dune line.	Same as alternative A.	Ramps would be two lanes wide with shell/clay base and have: <ul style="list-style-type: none"> <li>• Standard regulatory signs and information boards at all ramps.</li> <li>• Gates at all ramps and access points.</li> <li>• Designated “air down” area with hardened surface (e.g., shell/clay base).</li> </ul>	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Permit Requirements</b>					
No permit required.	Night-driving permit required for ORV use from 10:00 p.m. to 6:00 a.m. Sep 16 to Nov 15.	ORV permit required.	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Permit Distribution</b>					
N/A	Available in person at various locations and online.	Available in person at designated permit issuing stations and online.	Same as alternative C.	Same as alternative C.	Available in person at designated NPS permit issuing stations.
<b>Permit Issuance Requirements</b>					
N/A	ORV owner must sign permit to acknowledge understanding of the rules and must carry permit when beach driving during the restricted period.	ORV owners must complete a short education program in person or online and pass a basic knowledge test. Owners would sign for their permits to acknowledge understanding of the rules and regulations governing ORV use at the Seashore.	ORV owners must read an information brochure and sign the permit to acknowledge understanding of the rules and regulations governing ORV use at the Seashore.	Same as alternative C.	ORV owners must complete a short education program in person and sign the permit to acknowledge understanding of the rules and regulations governing ORV use at the Seashore.
<b>Permit Types</b>					
N/A	Night-driving permit for Sep 16 to Nov 15.	Annual ORV permits would be valid for 12 months from date of purchase.	Annual ORV permits would be valid for the calendar year.	Weekly (7-day) and annual (12-month) ORV permits would be valid from date of purchase. Permits would include night-driving component for September 16 to November 15. In addition, a separate permit would be required for the following activities: <ul style="list-style-type: none"> <li>• Park-and-stay overnight.</li> <li>• Self-contained vehicle (SCV) camping.</li> </ul>	7-day ORV permits would be valid from date of purchase. Annual ORV permits would be valid for the calendar year. Permits would include night-driving component for September 16 to November 15.
<b>Permit Number Limits</b>					
N/A	No limit on night-driving permits.	No limit on ORV permits.	Same as alternative C.	Same as alternative C, except: <ul style="list-style-type: none"> <li>• Use limits would be established for park-and-stay and SCV camping.</li> <li>• Use limits would be subject to periodic review.</li> </ul>	Same as alternative C.



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<b>Permit Fees</b>					
N/A	None	ORV permit fee would be based on cost recovery as described in NPS Director’s Order and Reference Manual 53.	Same as alternative C, except: <ul style="list-style-type: none"> <li>Amount of fee would be lower than alternative C due to decreased management costs under this alternative.</li> </ul>	Same as alternative C, except: <ul style="list-style-type: none"> <li>Fee for weekly ORV permit would be less than fee for annual permit.</li> <li>Fees for park-and-stay and SCV permits would be determined separately.</li> </ul>	Same as alternative C, except: <ul style="list-style-type: none"> <li>Fee for 7-day ORV permit would be less than fee for annual permit.</li> </ul>
<b>Permit Form</b>					
N/A	Night-driving permit is an informational brochure that the user signs and places on dash of vehicle.	ORV permit would be affixed to vehicle in a manner approved by the NPS.	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Permit Revocation</b>					
N/A	Night-driving permit may be revoked for violation of applicable park regulations or terms and conditions of the permit.	ORV permit may be revoked for violation of applicable park regulations or terms and conditions of the permit.	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Beach Parking</b>					
Parking within routes is allowed in any configuration, as long as parked vehicles do not obstruct traffic.	Same as alternative A.	Same as alternative A.	Parking within ORV routes is allowed, but only one vehicle deep. Stacking of vehicles in more than one row would be prohibited.	Same as alternative A.	Parking within ORV routes is allowed, but only one vehicle deep, as long as vehicles do not obstruct two-way traffic. Stacking of vehicles in more than one row would be prohibited.
<b>Vehicle Carrying Capacity Determination</b>					
Vehicle carrying capacity would not be determined.	Same as alternative A.	Carrying capacity would be a “peak use limit” determined for all areas based on the linear feet of beachfront and the following physical space requirements (“mile” refers to miles of beach open to ORV use): <p><b>Bodie Island District:</b></p> <ul style="list-style-type: none"> <li>260 vehicles/mile (20 feet/vehicle).</li> </ul> <p><b>Hatteras Island District:</b></p> <ul style="list-style-type: none"> <li>260 vehicles/mile (20 feet/vehicle).</li> </ul> <p><b>Ocracoke Island District:</b></p> <ul style="list-style-type: none"> <li>175 vehicles/mile (30 feet/vehicle).</li> </ul> Temporary exceptions to carrying-capacity limits may be approved for short-term events operating under a special use permit. Carrying-capacity criteria would be subject to periodic review.	Carrying capacity would be addressed solely by the beach parking restriction described in the row above.	Same as alternative C, except: <p><b>Hatteras Island District:</b></p> <ul style="list-style-type: none"> <li>Cape Point: 400 vehicles allowed within a 1 mile area centered on Cape Point.</li> </ul>	The maximum number of vehicles allowed on any particular ORV route is the linear distance of the route divided by 6 meters (20 feet) per vehicle (i.e., the equivalent of 260 vehicles per mile).

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<b>ORV Characteristic Requirements</b>					
All vehicles operating in all areas of the Seashore must have valid vehicle registration, insurance, and license plate. Vehicles must be street legal. All-terrain vehicles (ATVs) are prohibited from beach driving.	Same as alternative A.	Off-road Vehicle characteristics: <ul style="list-style-type: none"> <li>All vehicles must be registered, licensed, and insured for highway use and must comply with state inspection regulations within the state, country, or province where the vehicle is registered</li> <li>Four-wheel-drive vehicles are recommended.</li> <li>Two-wheel-drive vehicles are allowed.</li> <li>Motorcycles and ATVs are prohibited.</li> <li>There is a three-axle maximum for vehicles (this is the axle maximum for the powered vehicle only and does not include the additional number of axles on towed trailers).</li> <li>Any trailers are limited to no more than two axles.</li> <li>The maximum vehicle length is 30 feet (this is the maximum length for the powered vehicle and does not include the additional length of a towed trailer).</li> <li>Tires must be U.S. Dept. of Transportation-listed or approved.</li> </ul>	Same as alternative C.	Same as alternative C, except: <ul style="list-style-type: none"> <li>Motorcycles would be prohibited on ocean beaches, but allowed on soundside access areas where ORVs are allowed.</li> </ul>	Off-road vehicle characteristics: <ul style="list-style-type: none"> <li>All vehicles must be registered, licensed, and insured for highway use and must comply with state inspection regulations within the state, country, or province where the vehicle is registered.</li> <li>Four-wheel-drive vehicles are recommended.</li> <li>Two-wheel-drive vehicles are allowed.</li> <li>Motorcycles, ATVs, and UTVs are prohibited.</li> <li>The vehicle must have no more than two axles.</li> <li>Towed boat trailers are allowed and must have no more than two axles. Travel trailers (i.e., camping trailers) are prohibited.</li> <li>Vehicle tires must be U.S. Department of Transportation-listed or approved.</li> </ul>
<b>Equipment Requirements</b>					
None	Same as alternative A.	Equipment requirements: <ul style="list-style-type: none"> <li>All vehicles shall contain a low-pressure tire gauge, shovel, jack, and jack stand.</li> <li>A full-sized spare tire, first-aid kit, fire extinguisher, trash bag or container, flashlight (if night driving), and tow strap are recommended.</li> </ul>	Same as alternative C.	Same as alternative C.	Same as alternative C.
<b>Tire Pressure</b>					
Recommend air down of tires before driving on the beach.	Same as alternative A.	When driving on designated routes, tire pressure must be lowered sufficiently to maintain adequate traction within the posted speed limit. Tire pressure of 20 psi is <i>recommended</i> for most vehicles. The softer the sand, the lower the pressure needed. Re-inflate tires to normal pressure as soon as possible after vehicle returns to paved roads.	<b>Same as alternative C.</b>	<b>Same as alternative C.</b>	<b>Same as alternative C.</b>

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<b>Speed Limit</b>					
<p>Speed limit is 25 mph (unless otherwise posted) on park beaches for public and private vehicles.</p> <p>Speed limit is 10 mph when ORV corridor is less than 100 feet wide.</p> <p>Speed limit in front of villages during off season (Sep 16 to May 14) on park beaches posted at 10 mph.</p> <p>Emergency vehicles exempt when responding to a call.</p>	<p>May 15 to Sep 15: Speed limit is 15 mph (unless otherwise posted).</p> <p>Sep 16 to May 14: Speed limit is 25 mph (unless otherwise posted).</p>	<p>Speed limit is 15 mph (unless otherwise posted).</p> <p>Emergency vehicles exempt when responding to a call.</p>	<p>Same as alternative C.</p>	<p>Same as alternative C.</p>	<p>Same as alternative C.</p>
<b>Essential Vehicles</b>					
<p>Essential vehicles are allowed in VFAs and within resource closures subject to guidelines in the “Essential Vehicles” section of appendix G of the USFWS <i>Piping Plover, Atlantic Coast Population, Revised Recovery Plan</i>. To the extent practicable, emergency response vehicle operators will consult with trained resource management staff regarding protected species before driving into or through resource closures; however, prior consultation may not always be practical.</p>	<p>Same as alternative A.</p>	<p>Same as alternative A.</p>	<p>Same as alternative A.</p>	<p>Same as alternative A.</p>	<p>Same as alternative A.</p>
<b>VFAs</b>					
<p>None designated. ORVs are temporarily prohibited in seasonal (village) closures, safety closures, administrative closures, and resource closures, including some areas that have been closed to ORV use for many years.</p>	<p>Same as alternative A.</p>	<p>VFAs would be designated as indicated in table 7.</p>	<p>VFAs would be designated as indicated in table 7.</p>	<p>VFAs would be designated as indicated in table 7.</p>	<p>VFAs would be designated as indicated in table 7-1.</p>
<b>Resource Education</b>					
<p>Information is available to the general public through the park website, newspaper, information brochures, and interpretive programs. However, there is no targeted education program for beach users.</p>	<p>Same as alternative A, except:</p> <ul style="list-style-type: none"> <li>• Night-driving permit has basic education component.</li> <li>• Protected species information is available at ORV access points.</li> <li>• There is a 24-hour citizen phone line.</li> <li>• The beach access brochure is to be redesigned.</li> </ul>	<p>General information would remain available as described in alternative A. There would be a new required education program for ORV users, as described under ORV Permit Issuance Requirements.</p>	<p>Same as alternative C.</p>	<p>Same as alternative C.</p>	<p>Same as alternative C, plus:</p> <ul style="list-style-type: none"> <li>• There would be a new voluntary resource education program targeted toward pedestrian beach users.</li> </ul>

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<b>Temporary ORV Use of VFAs</b>					
<p>Beach access would be provided through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.</p>	<p>Beach access would be provided through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.</p>	<p>Under the terms and conditions of a special use permit, the Superintendent could authorize the following:</p> <ul style="list-style-type: none"> <li>• Beach access would be provided through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.</li> <li>• Temporary emergency ORV use of VFAs if needed to bypass sections of NC-12 that are closed for repairs. This could apply to all vehicles, including private vehicles, and would require a special use permit during the temporary emergency situation.</li> <li>• Temporary non-emergency ORV use of VFAs traditionally used for fishing tournaments that were established prior to Jan 1, 2009.</li> <li>• Temporary non-emergency ORV use of VFAs in front of villages to transport mobility-impaired individuals to join their family or friends on an open beach that is otherwise closed to ORVs. ORV use would be limited to the shortest, most direct distance between the nearest designated ORV route and the location of the gathering.</li> </ul> <p>Temporary non-emergency use by <i>nonessential</i> vehicles would not be permitted within resource closures.</p>	<p>Same as alternative A.</p>	<p>Same as alternative C.</p>	<p>The superintendent may issue a special use permit for temporary off-road vehicle use to:</p> <ul style="list-style-type: none"> <li>• Authorize the North Carolina Department of Transportation to use Seashore beaches as a public way when necessary to by-pass sections of NC Highway 12 that are impassible or closed for repairs.</li> <li>• Allow participants in a regularly-scheduled fishing tournament to drive in an area not designated for off-road use, if off-road use was allowed in that area for that tournament before January 1, 2009.</li> <li>• Allow vehicular transport of mobility-impaired individuals to a predetermined location in a designated VFA in front of villages via the shortest most direct distance from the nearest designated ORV route or Seashore road; the vehicle must return to the designated ORV route or Seashore road immediately after the transport.</li> </ul> <p>Temporary non-emergency use by <i>nonessential</i> vehicles would not be permitted within resource closure.</p>

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<b>Parking Areas for Access to VFAs</b>					
Parking is currently provided in 32 park-maintained parking lots throughout the Seashore, totaling approx. 1,000 spaces.	Same as alternative A.	New or expanded parking would be established to support pedestrian access to VFAs as identified in table 7. NPS would use environmentally appropriate design standards to minimize stormwater runoff and other resource impacts. Toilet facilities and trash receptacles would be provided at high-use locations.	Same as alternative C.	Same as alternative C.	Same as alternative C, except as identified in table 7-1.
<b>Alternative Transportation</b>					
None	Same as alternative A.	NPS would consider applications for commercial use authorization to offer beach shuttle services.	Same as alternative A.	Same as alternative C, plus: <ul style="list-style-type: none"> <li>NPS would designate and post boat landing zones (drop-off) near the inlet at Bodie Island Spit and South Point Ocracoke that could be used to drop off pedestrians if/when the inlet shoreline is not otherwise closed to protect Seashore resources. NPS would encourage a commercial water shuttle service for this purpose; however, the drop-off points would be subject to closure on short notice if needed to protect Seashore resources.</li> </ul>	NPS would consider applications for commercial use authorizations to offer beach and water shuttle services. NPS would apply for funding to conduct an alternative transportation study to evaluate the feasibility of alternative forms of transportation to popular sites, such as inlets and Cape Point.

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<b>Camping and Nighttime Beach Use</b>					
<p>Per 36 CFR 2.10: Camping<sup>a</sup> is prohibited except in designated areas. In the Superintendent's Compendium, camping is prohibited on Seashore beaches. In areas open to ORV use, ORVs are allowed on the beach overnight if someone associated with the vehicle is actively fishing.</p> <p><sup>a</sup>Camping is defined in 36 CFR 1.4 as the erecting of a tent or shelter of natural or synthetic material, preparing a sleeping bag or other bedding material for use, parking of a motor vehicle, motor home, or trailer, or mooring of a vessel for the apparent purpose of overnight occupancy.</p>	<p>Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>Nighttime use of ORVs is seasonally restricted as described under the Hours of Allowable ORV Operation section.</li> </ul>	<p>Same as alternative B, plus:</p> <ul style="list-style-type: none"> <li>Unattended beach equipment (e.g., chairs, canopies, volleyball nets, watersports gear) is prohibited on the Seashore at night. Turtle patrol and law enforcement will tag equipment found at night. Owners have 24 hours to remove equipment before it is removed by NPS staff.</li> </ul>	<p>Same as alternative C.</p>	<p>Same as alternative C, plus:</p> <p>SCV camping would be authorized as follows:</p> <ul style="list-style-type: none"> <li>The following campgrounds and use limits would be designated for SCV camping from Nov 1 to Mar 31: Oregon Inlet—100 spaces; Cape Point—100 spaces; and Ocracoke—50 spaces. Use limits would be established in the Superintendent's Compendium and subject to periodic review.</li> <li>SCV permits would be required, in addition to an ORV permit for beach driving, and would be available in weekly or seasonal increments.</li> <li>There would be a 7-consecutive-day- / 6-night-stay limit during any one visit and a limit of one visit per month.</li> <li>SCVs would be required to have a self-contained toilet and a separate, permanently installed holding tank for both black and grey water, each with a min. capacity of 3 days' waste.</li> <li>Holding tanks must be dumped at an appropriate facility every 72 hours during a visit.</li> </ul> <p>Between May 1 and September 16, ORV park-and-stay overnight would be allowed with a permit at selected spits and points, if not otherwise closed to protect resources. The following park-and-stay use limits would be established: Inlet spits—15 vehicles each; Cape Point and South Point Ocracoke—25 vehicles each.</p> <p>Park-and-stay use limits and hours of night-driving prohibition would be established in the Superintendent's Compendium and subject to periodic review.</p>	<p>Same as alternative C.</p>

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<b>Beach Fires</b>					
<p>Per 36 CFR 2.13: Fires are prohibited except in designated areas. In the Superintendent's Compendium, beach fires are authorized year-round, with the following restrictions:</p> <ul style="list-style-type: none"> <li>• Fires are prohibited from midnight to 6:00 a.m. year-round.</li> <li>• Fires are prohibited within resource closures.</li> </ul>	<p>Same as alternative A.</p>	<p>Same as alternative B, plus:</p> <ul style="list-style-type: none"> <li>• A non-fee educational fire permit is required for any beach fire year-round.</li> <li>• The hours that beach fires are permitted are subject to periodic review.</li> </ul>	<p>Same as alternative A.</p>	<p>Same as alternative C.</p>	<p>Beach fires are authorized year-round, with the following restrictions:</p> <ul style="list-style-type: none"> <li>• A non-fee educational fire permit is required for any beach fire.</li> <li>• Fires are prohibited from 10:00 p.m. to 6:00 a.m. year round.</li> <li>• Fires are prohibited within resource closures and within 100 meters of any turtle nest closure.</li> <li>• May 1 to Nov 15: Beach fires would be permitted only in front of Coquina Beach, Rodanthe, Waves, Salvo, Avon, Buxton, Frisco Hatteras Village, and Ocracoke day use area during the sea turtle nesting season.</li> </ul>
<b>Pets</b>					
<p>Per 36 CFR 2.15: The following are prohibited:</p> <ul style="list-style-type: none"> <li>• Possessing a pet in an area closed to the possession of pets by the Superintendent.</li> <li>• Failing to crate, cage, restrain on a leash which shall not exceed 6 feet in length, or otherwise physically confine a pet at all times.</li> </ul> <p>In the Superintendent's Compendium, pets are prohibited in all resource closures. Pets are prohibited, even if on a leash, from the landward side of the posts delineating the ORV corridor at the spits (Bodie, Hatteras, Ocracoke) and Cape Point.</p>	<p>Same as alternative A.</p>	<p>Same as alternative A, except :</p> <ul style="list-style-type: none"> <li>• Pets would be prohibited within all designated Breeding Shorebird Species Management Areas (SMAs) from Mar 15 to Oct 15.</li> <li>• Pets would be prohibited within all Nonbreeding Shorebird SMAs that are otherwise open to recreational use.</li> </ul>	<p>Same as alternative C, except :</p> <ul style="list-style-type: none"> <li>• Pets would be prohibited in all designated SMAs year-round.</li> <li>• This policy would not be subject to periodic review.</li> </ul>	<p>Same as alternative C, except:</p> <ul style="list-style-type: none"> <li>• Pets would be prohibited within all designated Breeding Shorebird SMAs, including pass-through zones, from Mar 15 to Aug 31.</li> </ul>	<p>Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Pets would be prohibited in pedestrian shoreline access areas in front of (i.e., seaward of) bird prenesting areas.</li> </ul>

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<b>Horses</b>					
<p>Per 36 CFR 2.16: The use of horses or pack animals is prohibited outside of trails, routes, or areas designated for their use.</p> <p>In the Superintendent's Compendium, horse use is prohibited in resource closures and on lifeguarded beaches, and is allowed only in the following locations:</p> <ul style="list-style-type: none"> <li>• On the beach seaward of the existing dunes and only on beaches open to ORV use.</li> <li>• Along road shoulders or across paved roads where travel is necessary to cross to and from beach access routes.</li> <li>• On trails or in areas as authorized by commercial-use authorization or special use permit.</li> </ul>	<p>Same as alternative A.</p>	<p>Same as alternative A, except:</p> <ul style="list-style-type: none"> <li>• Horse use would be allowed in some VFAs, except for SMAs, and on a limited number of trails to be designated in the Superintendent's Compendium after ORV routes are determined.</li> <li>• Horse use would be allowed on village beaches from Sep 16 to May 14.</li> <li>• The designated horse use trails and areas would be subject to periodic review.</li> </ul>	<p>Same as alternative A.</p>	<p>Same as alternative C.</p>	<p>Same as alternative A, except:</p> <ul style="list-style-type: none"> <li>• Horse use would be allowed in some VFAs and on a limited number of trails to be designated in the Superintendent's Compendium after ORV routes are determined.</li> <li>• Horse use would be allowed on village beaches from Sep 16 to May 14.</li> <li>• Horses are prohibited in resource closures and in pedestrian shoreline access areas in front of (i.e., seaward of) bird prenesting areas.</li> </ul>
<b>Authorized Commercial Vehicles</b>					
<p>Commercial fishing at the Seashore is authorized and managed under a special use permit in accordance with 36 CFR 7.58(b). Commercial fishing vehicles are considered <i>non-essential vehicles</i> and are not authorized to enter resource closures. Permitted commercial fishermen are authorized to enter other areas that are closed to recreational ORV use, including seasonal closures and safety closures, but are not authorized to enter lifeguarded beaches.</p>	<p>Same as alternative A, plus:</p> <ul style="list-style-type: none"> <li>• Commercial fishing vehicles are subject to the night-driving restriction in the consent decree.</li> <li>• Under the modified consent decree, commercial fishermen would be granted access to beaches at 5:00 a.m. instead of 6:00 a.m, provided certain conditions from the modified consent decree are met.</li> </ul>	<p>Same as alternative A, except:</p> <ul style="list-style-type: none"> <li>• Commercial fishermen would not be required to obtain an ORV permit that would be required for recreational ORVs.</li> <li>• Commercial fishing vehicles would be authorized to enter VFAs, except for resource closures and lifeguarded beaches.</li> <li>• In areas outside of existing resource closures, the Superintendent would be able to modify the hours of night-driving restrictions by +/- two hours, subject to terms and conditions of the fishing permit, for commercial fishermen who are actively engaged in authorized commercial fishing activity and can produce fish house receipts from the past 30 days. Such modifications would be subject to periodic review.</li> </ul>	<p>Same as alternative C.</p>	<p>Same as alternative C.</p>	<p>Use of vehicles off-road under the terms of a commercial use authorization or commercial fishing permit issued by the superintendent would be as follows. A separate ORV permit is not required.</p> <ul style="list-style-type: none"> <li>• When driving off-road, a commercial use authorization (CUA) holder is restricted to the designated off-road routes open for use.</li> <li>• A commercial fishing permit holder may drive on designated off-road routes and, when actively engaged in authorized commercial fishing activities, on beaches not designated for off-road use, except for resource closures and lifeguarded beaches.</li> <li>• The superintendent may allow commercial fishing vehicles to enter the beach at 5 a.m. when night driving restrictions are in effect for the general public, for those actively engaged in authorized commercial fishing activity involving haul seine and gill nets and able to present fish house receipts for the previous 30 days.</li> </ul>



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<b>Periodic Review</b>					
None	Same as alternative A.	Every 5 years NPS would conduct a systematic review of the ORV management measures that are identified in this plan as being subject to Periodic Review. This could result in changes to those management actions in order to improve effectiveness.	Same as alternative A.	Same as alternative C.	Same as alternative C.
<b>Staffing and Material Costs (annual costs based on 2009 dollars)</b>					
Protection: \$1,147,500 Management/Administration: \$428,750 Resource Mgmt: \$508,500 Facilities: \$55,600 Interpretation: \$68,500 Total: \$2,208,850	Protection: \$1,481,500 Management/Administration: \$483,950 Resource Mgmt: \$813,000 Facilities: \$178,600 Interpretation: \$193,500 Total: \$3,150,550	Protection: \$1,706,900 Management/Administration: \$380,100 Resource Mgmt: \$704,000 Facilities: \$198,800 Interpretation: \$193,500 Total: \$3,183,300	Protection: \$1,768,500 Management/Administration: \$360,850 Resource Mgmt: \$649,500 Facilities: \$178,600 Interpretation: \$193,500 Total: \$3,150,950	Protection: \$2,204,300 Management/Administration: \$383,100 Resource Mgmt: \$924,200 Facilities: \$211,400 Interpretation: \$193,500 Total: \$3,916,500	Protection: \$1,956,100 Management/Administration: \$274,150 Resource Mgmt: \$943,950 Facilities: \$194,100 Interpretation: \$263,850 Total: \$3,632,150
<b>Resource Protection Measures</b>					
<b>Breeding Season Measures</b>					
Shorebird prenesting areas and ORV/pedestrian buffers for observed shorebird breeding behavior, sea turtle nests, and seabeach amaranth are established as described in the Interim Strategy FONSI (table 9).	Shorebird prenesting areas and ORV/pedestrian buffers for observed shorebird breeding behavior, sea turtle nests, and seabeach amaranth are established as described in the Interim Strategy FONSI (table 9), as modified by the consent decree.	Breeding Shorebird SMAs would be designated. Shorebird prenesting areas and ORV/pedestrian buffers for observed shorebird breeding behavior, sea turtle nests, and seabeach amaranth would be established as described in table 10. ML1 measures would be implemented at all locations (including those outside of SMAs), except at Bodie Island Spit, Cape Point, and South Point Ocracoke, where ML2 measures would be implemented. Designated SMAs would be subject to periodic review.	Same as alternative C, except: <ul style="list-style-type: none"> <li>ML1 would be implemented at all locations.</li> </ul>	Same as alternative C, except: <ul style="list-style-type: none"> <li>ML2 areas at Bodie Island Spit, Cape Point, and South Point Ocracoke would include an ORV pass-through zone, using standard buffer distances as described in table 10.</li> </ul>	Prenesting areas and buffers would be established as described in table 10-1. Pedestrian shoreline access below the high tide line would be permitted in front of (i.e., seaward of) prenesting areas until breeding activity is observed, then standard buffers for breeding activity would apply. The NPS retains discretion at all times to enforce more protective closures or take other measures, if considered necessary, consistent with its obligations under the law.
<b>Nonbreeding Season Measures</b>					
As described in the Interim Strategy FONSI: Suitable interior habitats at spits and at Cape Point are closed year-round to all recreational users to provide for resting and foraging for shorebirds. Suitable habitats include ephemeral ponds and moist flats at Cape Point, Hatteras Spit, Ocracoke, and Bodie Island Spit. Actual locations of suitable foraging and resting habitat may change periodically due to natural processes and are determined based on annual habitat assessment and monitoring.	Same as alternative A.	Nonbreeding Shorebird SMAs would be established at the points and spits based on an annual habitat assessment. In addition, year-round VFAs along the ocean shoreline outside of the villages, as identified in table 7, would be managed as Nonbreeding Shorebird SMAs with recreational activity restrictions as described in table 10. Designated SMAs would be subject to periodic review.	Same as alternative C.	Same as alternative C.	VFAs throughout the Seashore would provide relatively less disturbed foraging, resting, and roosting habitat for migrating and wintering birds. These areas would be managed as described in table 10-1.

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<b>Vegetation</b>					
ORV use is generally restricted to minimize impacts.	Same as alternative A.	ORV use would be restricted or prohibited in locations where ORV use is causing unacceptable impacts to vegetation.	Same as alternative C.	Same as alternative C.	Same as alternative C.

**TABLE 9. SPECIES OBSERVATION AND MANAGEMENT UNDER THE INTERIM PROTECTED SPECIES MANAGEMENT STRATEGY, CONSENT DECREE, AND MODIFIED CONSENT DECREE**

Note: This table represents actions from the FONSI for the Interim Protected Species Management Strategy (alternative A). Additions in bold, italic font indicate changes made by the consent decree or modified consent decree as indicated (alternative B).

SPECIES OBSERVATION ACTIVITY	
<b>Survey Time and Frequency</b> <b>Prenesting</b>	<p>Piping plover: March 15 – March 31 survey recent breeding areas at Bodie Island Spit, Cape Point and South Beach, Hatteras Spit, and the northern and southern ends of Ocracoke one time per week. April 1 – June 15 survey recent breeding areas at Bodie Island Spit, Cape Point and South Beach, Hatteras Spit, and the northern and southern ends of Ocracoke three times per week (or every other day) and potential new habitat two times per week. Survey for Wilson's plover during piping plover surveys. American oystercatcher: March 15 – June 15 survey recent breeding areas two times per week. Colonial waterbirds: May 1 – June 15 survey recent breeding areas two times per week.</p> <p><b>CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>• <b><i>Survey Cape Point, South Beach, Hatteras Spit, North Ocracoke, and Ocracoke South Point at least once every two days from March 15 to April 15, and daily from April 16 to July 15, to determine if any birds are exhibiting prenesting and/or breeding behavior. The NPS shall monitor Bodie Island Spit at least daily from March 15 to July 15.</i></b></li> </ul>
<b>Survey Time and Frequency</b> <b>Life Stages</b>	<p><u>Courtship/Mating:</u> If species are observed exhibiting territorial or courtship behavior during two consecutive surveys in historic habitat, observe three times per week. If scrapes or eggs are observed, survey three times per week. Survey potential new habitat two times per week.</p> <p><u>Nesting:</u> Piping plover: Observe nests from a distance that does not disturb the birds, based on professional judgment, one time daily. Approach nests once per week to observe and record data. American oystercatcher and colonial waterbirds: Observe nests at least three times per week. Wilson's plover: Observe nests incidental to piping plover monitoring.</p> <p><u>Unfledged Chicks:</u> Piping plover: During the first week, observe continually during daylight hours. After the first week, if the closure is reduced or remains the same size, keep continuous observation. If the closure is enlarged, observe once daily. American oystercatcher: Observe once daily. Colonial waterbirds: Observe broods at one-day to two-day intervals and record data. Wilson's plover: Observe broods incidental to piping plover monitoring. All Species: When broods are mobile, provide more frequent observation and enforcement presence. All observations end when all chicks have fledged.</p> <p><u>Nonbreeding/Wintering:</u> Piping plover: As provided in the USFWS Amended Biological Opinion (2007) (attachment 1 to the FONSI), the NPS will monitor the presence, abundance, and behavior of migrating and wintering piping plovers from August 1 – March 31 of each year. At each session, specific observations include vehicle, pedestrian, and pet tracks in posted habitat; any signs of predators, including species; specific management measures in place at the time of the observation; observed behaviors; and reactions to disturbance by pedestrians, pets, or vehicles. American oystercatcher, red knot, Wilson's plover: Survey with piping plover. Colonial waterbirds: Winter/Nonbreeding habitat not surveyed.</p>
<b>Data Collected</b>	<p>Piping plover: Use GPS to document breeding areas and nest locations. Record locations where territorial/courtship behavior occurs. Record presence and abundance of birds. American oystercatcher and colonial waterbirds: Use GPS to document nest and colony locations. Record presence and abundance of prenesting birds.</p>
<b>Sea Turtles</b>	
<b>Survey Time and Frequency</b>	<p>May 1 – September 15 Conduct daily morning surveys by ATV and some ORVs for crawls and nests on all beaches before onset of heavy public ORV use. Daily surveys for nests end September 15. Periodic monitoring (e.g., every two to three days) for unknown nesting and emerging hatchlings will continue, especially in areas of high visitation, September 16 – November 15. Monitoring will also occur for post-hatchling washbacks during periods when there are large quantities of seaweed washed ashore or following severe storm events. Nest observations stop when all nests have hatched or excavation indicates that the nest was not viable. Once a light filter fence is installed, monitor nests daily for signs of hatchling emergence.</p>

SPECIES OBSERVATION ACTIVITY	
<b>Data Collected</b>	<p>Follow the North Carolina Wildlife Resources Commission Handbook and record:</p> <ul style="list-style-type: none"> <li>• Turtle species</li> <li>• Nest vs. false crawl</li> <li>• Location (physical description and GPS location)</li> <li>• -If nest needs to be relocated and, if so, why and where (new physical description and GPS location), number of eggs relocated, and time of day</li> <li>• Necessary protective measures for nest and hatchlings</li> <li>• Information regarding any post hatching nest excavation and analysis</li> </ul> <p>Examine all nests after hatching to determine productivity rates. Excavate nests at a minimum of 72 hours after hatching event. In cases where hatching events or dates were unknown, unearth nest cavities 80–90 days after the lay date.</p>
<b>Seabeach Amaranth</b>	
<b>Survey Time and Frequency</b>	<p>April 1 During bird and turtle surveys, note any seedlings or plants and record location.</p> <p>August Annual survey of potential habitat (some bird closure areas may not be surveyed due to potential to disturb nesting birds).</p> <p>April – September Before opening any species closure or identifying alternate ORV corridors, survey for seedling/plants.</p> <p>End observations when all plants have died back.</p>
<b>Data Collected</b>	Record location of all individual plants or plant clusters using a GPS and note if the plant is located in an area open or closed to recreational use.
<b>Essential Vehicle Use</b>	
<b>Bird Surveys</b>	Piping plover: During bird surveys, NPS vehicles will remain outside of established resources closures.
SPECIES MANAGEMENT ACTIVITY	
<b>Closures/Buffers</b>	<p><u>Prenesting:</u></p> <p>American oystercatcher: March 15 Activate closures if a territory is established or a nest located. Closures removed when areas have been abandoned for a two-week period.</p> <p>Piping plover: April 1 In February or March of each year, NPS natural resource staff to conduct an annual assessment of piping plover breeding habitat to plan prenesting closures in recent breeding areas that are adapted to current habitat and physiographic conditions. Close recent breeding areas by posting symbolic fencing by April 1. Remove closures if no bird activity is seen by July 15 or when area has been abandoned for a two-week period, whichever comes later.</p> <p>Colonial waterbirds: May 1 Activate closures if a territory is established or a nest located. Closures removed when areas have been abandoned for a two-week period.</p> <p>All Species: Designate a 100-foot-wide ORV and pedestrian corridor. Outside of ORV corridor, prohibit pedestrian access to breeding areas beyond the symbolic fencing. Delineate the corridor with posts placed up to 100 feet above the high tide line. In areas of reduced corridor width (i.e., narrower than 100 feet), post a reduced speed limit of 10 mph.</p> <p><b>CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>• <i>All-species: Prenesting areas established on Bodie Island Spit, Cape Point, South Beach, Hatteras Spit, North Ocracoke, and Ocracoke South Point. The prenesting areas shall remain in place until the later of July 15 or two weeks after the last tern, black skimmer, American oystercatcher, piping plover, or Wilson's plover chick within the area has fledged, as determined by two consecutive monitoring events. Prenesting areas would be delineated to incorporate to the maximum extent the areas delineated in the 2008 prenesting closure maps and would include to the maximum extent possible the soundside intertidal zone, areas of moist soil habitat, ocean backshore, dunes, dry sand flats, overwashes, blowouts, and areas of the ocean tidal zone consistent with these areas.</i></li> <li>• <i>If NPS observes prenesting and/or breeding behavior of colonial waterbirds, piping plovers, or American oystercatchers, NPS shall establish the appropriate buffer as quickly as possible, but always within 8 daylight hours.</i></li> </ul>

SPECIES MANAGEMENT ACTIVITY	
<b>Closures/Buffers (continued)</b>	<p><u>Courtship/Mating:</u>  Piping plover: If courtship or copulations are observed outside of existing closures on two consecutive survey days, establish or expand buffer to ensure 150-foot buffer for the observed birds.  If additional closures are created around courtship/mating areas, adjust the ORV corridor whenever possible to allow vehicle passage. Allow management to be responsive to individual bird behavior when determining adequacy of closure size.  American oystercatcher and colonial waterbirds: If territorial or courting birds are observed outside of existing closures, based on bird behavior and suitable habitat, expand buffers to accommodate the birds. Provide ORV/pedestrian corridor above the high tide line.</p> <p><b>CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>• <b><i>Piping Plover: 50-meter buffer.</i></b></li> <li>• <b><i>Least Tern: 100-meter buffer.</i></b></li> <li>• <b><i>Other Colonial Waterbirds: 200-meter buffer.</i></b></li> <li>• <b><i>American Oystercatcher: 150-meter buffer.</i></b></li> <li>• <b><i>When multiple species present, greatest applicable buffer distance shall be used.</i></b></li> </ul>
	<p><u>Nesting:</u>  Piping plover: Establish 150-foot buffer/closure around piping plover nests occurring outside existing closures. Expand closures, if necessary, using flexible increments dependent on observed bird behavior. When resource closures are created around nests, adjust the ORV corridor whenever possible to allow vehicle passage. Reduce the width of the ORV corridor if necessary. In areas in which the buffer zone would eliminate the ORV corridor, identify alternate ORV routes if available or provide a bypass (see "Short-term Bypass Route Criteria" on page 11 of the FONSI) if possible.  American oystercatcher: Establish buffer/closure based on adult's reaction to human disturbance. Closures vary in size dependent on best professional judgment. When resource closures are created around nests, adjust the ORV corridor whenever possible to allow ORV passage. Reduce width of ORV corridor if necessary. In areas in which the buffer zone would eliminate the ORV corridor, identify alternate ORV routes if available, or provide a bypass (see "Short-term Bypass Route Criteria" on page 11 of the FONSI) if possible. Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones around nests.  Colonial waterbirds: Establish a buffer/closure of 150 feet to 300 feet around the nest or colony based on observed bird behavior, while maintaining ORV/pedestrian corridor. If the buffer and the corridor overlap each other, then staff will reduce corridor width if necessary. In areas in which the buffer zone would eliminate the ORV corridor, identify alternate ORV routes if available, or provide a bypass (see "Short-term Bypass Route Criteria" on page 11 of the FONSI) if possible. Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones around nests.  Reduced width of ORV/pedestrian corridors for American oystercatcher and colonial waterbirds will be approached as a research opportunity to gather data useful for the long-term ORV management plan/EIS to test for the distance at which vehicle disturbance to nesting American oystercatcher and colonial waterbirds occurs.  All species:  Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones around nests.  If nest is lost, buffers remain in place 2–3 weeks after nest is lost to determine if pair will re-nest, if no other species nesting in area.</p> <p><b>CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>• <b><i>Piping Plover: 50-meter buffer.</i></b></li> <li>• <b><i>Least Tern: 100-meter buffer.</i></b></li> <li>• <b><i>Other Colonial Waterbirds: 200-meter buffer.</i></b></li> <li>• <b><i>American Oystercatcher: 150-meter buffer.</i></b></li> <li>• <b><i>When multiple species present, greatest applicable buffer distance shall be used.</i></b></li> <li>• <b><i>Upon discovery of an active nest outside an existing closure, protective measures shall be taken immediately to close and establish the buffers described above. Symbolic fencing with the applicable buffer distances stated above shall be installed as soon as NPS staff can reasonably be mobilized to erect the fencing, but always within 6 daylight hours.</i></b></li> </ul>
	<p><u>Adult Foraging:</u>  Piping plover: For adults foraging outside of a closure on two consecutive surveys, expand buffer to include foraging site. These closures are intended to provide foraging opportunities close to breeding sites.  Colonial waterbirds, American oystercatcher, and Wilson's plover: No additional buffers/closures.</p> <p><b>CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>• <b><i>If no piping plover are observed utilizing such a foraging closure over a two-week period of time, the closure will be removed.</i></b></li> </ul>

SPECIES MANAGEMENT ACTIVITY	
Closures/Buffers (continued)	<p><u>Unfledged Chicks:</u></p> <p>Piping plover: Establish a minimum 600-foot buffer on either side of brood based on observation of bird behavior and terrain conditions at site. Based on observed behavior, buffer area may require expansion up to 3,000 feet if chicks are highly mobile. Based on observed behavior (i.e., mobility of the brood) and the capability to continually observe mobility and behavior, buffer zone can be reduced after the first week to no less than 300 feet, but may require expansion up to 3,000 feet if chicks are highly mobile. Buffer moves with chicks. Close bypass route at night if buffer zone is less than 600 feet (as identified on p. 8 of the USFWS Amended Biological Opinion (2007) [attachment 1 to the FONSI]).</p> <p>When resource closures are created around broods, adjust the ORV corridor whenever possible to allow vehicle passage. Reduce ORV corridor if necessary. In areas in which the buffer zone would eliminate the ORV corridor identify alternate ORV routes if available. If there are no alternate ORV routes, then if possible establish a bypass (see "Short-term Bypass Route Criteria" on page 11 of the FONSI). Close beach to recreation access down to the waterline, if necessary, to allow chicks access to foraging areas.</p> <p>American oystercatcher: Establish 150-foot to 300-foot buffer zone when unfledged chicks are present. Adjust buffer zone as needed when chicks are mobile. Provide alternate ORV/pedestrian access route or bypass to open areas beyond the closure, if possible.</p> <p>Colonial waterbirds: Establish 150-foot to 300-foot buffer zone when unfledged chicks present. Adjust buffer zone as needed when chicks are mobile. Provide alternate ORV/pedestrian access route or bypass to open areas beyond the closure, if possible.</p> <p>For all species: Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones around broods.</p> <p>Reopen 100-foot-wide ORV corridor in recent or current nesting areas after chicks fledge. Areas outside of corridor, including the upper beach remain available for protected species use. Re-establish 150-foot ORV corridor after August 31.</p> <p><b>CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>• <i>Piping Plover: 1,000-meter buffer, although it would be reduced to 300 meters for pedestrians during daylight hours only. Two-weeks after hatching, the NPS may allow ORV access within the 1,000-meter buffer down to 300 meters, although the NPS may re-establish the 1,000-meter buffer based on plover movement or behavior. Vehicles may be allowed to pass through portions of the protected area, where the protected area is considered by NPS natural resource management staff to be inaccessible to piping plover chicks because of steep topography, dense vegetation, or other naturally occurring obstacles. All of the ocean beach at Cape Point, South Beach, and North Ocracoke and all of the bayshore and ocean beach at Bodie Island Spit and Ocracoke South Point will be considered accessible to piping plover chicks in these areas. Within the 1,000-meter piping plover unfledged chick buffer at Hatteras Spit, all of the ocean beach and that part of the bayshore beach at the overwash fans and from the inlet east to a point 200 meters east of the point where the Spur Road from the Pole Road meets the bayshore will be considered accessible to piping plover chicks in these areas.</i></li> <li>• <i>All other species: 200-meter buffer.</i></li> <li>• <i>Locations of buffers are adjusted to accommodate chick movement. The NPS retains discretion to enforce greater restrictions as necessary to protect the species.</i></li> <li>• <i>When multiple species present, greatest applicable buffer distance shall be used.</i></li> <li>• <i>Upon discovery of chicks outside an existing closure, protective measures shall be taken immediately to close and establish the buffers described above. Symbolic fencing with the applicable buffer distances stated above shall be installed as soon as NPS staff can reasonably be mobilized to erect the fencing, but always within 6 daylight hours.</i></li> </ul>
Disturbance from ORVs or Pedestrians	<p><b>CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>• <i>If NPS staff observes disturbance from ORVs and/or pedestrians, buffers would be expanded in 50-meter increments until no disturbance occurs. If a deliberate violation occurs that disturbs wildlife or vandalizes nests or fencing, the buffer would be expanded by 50 meters on the first offense. If there are multiple occurrences in the same area, the buffer would be expanded by 100 meters and 500 meters for the second and third violations, respectively.</i></li> </ul> <p><b>MODIFIED CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>• <i>If a violator is apprehended, the NPS would not be required to institute expanded buffers. If the buffer has been expanded and then the violator is caught, the NPS can retract the expansion.</i></li> </ul>
Non Breeding/Wintering Closures	<p>For piping plover: Suitable interior habitats at spits and at Cape Point closed year-round to all recreational users to provide for resting and foraging for all species. For example, at present, such suitable habitats include ephemeral ponds and moist flats at Cape Point, Hatteras Spit, Ocracoke, and Bodie Island Spit. Actual locations of suitable foraging and resting habitat may change periodically due to natural processes.</p>

SPECIES MANAGEMENT ACTIVITY	
<b>Sea Turtles</b>	
<b>Nest Closures/Buffers</b>	<p>Establish a buffer approximately 30 feet by 30 feet with symbolic fencing and signage around nest.</p> <p>Approximately 50–55 days into incubation, closures expanded to the surf line. The width of the closure based on the type and level of use in the area of the beach where the nest was laid:</p> <ol style="list-style-type: none"> <li>VFAs with little or no pedestrian traffic – 75 feet wide (total width);</li> <li>villages or other areas with high levels of day use – 150 feet wide (total width);</li> <li>areas with ORV traffic – 350 feet wide (total width).</li> </ol> <p>Opposite the surf line on the upper end of the closure, the closed area expanded to 50 feet where possible, but no less than 30 feet duneward from the nest. Traffic detours behind the nest area clearly marked with signs and reflective arrows.</p> <p>Where present within closure, vehicle tracks manually smoothed with rakes or a steel mat attached to an ATV, so as not to impede hatchlings attempting to reach the surf.</p> <p>Use light filtering fence behind nests nearing hatch dates to block light pollution from the villages and vehicles operating on the beach after dark.</p> <p><b>CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>After September 15 all remaining unhatched turtle nests, once they reach their hatch window, shall be protected by full beach closures.</li> </ul> <p><b>MODIFIED CONSENT DECREE</b></p> <ul style="list-style-type: none"> <li>After September 15, all unhatched turtle nests would only require full beach closures from sunset until 6:00 a.m. instead of 24 hours a day.</li> </ul>
<b>Nest Relocation</b>	<p>When a nest is found, staff assesses need for nest relocation and follows relocation guidance identified in the NCWRC handbook.</p> <p>If it is determined the nest will not be relocated, it will be immediately protected with a symbolic fence measuring approximately 30 feet by 30 feet and signage.</p> <p>If a nest is threatened by a storm event, the NPS will consult NCWRC to determine appropriate action.</p>
<b>Light Management</b>	<p>Establish turtle friendly lighting standards for all Seashore (NPS) structures.</p> <p>Encourage concessioners to install turtle friendly lighting.</p>
<b>Research</b>	<p>Support research efforts looking at the sex ratios of turtles.</p>
<b>Seabeach Amaranth (SBA)</b>	
<b>Buffers</b>	<p>April 15 – November 30</p> <p>If a plant/seedling is found outside of an existing closure, the Seashore will erect symbolic fencing with signage creating a 30-foot by 30-foot buffer around the plant. If plants are located next to each other, the area will be expanded to create one enclosure protecting several plants.</p> <p>If a SBA is found during the survey prior to reopening a bird closure to ORV and pedestrian use, the Seashore will protect the SBA as described above and reopen the areas of the bird closure where no plants exist.</p> <p>Areas reopened if no plants are present by September 1. Where plants occur, the closed areas will be reopened after the plants have died.</p>
<b>Predator Management</b>	<p>Trappers will target red and gray fox, raccoons, cats and other predators for removal.</p> <p>Piping plover: Nests surveyed to count eggs and look for predator tracks.</p> <p>As applicable, predator exclosures are erected when nest found with eggs.</p> <p>American oystercatcher and colonial waterbirds: Nests surveyed to count eggs and look for predator tracks.</p> <p>Sea Turtle: Nests surveyed to count eggs and look for predator tracks. Predator exclosures may be placed over nests if predator tracks or nest predation is evident.</p> <p>SBA: No predator management.</p>
<b>Conservation Measures</b>	<p>Conservation measures are discretionary activities intended to minimize or avoid adverse effects of an action on listed species or critical habitat, to help implement recovery plans, or to develop information. Conservation measures outlined in the USFWS Amended Biological Opinion (2007) (attachment 1 to the FONSI) will be considered for implementation. The Seashore will notify the USFWS when any of these conservation measures are implemented.</p>

**TABLE 10. SPECIES MANAGEMENT STRATEGIES FOR ALTERNATIVES C, D, AND E**

DEFINITIONS			
<p><b>Breeding behavior:</b> Shorebird behavior that includes, but is not limited to, courtship, mating, scraping, confirmed scrapes, and other breeding or nest-building activities. The terms breeding behavior and breeding activity are used synonymously.</p> <p><b>Human disturbance:</b> Any human activity that changes the contemporaneous behavior of one or more individuals of breeding, nesting, foraging, or roosting colonial waterbirds, piping plover, Wilson’s plover, or American oystercatcher. Behaviors indicating disturbance include defensive displays; alarm calls; flushing or leaving a nest or feeding area; and diving or mobbing pedestrians, dogs, or vehicles.</p> <p><b>Periodic review:</b> A systematic review of data, habitat conditions, and other information to be conducted by the NPS every 5 years, after storms or events that Seashore management determines to be a major modification of habitat quantity or quality, or after a significant change in protected species status (e.g., listing or de-listing), in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives. Periodic review could result in changes to the management actions in order to improve effectiveness. When desired future conditions for resources are met or exceeded, periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remained stable. Where progress is not being made toward goals, periodic review and adaptive management may result in <u>increased</u> restrictions on recreational use.</p> <p><b>Prenesting closure:</b> A kind of resource closure in which an area of suitable habitat is proactively closed to ORVs and pedestrians at the start of the shorebird breeding season to provide undisturbed habitat for bird breeding activities to occur.</p> <p><b>Research area:</b> Area of suitable habitat set aside on a temporary or long-term basis (such as a study site or control plot) as part of a research project authorized by NPS under a research permit.</p> <p><b>Resource closure:</b> Any area posted as closed to all public entry in order to protect wildlife, such as breeding and foraging shorebirds and bird and turtle nests, or vegetation from human disturbance.</p> <p><b>Species Management Area (SMA):</b> Area of suitable habitat that has had concentrated and recurring use by multiple individuals and/or multiple species of protected shorebirds during the breeding season or nonbreeding season, or concentrations of seabeach amaranth specimens, in more than one (i.e., two or more) of the past 5 years and is managed to reduce or minimize human disturbance. Currently designated SMAs are listed at the end of this table. SMAs will be re-evaluated and re-designated every 5 years, or after storms or events that Seashore management determines to be a major modification of habitat quantity or quality, or if necessitated by a significant change in protected species status (e.g., listing or de-listing), as part of the periodic review process described at the end of this table.</p>			
<ul style="list-style-type: none"> <li>• <b>Breeding Shorebird and Seabeach Amaranth SMA:</b> Area of suitable breeding habitat that has had multiple nests of individuals and/or multiple species of protected shorebirds, or concentrations of seabeach amaranth specimens, in more than 1 (i.e., 2 or more) of the past 5 years and is managed to minimize human disturbance during the breeding season. Focal species for Breeding Shorebird SMAs include piping plover, Wilson’s plover, American oystercatcher, least tern, common tern, gull-billed tern, and black skimmer; however, there will be ongoing evaluation of the breeding shorebird species addressed by this plan, as part of the periodic review process described at the end of this table. The following areas have been initially designated as Breeding Shorebird SMAs:</li> <li>• <b>Bodie Island Spit:</b> 0.2 mile south of ramp 4 to inlet</li> <li>• Ramp 27 to ramp 30</li> <li>• New ramp 32.5 to ramp 34</li> <li>• Approximately 1.7 miles south of ramp 38 to north boundary of Buxton</li> <li>• Cape Point: 0.2 mile south of ramp 44 to ramp 45</li> <li>• South Beach: ramp 45 to new ramp 47</li> <li>• Hatteras Inlet Spit: Ocean shoreline south of Pole Road to soundside of inlet</li> <li>• North Ocracoke Spit: Inlet to 0.25 mile northeast of ramp 59</li> <li>• 0.5 mile southwest of ramp 68 to 1.2 miles north of ramp 70</li> <li>• South Point Ocracoke: 0.5 mile southwest of ramp 72 to inlet</li> <li>• <b>Nonbreeding Shorebird SMA:</b> Area of suitable nonbreeding habitat that has had concentrated foraging by migrating/wintering shorebirds in more than 1 (i.e., 2 or more) of the past 5 years and is managed to reduce human disturbance during the nonbreeding season. This may include portions of breeding SMAs that provide suitable nonbreeding habitat during periods of overlap between the breeding and migrating season and designated VFAs that are set aside to provide pedestrians with the opportunity for a natural beach experience.</li> </ul> <p><b>Management Level 1 (ML1):</b> An approach to shorebird protection during the breeding season that will use larger, longer-lasting buffers with less monitoring to reduce the need for more frequent monitoring and fencing changes.</p> <p><b>Management Level 2 (ML2):</b> An approach to shorebird protection during the breeding season that will use smaller buffers and will require more frequent monitoring and fencing changes when an ORV or pedestrian access corridor is open at designated locations during the breeding season.</p>			
Management Activity	Shorebirds		
	Piping Plover	American Oystercatcher and Wilson’s Plover	Colonial Waterbirds, including Least Terns, Common Terns, Gull-Billed Terns, and Black Skimmers
Prenesting Surveys	By Mar 1: NPS staff will evaluate all potential breeding habitat and recommend piping plover prenesting closures based on that evaluation.  Mar 15 to Jul 15: Prenesting closures will be surveyed three times per week. Outside of prenesting closures, suitable habitat will be surveyed twice per week, increasing to three times per week once birds are present.	Mar 15 to Jul 15: Prenesting closures will be surveyed three times per week.  Outside of prenesting closures, suitable habitat will be surveyed twice per week, increasing to three times per week once breeding pairs are present.	May 1 to Jul 15: Prenesting closures will be surveyed three times per week.  Outside of prenesting closures, suitable habitat will be surveyed twice per week, increasing to three times per week once breeding pairs are present.



Table 10. Species Management Strategies for Alternatives C, D, and E

Management Activity	Shorebirds		
	Piping Plover	American Oystercatcher and Wilson's Plover	Colonial Waterbirds, including Least Terns, Common Terns, Gull-Billed Terns, and Black Skimmers
<b>Prenesting Closures</b>	<p><b>All species:</b> All designated Breeding Shorebird SMAs will be posted as prenesting closures using symbolic fencing by <b>Mar 15</b> at sites involving piping plover, Wilson's plover, and/or American oystercatcher; and by <b>Apr 15</b> at sites involving only colonial waterbirds. The NPS will determine the configuration of specific prenesting closures based on an annual habitat assessment. Prenesting closures would be adjusted to the configuration of the Nonbreeding Shorebird SMAs for the respective sites (as described later in this table) if no breeding activity is seen in the area by <b>Jul 31</b>, or 2 weeks after all chicks have fledged, whichever comes later. Prenesting closures will not be modified in cases where the beach erodes into the buffered habitat. ORVs, pedestrians, and pets are prohibited within all resource closures, including prenesting closures.</p> <p><b>ML1:</b> SMAs managed using ML1 measures would not allow ORV or pedestrian access when prenesting closures are in effect. Areas outside of SMAs would be managed under ML1 measures.</p> <p><b>ML2:</b> The Bodie Island Spit, Cape Point, and South Point Ocracoke SMAs would be managed using ML2 measures in action alternatives C, E, and F. Once prenesting closures are implemented at these sites, a narrow ORV access corridor (where ORV use is permitted) or a pedestrian access corridor (where ORV use is not permitted) would be established. Upon the first observation of breeding activity, the standard buffers (please refer to table 11, Shorebird/Waterbird Buffer Summary) will apply, which depending upon the circumstances may close the access corridor. The Bodie Island Spit access corridor would follow the ocean shoreline to the inlet. The Cape Point access corridor would follow the ocean shoreline from ramp 44 south to the point, then west approximately 0.2 mile along the ocean shoreline. The South Point Ocracoke access corridor would follow the ocean shoreline south from ramp 72 to the inlet. Exact configuration of the corridor would be determined by NPS staff based on the annual habitat assessment. The ORV access corridor at ML2 sites will generally be no more than 50 meters wide above the high tide line (alternative E may include a designated pass-through zone where no stopping or recreation would be permitted in order to minimize disturbance). An ML2 pedestrian access corridor would generally be below the high tide line and would in no case be more than 10 meters above the high tide line. Pets, as well as kite flying, ball and Frisbee tossing, and similar activities, will be prohibited in the access corridors or pass-through zones (in alternative E only) while the prenesting closure is in effect.</p>		
<b>Courtship/Mating Surveys</b>	<p>Prenesting closures would be surveyed three times per week. Outside of prenesting closures, potential suitable habitat would be surveyed three times per week once breeding pairs are present.</p>		
<b>Courtship/Mating Buffers</b>	<p><b>All species:</b> The Seashore retains the discretion to expand courtship/mating buffers under ML1 and ML2 depending on staffing and bird behavior. Areas outside of SMAs would be managed under ML1 measures. In unprotected areas, a buffer will be established immediately when courtship or mating is observed. When courtship or mating is observed in the immediate vicinity of paved roads, parking lots, campgrounds, buildings, and other facilities, the NPS retains the discretion to provide resource protection to the maximum extent possible while still allowing those facilities to remain operational. The NPS shall not reduce buffers to accommodate ORV ramp access.</p>		
	<p><b>ML1/ML2:</b> If breeding activity is observed outside of an existing closure, a buffer will be established or expanded to ensure a 75-meter buffer for the observed birds.</p> <p>Buffers will be increased in 50-meter increments if human disturbance* occurs.</p> <p>Outside of prenesting areas, closures will be removed if no breeding activity is observed for a 2-week period, or when associated breeding activity has concluded.</p> <p>*Buffers are not expanded for incidental disturbance associated with required NPS protected species monitoring.</p>	<p><b>ML1:</b> If breeding activity is observed outside of an existing closure, a buffer will be established or expanded to ensure a 300-meter buffer for the observed birds.</p> <p><b>ML2:</b> If breeding activity is observed outside of an existing closure, a buffer will be established or expanded to ensure a 150-meter buffer for the observed birds.</p> <p>Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p><b>All:</b> Outside of prenesting areas, closures will be removed if no breeding activity is observed for a 2-week period, or when associated breeding activity has concluded.</p>	<p><b>ML1:</b> If scraping is observed outside an existing closure, a buffer will be established or expanded to ensure a 300-meter buffer for the observed birds.</p> <p><b>ML2:</b> If scraping is observed outside a resource closure, a 100-meter buffer will be established around the scrape location for least terns (if only least terns are present), or a 200-meter buffer when other colonial waterbird species are present. Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p><b>All:</b> Buffer establishment will be based on the location of scrape(s) and not location of copulation or "fish flashing."</p> <p>Outside of prenesting areas, buffers will be removed if no breeding activity is observed for a 2-week period, or when associated breeding activity has concluded.</p>
<b>Nest Surveys</b>	<p>A walk-through will be conducted to look for nests every 3 days. Once nests are found, nests will be observed daily from a distance that does not disturb the birds, based on professional judgment. Nests will be approached once per week to observe and record data.</p>	<p>A walk-through will be conducted to look for nests when observations suggest a nest is present.</p> <p><b>ML1:</b> Nests will be observed at least three times per week from a distance that does not disturb the birds, based on professional judgment. For incubating birds that cannot be observed from a distance, nests will be checked on a weekly basis (or as staff is available).</p> <p><b>ML2:</b> Nests will be observed daily from a distance that does not disturb the birds, based on professional judgment. For incubating birds that cannot be observed from a distance, nests will be checked every 3 days.</p>	<p>Colonies will be surveyed during the peak nesting period for each species, which generally is during the last week of May and the first week of June, but could be later, especially for black skimmers.</p> <p><b>ML1:</b> Colonies will be observed at least three times per week from a distance that does not disturb the birds. For incubating birds that cannot be observed from a distance, colonies will be checked on a weekly basis.</p> <p><b>ML2:</b> Nests will be observed daily from a distance that does not disturb the birds, based on professional judgment. For incubating birds that cannot be observed from a distance, colonies will be checked every 3 days.</p>
<b>Nest Buffers</b>	<p><b>All species:</b> The Seashore retains the discretion to expand nest buffers under ML1 and ML2 depending on staffing and bird behavior. In unprotected areas, a buffer will be established immediately when a nest with egg(s) is found. Areas outside of SMAs would be managed under ML1 measures. Prior to hatching, vehicles may pass by such areas within designated ORV access corridors that have been established along the outside edge of nesting habitat, provided that buffers adequate to prevent human disturbance are maintained. When nests or chicks occur in the immediate vicinity of paved roads, parking lots, campgrounds, buildings, and other facilities, the NPS retains the discretion to provide resource protection to the maximum extent possible while still allowing those facilities to remain operational. The NPS shall not reduce buffers to accommodate ORV ramp access. Buffers will remain in place for 2 weeks after a nest is lost to determine if pair will re-nest. Outside of prenesting areas, buffers will be removed if no breeding activity is seen in the area for 2 weeks, or 2 weeks after all chicks have fledged, whichever comes later.</p>		
	<p><b>ML1 and ML2:</b> A 75-meter buffer/closure will be established around nest(s). Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p>If a buffer falls within the intertidal zone, a full-beach closure will result.</p>	<p><b>ML1:</b> A 300-meter buffer/closure will be established around nest(s).</p> <p><b>ML2:</b> A 150-meter buffer/closure will be established around nest(s). Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p>If a buffer falls within the intertidal zone, a full-beach closure will result.</p> <p>For nests that occur inside a prenesting closure <b>and</b> require a buffer expansion of the prenesting area, the buffer expansion may be removed to the original prenesting closure after 2 weeks with no breeding activity if the nest is lost to overwash or predation.</p>	<p><b>ML1:</b> Buffers will be the same as for courtship and mating: 300 meters.</p> <p><b>ML2:</b> A 100-meter buffer/closure will be established around a least tern nest or colony. A 200-meter buffer/closure will be established around the nest or colony if any common terns, gull-billed terns, or black skimmers are present. Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p>If a buffer falls within the intertidal zone, a full-beach closure will result.</p> <p>For a colony that occurs inside a prenesting closure <b>and</b> requires a buffer expansion of the prenesting area, the buffer expansion may be removed after 2 weeks with no breeding activity if the nest is lost to overwash or predation.</p>

Management Activity	Shorebirds		
	Piping Plover	American Oystercatcher and Wilson's Plover	Colonial Waterbirds, including Least Terns, Common Terns, Gull-Billed Terns, and Black Skimmers
<b>Adult Foraging Surveys and Buffer</b>	Suitable breeding habitat will be surveyed three times per week to monitor for adults with an associated scrape or nest territory foraging outside of an existing closure. If birds are observed foraging outside an existing closure, the site will be surveyed daily. If birds are observed foraging outside of a closure on two consecutive surveys, the buffer will be established or expanded using flexible increments based on observed bird behavior to include the foraging site. These closures are intended to provide foraging opportunities close to breeding sites. The closure will be removed if no foraging is observed for a 2-week period during the breeding season, or when associated breeding activity has concluded.	No additional buffers/closures.	No additional buffers/closures.
<b>Unfledged Chicks Surveys</b>	<p><b>ML1:</b> Brood will be observed once daily.</p> <p><b>ML2:</b> Brood will be observed at least one hour each in a.m. and p.m. daily. Monitor(s) will be present during periods of ORV or pedestrian access.</p> <p><b>All:</b> Observations will end once chicks have fledged. Chicks are considered fledged at 35 days of age or when observed in sustained flight of at least 15 meters.</p>	<p><b>ML1:</b> Brood will be observed every other day.</p> <p><b>ML2:</b> Brood will be observed at least once daily. If the brood cannot be located, at least a one-half hour would be spent in efforts to locate the brood/chick.</p> <p><b>All:</b> Observations will end once the chicks have fledged. American oystercatcher chicks are considered fledged if they have been observed to be proficient in flying or observed in sustained flight of at least 30 meters. Wilson's plover chicks are considered fledged if they are observed in sustained flight of at least 15 meters.</p>	<p><b>ML1:</b> Colony will be observed every other day.</p> <p><b>ML2:</b> Colony will be observed daily.</p> <p><b>All:</b> Colonies will be surveyed during the peak hatching period, which should fall 21 days after initial nest observations.</p> <p>A follow-up survey (perimeter count) should be conducted during the peak fledge, which should fall 20 days after hatch counts.</p> <p>Observations will end after no unfledged chicks have been observed on three consecutive surveys.</p>
<b>Unfledged Chick Buffers</b>	<p><b>ML1:</b> A minimum 1,000-meter buffer will be established on either side of the nest when unfledged chicks are present.</p> <p><b>ML2:</b> A 1,000-meter ORV buffer and, where disturbance can be minimized, a 300-meter pedestrian buffer will be established on either side of the nest when unfledged chicks are present. Buffers move with chicks.</p> <p><b>All:</b> The buffer should extend 1,000 meters for ORVs (or 300 meters for pedestrians under ML2) on each side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting area (2,000 meters wide for ORVs or 600 meters wide for pedestrians) of protected habitat for piping plover chicks would extend from the oceanside low water line to the soundside low water line or to the farthest extent of dune habitat if no soundside intertidal habitat exists.</p>	<p><b>ML1:</b> A 300-meter buffer will be established around the nest when unfledged chicks are present. If chicks move outside of the buffer, it will be adjusted to include an additional 200 meters from the chicks' location. Closures will be removed 2 weeks after fledging.</p> <p><b>ML2:</b> A 200-meter buffer will be established around the unfledged chicks' location. Foraging and roosting habitat will be included from the ocean (low water line) to the dune (or sound shoreline, if accessible). Buffers will be adjusted/increased as needed when chicks are mobile. Buffers move with chicks.</p> <p>Buffers will remain until Wilson's plover chicks have fledged or 2 weeks after American oystercatcher chicks have fledged (observed flight of 30 meters); a pedestrian corridor may be established prior to the end of the 2-week waiting period for permitting access to the points and spits.</p>	<p><b>ML1:</b> A 300-meter buffer will be established around nests or colony. If chicks move outside of the buffer, it will be adjusted to provide a standard buffer of 200 meters from the chicks' location.</p> <p><b>ML2:</b> A 200-meter buffer will be established around the chicks' location. Buffers will be adjusted as needed when chicks are mobile.</p>
	<b>All Species:</b> Vehicles and/or pedestrians may be allowed to pass through portions of the buffers or closures that are considered inaccessible to chicks because of steep topography, dense vegetation, or other naturally occurring obstacles. Access corridors outside of the prenesting area will be reopened after chicks fledge (except for American oystercatchers, where the area will remain closed for an additional 2 weeks). Prenesting closures can be removed after Jul 31, or 2 weeks after all breeding activity has ceased or chicks have fledged, whichever is later. Areas outside of SMAs would be managed under ML1 measures.		
<b>Breeding Data Collection/Reporting</b>	<p>The following data will be recorded:</p> <p>Date, time, location of breeding pair, courtship behavior, foraging, scrape, nest, or brood observations; identity of observer.</p> <p>Pair, nest, and brood identification number.</p> <p>Number, location, and status of territorial pairs, nesting pairs, nests, eggs, and chicks. GPS will be used to document nest location.</p> <p>Status of eggs/nest and presence/behavior of adults (laying, incubating, lost, abandoned, hatching, hatched).</p> <p>Status of chicks (age, behavior, fledge status) and presence/behavior of adults.</p> <p>Indications of potential predators, humans, pets, or ORVs within posted areas.</p> <p>Indications of cause of nest or chick loss, if apparent.</p> <p>Reproductive rate (chicks fledged per breeding pair).</p>	<p>The following data will be recorded:</p> <p>Date, time, and location of breeding pair, scrape, nest, or brood observations; identity of observer.</p> <p>Pair number; color band (if applicable).</p> <p>Number, location, and status of pairs, scrapes, nests, eggs, and chicks. Use GPS to document nest location.</p> <p>Status of eggs/nest and presence/behavior of adults (laying, incubating, lost, abandoned, hatching, hatched).</p> <p>Status of chicks (age, behavior, fledge status) and presence/behavior of adults.</p> <p>Indications of potential predators, humans, pets, or ORVs within posted areas.</p> <p>Indications of cause of nest or chick loss, if apparent.</p> <p>Reproductive rate (chicks fledged per breeding pair).</p>	<p>The following data will be recorded:</p> <p>Date, time, location, and species of nest/colony observations; identity of observer.</p> <p>Number and location of birds, nests, chicks, and fledglings. GPS will be used to document colony location.</p> <p>Status of colony and presence/behavior of adults (laying, incubating, lost, abandoned).</p> <p>Status of chicks (behavior, fledge status) and presence/behavior of adults.</p> <p>Indications of potential predators, humans, pets, or ORVs within posted areas.</p> <p>Indications of cause of nest or chick loss, if apparent.</p>

Management Activity	Shorebirds		
	Piping Plover	American Oystercatcher and Wilson's Plover	Colonial Waterbirds, including Least Terns, Common Terns, Gull-Billed Terns, and Black Skimmers
<b>Nonbreeding Survey</b>	The NPS will monitor presence, abundance, and behavior of migrating and wintering shorebirds from July through May using the SECN protocol. Survey sites will include all Nonbreeding Shorebird SMAs. The NPS will obtain data similar to International Shorebird Survey data. The following information will be recorded: Date, time, and location of observations; identity of observer; species and number of birds observed; band combination of any banded birds; weather variables and tidal stage; habitat; behavior of the majority of birds in the flock (foraging, resting, disturbed [source will be recorded], other); site management in effect where birds are seen; and number of pedestrians, pets, ORVs and other potential disturbances. Species to be surveyed include piping plover, American oystercatcher, Wilson's plover, red knot, and representative species of colonial waterbirds.		
<b>Nonbreeding Shorebird SMAs</b>	<p><b>All Species:</b> Nonbreeding Shorebird SMAs will be established and managed to reduce disturbance of migrating/wintering shorebirds at various locations throughout the Seashore. Such closures will be installed no later than when breeding season closures are removed at the same location(s). Pets will be prohibited within Nonbreeding Shorebird SMAs.</p> <p><b>Points and Spits:</b> An annual habitat assessment will be conducted after all birds have fledged from the area. Nonbreeding resource closures will be established at the points and spits based on habitat used by wintering piping plovers in more than one (i.e., two or more) of the past 5 years, the presence of birds at the beginning of the migratory season, and suitable habitat types based on the results of the annual survey. This may include VFAs as well as areas closed to all recreational use. Actual locations of suitable foraging and roosting habitat may change periodically due to natural processes. Access to the inlet shorelines, where permitted, will be maintained by a corridor to be determined by NPS staff based on the annual habitat assessment.</p> <p><b>Ocean Shoreline Areas:</b> In addition to the nonbreeding resource closures at the points and spits described above, the NPS will establish VFAs along the ocean shoreline that will provide relatively less-disturbed foraging, resting, and roosting areas for migrating and wintering shorebirds. These may include wider sections of beach with an upper-beach ORV corridor that has a buffer of at least 50 meters above the high tide line, and/or sections of beach that have been designated as vehicle free for other reasons, such as to provide pedestrians with opportunities for a natural beach experience. The following activities are generally compatible with migrating/wintering shorebird use of these areas: pedestrian access for fishing, beach walking, bird-watching, kayaking, kiteboarding, paddleboarding, photography, picnicking, sailing, shelling, stargazing, sunbathing, surfing, swimming, wildlife viewing, windsurfing, and commercial fishing due to the relatively low number and frequency of occurrences. If resource protection staff determines that any single activity or collection of activities is negatively impacting shorebird use of a specific location, the NPS may implement additional restrictions on compatible activities. The location(s) of all ocean shoreline Nonbreeding Shorebird SMAs will be subject to periodic review.</p>		
<b>Adaptive Management Initiatives</b>	<p>The NPS would take an adaptive management approach to the species management program in order to evaluate the effectiveness of and improve the measures identified above. During the course of this plan, the NPS would seek funding and assistance to develop the following adaptive management initiatives related to shorebirds or shorebird habitat:</p> <p><b>Vegetation management:</b> As a pilot project, an adaptive management study to evaluate methods for managing vegetation and improving habitat and wildlife access to available habitat in the Cape Point dredge pond area. The applicability and potential effectiveness of such measures at other locations will be determined.</p> <p><b>Habitat management:</b> As a pilot project, an adaptive management study to evaluate methods of improving shorebird nesting and/or foraging habitat at one location in the Seashore by applying dredge material or by moving/manipulating sand or water at the site. The applicability and potential effectiveness of such measures at other locations will be determined.</p> <p><b>Enhanced predator management:</b> An adaptive management study to evaluate whether predator management actions to be implemented under the (proposed) predator control program for protected species management are effective as is, or whether enhanced measures (such as managing avian predators or ghost crabs) would be beneficial and effective, or are necessary to achieve the desired future conditions for species protection.</p> <p><b>Colonial waterbird social attraction:</b> As a pilot project, an adaptive management study to evaluate the effectiveness of using colonial waterbird decoys and audio-attraction to establish or re-establish colonial waterbird colonies in suitable habitat.</p> <p><b>Piping plover chick fledge rate:</b> An adaptive management study to evaluate the short-term performance target of 1.0 chick fledged per breeding pair, as well as the 1.5 chicks fledged per pair productivity rate identified in the recovery plan, to determine what productivity rate is realistically attainable and would provide for a growing population at the Seashore over the long term. If the actual productivity rate is not sufficient to achieve the desired future conditions for piping plover, it will be determined what management actions (e.g., frequency of monitoring; size or timing of buffers) need to be changed in order to achieve the desired results. The NPS would seek funding for this study as a conservation measure to contribute to the piping plover knowledge base pursuant to its <i>Endangered Species Act</i> recovery responsibilities.</p> <p>After desired future conditions are attained, the NPS would seek funding to develop the following adaptive management initiatives related to resource protection buffers for shorebirds:</p> <p><b>Piping plover chick buffer distance:</b> An adaptive management study to evaluate whether a reduced ORV or pedestrian buffer distance (i.e., less than that stated in this plan) after a certain time period, such as 2 weeks after chicks have hatched, would be adequate to prevent disturbance of piping plover chicks by ORVs and/or pedestrians using adjacent areas during daylight hours.</p> <p><b>Pass-through buffers during the incubation period:</b> An adaptive management study or studies to evaluate whether a reduced buffer distance is adequate to prevent disturbance caused by ORVs driving past piping plover, American oystercatcher, or colonial waterbird nest sites if all other recreation (e.g., pedestrians, pets) is prohibited within the reduced buffer, and to determine whether a reduced buffer is adequate to prevent disturbance caused by pedestrians walking below the high tide line past piping plover, American oystercatcher, or colonial waterbird nest sites.</p>		
<b>Research</b>	In addition to the species management procedures outlined in this table, through the issuance of a research permit, the NPS may authorize qualified researchers associated with recognized academic or research institutions to conduct additional scientific research on the respective species that will add to the existing knowledge of shorebird species or improve resource protection within the Seashore. Establishment of Research Areas may be authorized under such a permit.		
<b>Implementation of Adaptive Management and Research Initiatives</b>	Should adaptive management initiatives and other research provide information that the NPS believes is an adequate basis for management changes, such changes would be evaluated and considered for implementation as part of the 5-year periodic review process described at the end of this table.		

Management Activity	Sea Turtles
<b>Survey Time and Frequency</b>	<p>Sea turtle patrol will begin on May 1, unless leatherback nests have been reported within the state, in which case, the Seashore will follow the direction of NCWRC. Patrol will continue until Sep 15, or 2 weeks after the last sea turtle nest or crawl is found, whichever is later.</p> <p>Daily surveys will be conducted by ATV/UTV and possibly ORV for crawls and nests on all beaches, generally in the morning before onset of public ORV use. Daily surveys for nests end Sep 15, or 2 weeks after the last sea turtle nest or crawl is found, whichever is later. Periodic monitoring (e.g., every 2 to 3 days) for unknown nesting and emerging hatchlings will continue, especially in areas of high visitation, from that date until Nov 15.</p> <p>Monitoring will also occur for post-hatchling washbacks during periods when there are large quantities of seaweed washed ashore or following severe storm events. Nest observations will stop when all nests have hatched or excavation indicates that unhatched nests are not viable.</p> <p>Once a light filter fence is installed, nests will be monitored daily for signs of hatchling emergence.</p>
<b>Sea Turtle Data Collection/Reporting</b>	<p>At a minimum, the NCWRC handbook will be followed and the following will be recorded:</p> <ul style="list-style-type: none"> <li>• Date, location, and species of nests and false crawls; identity of observer.</li> <li>• Whether nests need to be relocated and, if so, why and where (new physical description and GPS location), number of eggs relocated, and time of day.</li> <li>• Necessary protective measures for nests and hatchlings.</li> <li>• Information regarding any post-hatching nest excavation and analysis.</li> </ul> <p>All nests will be examined after hatching to determine productivity rates. Nests will be excavated in the evening, a minimum of 72 hours after the hatching event. In cases where hatching events or dates are unknown, nest cavities will be unearthed 80–90 days after the lay date. Any live hatchlings found during excavations will be released at dusk or after dark on the same day as excavation.</p> <p>For strandings, the following will be recorded: species, location (GPS), measurements, indications of human interactions, and disposition of animal/carcass. Samples and photos will be collected when necessary. Necropsies will be conducted when possible.</p>
<b>Nest Closures/Buffers</b>	<p>A buffer approximately 10 × 10 meters will be established with symbolic fencing and signage around nest. Closure size may be modified depending on environmental conditions at the nest site.</p> <p>Approximately 50–55 days into incubation, closures will be expanded to the surf line. The width of the closure will be based on the type and level of use in the area of the beach where the nest was laid:</p> <ol style="list-style-type: none"> <li>1. VFAs with little or no pedestrian traffic—25 meters wide (total).</li> <li>2. Village beaches or other areas with high levels of pedestrian and other vehicle free use—50 meters wide (total).</li> <li>3. Areas with ORV traffic—105 meters wide (total).</li> </ol> <p>On the landward side of the nest, the closed area will be expanded to 15 meters from the nest where possible, but no less than 10 meters landward from the nest. If appropriate, traffic detours behind the nest area will be established and clearly marked with signs and reflective arrows.</p> <p>Light-filtering fence will be used in a U-shaped configuration around nests nearing their hatch dates, with the open face of the U oriented toward the water, to block light pollution from the villages and vehicles operating on the beach after dark.</p> <p>Once the buffer expansion is implemented, NPS staff will use rakes or a steel mat attached to an ATV to smooth any vehicle tracks between the nest and the water, so that tracks do not impede hatchlings from reaching the water.</p> <p>If multiple nests are located near each other (within 50 meters), and have similar hatch dates (within 14 days of each other), then closures will encompass all nests in the area and will not be removed until all nests within the closure have hatched.</p>
<b>Nest Watch Program</b>	<p>A cadre of trained volunteers will be established to watch nests that have reached their hatch windows in order to monitor hatchling emergence success and success reaching the water, and to provide for the minimization of negative impacts from artificial lighting, predation, and human disturbance. Depending on the number of nests that may be ready to hatch and the availability of volunteers, it may be necessary for NPS turtle staff to prioritize which nests are watched on any particular night. Priority will be given to watching the nests that are most likely to be negatively impacted by manageable factors.</p>
<b>Nest Relocation</b>	<p>By Apr 15, areas deemed unsuitable for turtle nests (e.g., those with a high erosion rate) will be identified by Seashore staff. Maps and descriptions of these areas will be analyzed by NCWRC prior to nesting season.</p> <p>When a nest is found, designated NPS staff members will assess the need for nest relocation and follow relocation guidance identified in the NCWRC handbook.</p> <p>If it is determined that the nest will not be relocated, it will be immediately protected with symbolic fencing and signs approximately 10 × 10 meters in size. Closure size may vary at the discretion of NPS staff depending on the environmental factors at a nest location.</p> <p>If a nest is threatened by an imminent storm event, NPS will consult with NCWRC to determine appropriate action.</p>
<b>Strandings</b>	<p>The Seashore will respond to sea turtle strandings in a timely manner, and will forward or report all information, pictures, and signs of human interaction to NCWRC.</p> <p>Necropsies of stranded turtles will be done when possible.</p>
<b>Light Restrictions</b>	<p>From May 1 through Nov 15:</p> <ul style="list-style-type: none"> <li>• Portable lanterns, auxiliary lights, and powered fixed lights of any kind shining for more than 5 minutes at a time would be prohibited on Seashore ocean beaches.</li> <li>• Beach fires would be allowed/restricted as described in the respective alternatives.</li> </ul>
<b>Night-Driving Restrictions</b>	<p>From May 1 to Nov 15, all non-essential vehicle use is restricted or prohibited as described in the respective alternatives.</p>
<b>Light Management</b>	<p>By May 1, 2012, turtle-friendly lighting fixtures will be installed on all Seashore structures visible from the ocean beach (except where prevented by other overriding lighting requirements, such as lighthouses, which serve as aids to navigation) and fishing piers operated by NPS concessioners.</p> <p>Educational material will be developed to inform visitors about their impact on the success of sea turtle nests.</p> <p>The Seashore will work with the USFWS, the NCWRC, and Dare County to encourage development of a turtle-friendly lighting education program for villages within the Seashore on Hatteras Island.</p>

Management Activity	Sea Turtles
<b>Adaptive Management Initiatives</b>	<p>The NPS would take an adaptive management approach to the species management program in order to evaluate the effectiveness of and improve the measures identified above. During the course of this plan, the NPS would seek funding and assistance to develop the following adaptive management initiatives for sea turtles:</p> <ul style="list-style-type: none"> <li>• An assessment tool to measure ambient artificial lighting along the length of the Seashore, which can be used to reassess conditions after any management actions (such as a lighting ordinance) are implemented to reduce artificial lighting. After light management actions are implemented, levels of lighting will be reassessed and impacts on sea turtle nesting success will be monitored and evaluated. If supported by the findings, the NPS will work toward an incremental adjustment (i.e., increase) in nighttime ORV access to limited select locations where not in substantial conflict with turtle nesting and hatchling activity.</li> <li>• An adaptive management study to evaluate the level of human disturbance, if any, that might be caused by designating night-driving routes to select points and spits, and to develop management tools to minimize impacts to an acceptable level. If supported by the findings, the NPS will work toward an incremental adjustment (i.e., increase) in nighttime ORV access to limited select locations where not in substantial conflict with turtle nesting and hatchling activity.</li> <li>• An adaptive management study to determine ways to increase the number of hatchlings that emerge and reach the water. The NPS would seek funding for this study as a conservation measure to contribute to the sea turtle knowledge base pursuant to its <i>Endangered Species Act</i> recovery responsibilities.</li> </ul>
<b>Research</b>	In addition to the species management procedures outlined in this table, through the issuance of a research permit, the NPS may authorize qualified researchers associated with recognized academic or research institutions to conduct additional scientific research on turtle species that will add to the existing knowledge of sea turtles or improve resource protection within the Seashore. Establishment of research areas could be authorized under such a permit.
<b>Implementation of Adaptive Management and Research Initiatives</b>	Should adaptive management initiatives and other research provide information that NPS believes is an adequate basis for management changes, such changes would be evaluated and considered for implementation as part of the 5-year periodic review process.
Management Activity	Seabeach Amaranth
<b>Survey Time and Frequency</b>	<p>Jul to Sep: Before removing any shorebird closures, surveys will be conducted for seabeach amaranth seedlings/plants.</p> <p>Aug: A Seashore-wide annual survey for seabeach amaranth will be conducted in all potential habitats. Some shorebird closures may not be surveyed until just prior to reopening an area to ORV traffic to minimize disturbance of nesting birds or chicks.</p> <p>Observations will end when all known seabeach amaranth plants have died back.</p>
<b>Data Collection</b>	The location of all individual plants or plant clusters will be recorded using GPS. It will be noted whether the plant is located in an area open or closed to recreational use.
<b>Buffers/Closures</b>	<p>Prior to Jun 1, suitable seabeach amaranth habitat will be identified at points and spits where plants have observed within the last 5 years and delineated with symbolic fencing if such areas are not already protected within existing shorebird resource closures.</p> <p>If a plant/seedling is found outside of an existing closure, symbolic fencing with signage will be erected creating a 10- x 10-meter buffer around the plant. If plants are located next to one another, the area will be expanded to create one enclosure protecting several plants.</p> <p>If a seabeach amaranth plant is found during the survey prior to reopening a bird closure to ORV and pedestrian use, the Seashore will protect the plant as described above and reopen the portions of the bird closure where seabeach amaranth plants do not exist.</p> <p>If seabeach amaranth is not present by Sep 1, seabeach amaranth buffers will be removed. If seabeach amaranth is present, buffers will remain until after the plants have senesced, which is typically around Dec 1.</p>
<b>Adaptive Management Initiatives</b>	<p>NPS would take an adaptive management approach to the species management program in order to evaluate the effectiveness of and improve the measures identified above. During the course of this plan, NPS would seek funding and assistance to develop the following adaptive management initiatives for seabeach amaranth:</p> <ul style="list-style-type: none"> <li>• A study to assess the feasibility of seabeach amaranth restoration at up to four suitable sites. NPS would seek funding for this study as a conservation measure to contribute to the seabeach amaranth knowledge base pursuant to its <i>Endangered Species Act</i> recovery responsibilities.</li> </ul>
Management Activity	All Species
<b>Periodic Review</b>	A systematic review of data, annual reports, and other information would be conducted by NPS every 5 years, after storms or events that Seashore management determines to be a major modification of habitat quantity or quality, or if necessitated by a significant change in protected species status (e.g., listing or de-listing), in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives. Periodic review could result in changes to the management actions in order to improve effectiveness. When desired future conditions for resources are met or exceeded, periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remained stable. Where progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may provide for additional management including appropriate restrictions on recreational use.

**TABLE 10-1. SPECIES MANAGEMENT STRATEGIES FOR ALTERNATIVE F**

DEFINITIONS			
<p><b>Breeding behavior:</b> Shorebird behavior that includes, but is not limited to, courtship, mating, scraping, confirmed scrapes, and other breeding or nest-building activities. The terms breeding behavior and breeding activity are used synonymously.</p> <p><b>Human disturbance:</b> Any human activity that changes the contemporaneous behavior of beach nesting birds that are breeding, nesting, foraging, or roosting, or migrating/wintering birds that are using the beach and associated habitats for foraging, resting, or roosting. Bird behaviors indicating disturbance include defensive displays; alarm calls; flushing or leaving a nest or feeding area; and diving or mobbing pedestrians, dogs, or vehicles.</p> <p><b>Periodic review:</b> A systematic review of data, habitat conditions, and other information to be conducted by the NPS every 5 years, or after storms or events that Seashore management determines to be a major modification of habitat quantity or quality, or after a significant change in protected species status (e.g., listing or de-listing), in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives. Periodic review could result in changes to the management actions in order to improve effectiveness. When desired future conditions for resources are met or exceeded,</p>		<p>periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remained stable. Where progress is not being made toward goals, periodic review and adaptive management may result in <u>increased</u> restrictions on recreational use.</p> <p><b>Prenesting closure:</b> A kind of resource closure in which an area of suitable habitat is proactively closed at the start of the shorebird breeding season to provide undisturbed habitat for bird breeding activities to occur.</p> <p><b>Research area:</b> Area of suitable habitat set aside on a temporary or long-term basis (such as a study site or control plot) as part of a research project authorized by NPS under a research permit.</p> <p><b>Resource closure:</b> Any area posted as closed to all public entry in order to protect wildlife, such as breeding and foraging shorebirds and bird and turtle nests, or vegetation from human disturbance.</p>	
Management Activity	Shorebirds		
	Piping Plover and Wilson's Plover	American Oystercatcher	Colonial Waterbirds, including Least Terns, Common Terns, Gull-Billed Terns, and Black Skimmers
Prenesting Surveys	Mar 15 to Jul 15: Prenesting closures will be surveyed three times per week. Outside of prenesting closures, suitable habitat will be surveyed twice per week, increasing to three times per week once birds are present.	Mar 15 to Jul 15: Prenesting closures will be surveyed three times per week. Outside of prenesting closures, suitable habitat will be surveyed twice per week, increasing to three times per week once breeding pairs are present.	May 1 to Jul 15: Prenesting closures will be surveyed three times per week. Outside of prenesting closures, suitable habitat will be surveyed twice per week, increasing to three times per week once breeding pairs are present.
Prenesting Closures	<p><b>All species:</b> By <b>Mar 1</b>, Seashore staff will evaluate all potential breeding habitat for piping plover, Wilson's plover and American oystercatcher and recommend prenesting closures for those species based on that evaluation. CWB breeding habitat will be evaluated by <b>Apr 1</b>. Areas of newly created habitat will also be evaluated during the annual habitat assessment Areas of suitable habitat that have had individual PIPL, WIPL or AMOY nests, or concentrations of more than 10 CWB nests in more than one of the past five years and new habitat that is particularly suitable for shorebird nesting, such as the habitat at new inlets or overwash areas, will be posted as prenesting closures using symbolic fencing (string between posts) or with other closure signs by <b>Mar 15</b> at sites involving piping plover, Wilson's plover, and/or American oystercatcher; and by <b>Apr 15</b> at sites involving only colonial waterbirds. Because CWB colonies may shift locations from year to year, ORV ramps and pedestrian access points that have had colonies in more than one of the past five years will remain open until scraping or nesting is observed. Prenesting closures adjacent to such ramps and access points will still be established in these areas, subject to standard buffers once scraping or nesting is observed. The NPS will determine the configuration of specific prenesting closures based on an annual habitat assessment. Once established at the beginning of the breeding season, these areas would not be reduced to accommodate an ORV corridor. Prenesting closures would be removed if no breeding activity is seen in the area by <b>Jul 31</b> (or <b>Aug 15</b> if black skimmers are present), or 2 weeks after all chicks have fledged, whichever comes later. Nonbreeding shorebird habitat protection would be implemented, as described later in this table, before prenesting areas are removed. Pedestrian access along ocean and inlet shorelines below the high tide line will be permitted in front of (i.e., seaward of) prenesting areas until breeding activity is observed, then standard buffers for breeding activity would apply. <b>The NPS retains discretion at all times to enforce more protective closures or take other measures, if considered necessary, consistent with its obligations under the law.</b></p> <p>Pets and horses are prohibited in pedestrian shoreline access areas in front of prenesting areas. ORVs, pedestrians, pets and horses are prohibited within all resource closures, including prenesting closures.</p> <p><b>ORV corridors at Cape Point and South Point:</b> When prenesting closures are implemented, the ORV access corridor at Cape Point and South Point will be reduced from 50 meters (164 feet) during the nonbreeding season to 35 meters (115 feet). Once established, the prenesting closure will not be modified if the beach erodes into the ORV corridor or into the protected habitat. Once breeding activity is observed, standard buffers for breeding activity will apply. The ORV corridor width will be restored to 50 meters (164 feet) after breeding activity is completed at the site and prenesting closures are removed.</p>		
Courtship/Mating Surveys	<b>All species:</b> Prenesting closures would be surveyed three times per week. Outside of prenesting closures, potential suitable habitat would be surveyed three times per week once breeding pairs are present.		
Courtship/Mating Buffers	<b>All species:</b> The Seashore retains the discretion to expand courtship/mating buffers depending on bird behavior. In unprotected areas, a buffer will be established within 12 daylight hours when courtship or mating by piping plover, Wilson's plover or American oystercatchers is observed. When courtship or mating is observed in the immediate vicinity of paved roads, parking lots, campgrounds, buildings, and other facilities, such as within the villages or at NPS developed sites, NPS retains the discretion to provide resource protection to the extent possible while still allowing those facilities to remain operational. This provision does not apply to ORV routes or ORV ramp access, which would be subject to standard buffers.		
	<p>If breeding activity is observed outside of an existing closure or within a closure less than the prescribed buffer distance from the closure boundary, a buffer will be established or expanded to ensure a 75-meter buffer for the observed birds.</p> <p>Buffers will be increased in 50-meter increments if human disturbance* occurs.</p> <p>Outside of prenesting areas, closures will be removed if no breeding activity is observed for a 2-week period, or when associated breeding activity has concluded.</p> <p>*Buffers are not expanded for incidental disturbance associated with required NPS protected species monitoring.</p>	<p>If breeding activity is observed outside of an existing closure or within a closure less than the prescribed buffer distance from the closure boundary, a buffer will be established or expanded to ensure a 150-meter buffer for the observed birds.</p> <p>Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p>Outside of prenesting areas, closures will be removed if no breeding activity is observed for at least a 2-week period, or when associated breeding activity has concluded.</p>	<p>Buffer establishment will be based on the location of scrape(s) and not location of copulation or "fish flashing."</p>

Management Activity	Shorebirds		
	Piping Plover and Wilson's Plover	American Oystercatcher	Colonial Waterbirds, including Least Terns, Common Terns, Gull-Billed Terns, and Black Skimmers
<b>Scrape/Nest Surveys</b>	<p>A walk-through will be conducted to look for scrapes/nests every 3 days until such monitoring will disrupt other nesting species in the area. Monitoring of known and potential breeding areas will continue from a distance.</p> <p>Nests will be observed daily from a distance that does not disturb the birds, based on professional judgment.</p> <p>Nests will be approached once per week to observe and record data.</p>	<p>A walk-through will be conducted to look for scrapes/nests when observations suggest a scrape or nest is present.</p> <p>Nests will be observed daily from a distance that does not disturb the birds, based on professional judgment.</p> <p>For incubating birds that cannot be observed from a distance, nests will be checked every 3 days.</p>	<p>If scrape(s)/nest(s) are observed outside a resource closure or within a closure less than the prescribed buffer distance from the closure boundary, a 100-meter buffer will be established around the scrape location for least terns (if only least terns are present), or a 200-meter buffer when other colonial waterbird species are present. Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p>Colonies will be surveyed during the peak nesting period for each species, which generally is during the first part of June for tern species, but could be later for species such as black skimmers.</p> <p>Nests will be observed daily from a distance that does not disturb the birds, based on professional judgment.</p> <p>For incubating birds that cannot be observed from a distance, colony activity will be checked every 3 days.</p>
<b>Scrape/Nest Buffers</b>	<p><b>All species:</b> The Seashore retains the discretion to expand scrape or nest buffers as needed to protect resources. In unprotected areas, a buffer will be established immediately when a nest with egg(s) is found. Prior to hatching, vehicles may pass by such areas within designated ORV access corridors that have been established along the outside edge of nesting habitat where, in the judgment of Seashore resources management staff, steep topography, dense vegetation, or other naturally-occurring obstacles minimize the risk of human disturbance. Such sites will be re-evaluated for disturbance during each subsequent survey. When scrape(s), nest(s) or chick(s) occur in the immediate vicinity of paved roads, parking lots, campgrounds, buildings, and other facilities, such as within the villages or at NPS developed sites, the NPS retains the discretion to provide resource protection to the extent possible while still allowing those facilities to remain operational. Regardless of the nature of the adjacent facilities, in all cases, as a minimum, NPS would provide signs, fencing and reduced buffers to protect nest(s) and chick(s) once they occur. This provision does not apply to ORV routes or ORV ramp access, which would be subject to standard buffers. Buffers will remain in place for 2 weeks after a nest is lost to determine if the pair will re-nest. For buffers that occur outside of, or that expand, the original prenesting areas, the buffer or expansion will be removed if no breeding activity is observed for a 2-week period, or when associated breeding activity has concluded.</p>		
	<p>A 75-meter buffer/closure will be established around scrape(s) or nest(s). Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p>If a buffer falls within the intertidal zone, a full-beach closure will result.</p>	<p>A 150-meter buffer/closure will be established around scrape(s) or nest(s). Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p>If a buffer falls within the intertidal zone, a full-beach closure will result.</p>	<p>A 100-meter buffer/closure will be established around a least tern scrape, nest or colony.</p> <p>A 200-meter buffer/closure will be established around the scrape, nest or colony if any common terns, gull-billed terns, or black skimmers are present.</p> <p>Buffers will be increased in 50-meter increments if human disturbance occurs.</p> <p>If a buffer falls within the intertidal zone, a full-beach closure will result.</p>
<b>Adult Foraging Surveys and Buffer</b>	<p><b>PIPL:</b> Suitable breeding habitat will be surveyed three times per week to monitor for adults with an associated scrape or nest territory foraging outside of an existing closure. If birds are observed foraging outside an existing closure, the site will be surveyed daily. If birds are observed foraging outside of a closure on two consecutive surveys, the buffer will be established or expanded using flexible increments based on observed bird behavior to include the foraging site. These closures are intended to provide foraging opportunities close to breeding sites. The closure will be removed if no foraging is observed for a 2-week period during the breeding season, or when associated breeding activity has concluded.</p> <p><b>WIPL:</b> No additional buffers/closures.</p>	<p>No additional buffers/closures.</p>	<p>No additional buffers/closures.</p>
<b>Unfledged Chick Surveys</b>	<p><b>PIPL:</b> Brood will be observed at least one hour each in a.m. and p.m. daily.</p> <p><b>WIPL:</b> Observe brood once daily.</p> <p><b>All:</b> Observations will end once chicks have fledged. Chicks are considered fledged at 35 days of age or when observed in sustained flight of at least 15 meters.</p>	<p>Brood will be observed at least once daily. If the brood cannot be located, at least one-half hour will be spent in efforts to locate the brood/chick.</p> <p>Observations will end once the chicks have fledged. Chicks are considered fledged if they have been observed to be proficient in flying or observed in sustained flight of at least 30 meters.</p>	<p>Colony will be observed daily.</p> <p>Observations will end after no unfledged chicks have been observed on three consecutive surveys. Chicks are considered fledged if they have been observed to be proficient in flying or observed in sustained flight of at least 15 meters.</p>

Management Activity	Shorebirds		
	Piping Plover and Wilson's Plover	American Oystercatcher	Colonial Waterbirds, including Least Terns, Common Terns, Gull-Billed Terns, and Black Skimmers
<b>Unfledged Chick Buffers</b>	<p><b>PIPL:</b> A 1,000-meter ORV buffer and, where disturbance can be minimized, a 300-meter pedestrian buffer will be established on either side of the nest when unfledged chicks are present. Buffers move with chicks.</p> <p>The buffer should extend 1,000 meters for ORVs (or 300 meters for pedestrians) on each side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting area (2,000 meters wide for ORVs or 600 meters wide for pedestrians) of protected habitat for piping plover chicks would extend from the oceanside low water line to the soundside low water line or to the farthest extent of dune habitat if no soundside intertidal habitat exists.</p> <p><b>WIPL:</b> A 200-meter buffer will be established around the unfledged chicks' location. Foraging and roosting habitat will be included from the ocean (low water line) to the dune (or sound shoreline, if accessible). Buffers will be adjusted/increased as needed when chicks are mobile. Buffers move with chicks.</p>	<p>A 200-meter buffer will be established around the unfledged chicks' location. Foraging and roosting habitat will be included from the ocean (low water line) to the dune (or sound shoreline, if accessible). Buffers will be adjusted/increased as needed when chicks are mobile. Buffers move with chicks.</p> <p>In areas designated for ORV use, buffers will remain until 2 weeks after American oystercatcher chicks have fledged (observed flight of 30 meters); a pedestrian corridor may be established prior to the end of the 2-week waiting period for permitting access to the points and spits.</p>	<p>A 200-meter buffer will be established around the chicks' location. Buffers will be adjusted as needed when chicks are mobile.</p>
	<p><b>All Species:</b> Vehicles and/or pedestrians may be allowed to pass through portions of the buffers or closures that are considered inaccessible to chicks because of steep topography, dense vegetation, or other naturally occurring obstacles. Access corridors outside of the prenesting area will be reopened after chicks fledge (except for American oystercatchers, where the area will remain closed for an additional 2 weeks). Prenesting closures can be removed after Jul 31, or 2 weeks after all breeding activity has ceased or chicks have fledged, whichever is later.</p>		
<b>Breeding Data Collection/Reporting</b>	<p>The following data will be recorded:</p> <ul style="list-style-type: none"> <li>• Date, time, location of breeding pair, courtship behavior, foraging, scrape, nest, or brood observations; identity of observer.</li> <li>• Pair, nest, and brood identification number.</li> <li>• Number, location, and status of territorial pairs, nesting pairs, nests, eggs, and chicks. GPS will be used to document nest location.</li> <li>• Status of eggs/nest and presence/behavior of adults (laying, incubating, lost, abandoned, hatching, hatched).</li> <li>• Status of chicks (age, behavior, fledge status) and presence/behavior of adults.</li> <li>• Indications of potential predators, humans, pets, or ORVs within posted areas.</li> <li>• Indications of cause of nest or chick loss, if apparent.</li> <li>• Reproductive rate (chicks fledged per breeding pair).</li> </ul>	<p>The following data will be recorded:</p> <ul style="list-style-type: none"> <li>• Date, time, and location of breeding pair, scrape, nest, or brood observations; identity of observer.</li> <li>• Pair number; color band (if applicable).</li> <li>• Number, location, and status of pairs, scrapes, nests, eggs, and chicks. Use GPS to document nest location.</li> <li>• Status of eggs/nest and presence/behavior of adults (laying, incubating, lost, abandoned, hatching, hatched).</li> <li>• Status of chicks (age, behavior, fledge status) and presence/behavior of adults.</li> <li>• Indications of potential predators, humans, pets, or ORVs within posted areas.</li> <li>• Indications of cause of nest or chick loss, if apparent.</li> <li>• Reproductive rate (chicks fledged per breeding pair).</li> </ul>	<p>The following data will be recorded:</p> <ul style="list-style-type: none"> <li>• Date, time, location, and species of nest/colony observations; identity of observer.</li> <li>• Number and location of birds, nests, chicks, and fledglings. GPS will be used to document colony location.</li> <li>• Status of colony and presence/behavior of adults (laying, incubating, lost, abandoned).</li> <li>• Status of chicks (behavior, fledge status) and presence/behavior of adults.</li> <li>• Indications of potential predators, humans, pets, or ORVs within posted areas.</li> <li>• Indications of cause of nest or chick loss, if apparent.</li> </ul>
<b>Nonbreeding Survey</b>	<p>The NPS will monitor and document the presence, abundance, and behavior of migrating and wintering shorebirds from July through May. The NPS will obtain data similar to International Shorebird Survey data. The following information will be recorded: Date, time, and location of observations; identity of observer; species and number of birds observed; weather variables and tidal stage; habitat; behavior of the majority of birds in the flock (foraging, resting, disturbed [source will be recorded], other); site management in effect where birds are seen; and number of pedestrians, pets, ORVs and other potential disturbances. Species to be surveyed include piping plover, American oystercatcher, Wilson's plover, red knot, and other selected species. Species recently added to the surveys include whimbrel, sanderling, and black-necked stilt.</p>		
<b>Nonbreeding Shorebird Habitat Protection</b>	<p><b>All Species:</b> VFAs throughout the Seashore will provide relatively less disturbed foraging, resting, and roosting habitat for migrating and wintering birds. These areas will be open to pedestrians for recreational use. Pets on a leash in accordance with existing regulations will be permitted in VFAs, except as previously noted for pedestrian shoreline access in front of prenesting closures.</p> <p><b>Points and Spits:</b> An annual habitat assessment will be conducted after all birds have fledged from the area. Prior to removing prenesting closures, resource closures will be established in the most sensitive portions of nonbreeding shorebird habitat at the points and spits based on habitat used by wintering piping plovers in more than one (i.e., two or more) of the past 5 years, the presence of birds at the beginning of the migratory season, and suitable habitat types based on the results of the annual habitat assessment. People and pets will be prohibited in these resource closures. Actual locations of suitable foraging and roosting habitat may change periodically due to natural processes. Access to the inlet shorelines, where permitted, will be maintained by a corridor to be determined by NPS staff based on the annual habitat assessment. For the nonbreeding season, the ORV corridor at Bodie Island Spit, Cape Point and South Point will be established at 50 meters (164 feet) after breeding activity is completed and prenesting closures are removed.</p>		



Management Activity	Shorebirds		
	Piping Plover and Wilson's Plover	American Oystercatcher	Colonial Waterbirds, including Least Terns, Common Terns, Gull-Billed Terns, and Black Skimmers
<b>Adaptive Management Initiatives</b>	<p>The NPS would take an adaptive management approach to the species management program in order to evaluate the effectiveness of and improve the measures identified above. During the course of this plan, the NPS would seek funding and assistance to develop the following adaptive management initiatives related to shorebirds or shorebird habitat:</p> <p><b>Vegetation management:</b> As a pilot project, an adaptive management study to evaluate methods for managing vegetation and improving habitat and wildlife access to available habitat in the Cape Point dredge pond area. The applicability and potential effectiveness of such measures at other locations will be determined.</p> <p><b>Habitat management:</b> As a pilot project, an adaptive management study to evaluate methods of improving shorebird nesting and/or foraging habitat at one location in the Seashore by applying dredge material or by moving/manipulating sand or water at the site. The applicability and potential effectiveness of such measures at other locations will be determined.</p> <p><b>Enhanced predator management:</b> An adaptive management study to evaluate whether predator management actions to be implemented under the (proposed) predator control program for protected species management are effective as is, or whether enhanced measures (such as managing avian predators or ghost crabs) would be beneficial and effective, or are necessary to achieve the desired future conditions for species protection.</p> <p><b>Colonial waterbird social attraction:</b> As a pilot project, an adaptive management study to evaluate the effectiveness of using colonial waterbird decoys and audio-attraction to establish or re-establish colonial waterbird colonies in suitable habitat.</p> <p><b>Piping plover chick fledge rate:</b> An adaptive management study to evaluate the short-term performance target of 1.0 chick fledged per breeding pair, as well as the 1.5 chicks fledged per pair productivity rate identified in the recovery plan, to determine what productivity rate is realistically attainable and would provide for a growing population at the Seashore over the long term. If the actual productivity rate is not sufficient to achieve the desired future conditions for piping plover, it will be determined what management actions (e.g., frequency of monitoring; size or timing of buffers) need to be changed in order to achieve the desired results. The NPS would seek funding for this study as a conservation measure to contribute to the piping plover knowledge base pursuant to its <i>Endangered Species Act</i> recovery responsibilities.</p> <p>After desired future conditions are attained, the NPS would seek funding to develop the following adaptive management initiatives related to resource protection buffers for shorebirds:</p> <p><b>Piping plover chick buffer distance:</b> An adaptive management study to evaluate whether a reduced ORV or pedestrian buffer distance (i.e., less than that stated in this plan) after a certain time period, such as 2 weeks after chicks have hatched, would be adequate to prevent disturbance of piping plover chicks by ORVs and/or pedestrians using adjacent areas during daylight hours.</p> <p><b>Pass-through buffers during the incubation period:</b> An adaptive management study or studies to evaluate whether a reduced buffer distance is adequate to prevent disturbance caused by ORVs driving past piping plover, American oystercatcher, or colonial waterbird nest sites if all other recreation (e.g., pedestrians, pets) is prohibited within the reduced buffer, and to determine whether a reduced buffer is adequate to prevent disturbance caused by pedestrians walking below the high tide line past piping plover, American oystercatcher, or colonial waterbird nest sites.</p> <p><b>Nonbreeding shorebird management:</b> Develop an adaptive management study to evaluate nonbreeding shorebird utilization of shoreline habitat that is open to ORV use compared to habitat that is not open to ORV use. Utilize findings in the future to determine best location and configuration of ORV corridors in areas designated for ORV use.</p>		
<b>Research</b>	<p>In addition to the species management procedures outlined in this table, through the issuance of a research permit, the NPS may authorize qualified researchers associated with recognized academic or research institutions to conduct additional scientific research on the respective species that will add to the existing knowledge of shorebird species or improve resource protection within the Seashore. Establishment of Research Areas may be authorized under such a permit.</p>		
<b>Implementation of Adaptive Management and Research Initiatives</b>	<p>Should adaptive management initiatives and other research provide information that the NPS believes is an adequate basis for management changes, such changes would be evaluated and considered for implementation as part of the 5-year periodic review process described at the end of this table.</p>		
Management Activity	Sea Turtles		
<b>Survey Time and Frequency</b>	<p>Sea turtle patrol will begin on May 1, unless leatherback nests have been reported within the state, in which case, the Seashore will follow the direction of NCWRC. Patrol will continue until Sep 15, or 2 weeks after the last sea turtle nest or crawl is found, whichever is later.</p> <p>Daily surveys will be conducted by UTV (and occasionally by ORV) to search for crawls and nests on all oceanside beaches and spits, generally in the morning before onset of public ORV use. Daily surveys for nests end Sep 15, or 2 weeks after the last sea turtle nest or crawl is found, whichever is later. Periodic monitoring (e.g., every 2 to 3 days) for unknown nesting and emerging hatchlings will continue, especially in areas of high visitation, from that date until Nov 15.</p> <p>Monitoring will also occur for post-hatchling washbacks during periods when there are large quantities of seaweed washed ashore or following severe storm events. Nest observations will stop when all nests have hatched or excavation indicates that unhatched nests are not viable.</p> <p>Once a light filter fence is installed, nests will be monitored daily for signs of hatchling emergence.</p>		
<b>Sea Turtle Data Collection/Reporting</b>	<p>At a minimum, the NCWRC handbook will be followed and the following will be recorded:</p> <ul style="list-style-type: none"> <li>• Date, location, and species of nests and false crawls; identity of observer.</li> <li>• Whether nests need to be relocated and, if so, why and where (new physical description and GPS location), number of eggs relocated, and time of day.</li> <li>• Necessary protective measures for nests and hatchlings.</li> <li>• Information regarding any post-hatching nest excavation and analysis.</li> </ul> <p>All nests will be examined after hatching to determine productivity rates. Nests will be excavated in the evening, a minimum of 72 hours after the hatching event. In cases where hatching events or dates are unknown, nest cavities will be unearthed 80–90 days after the lay date. Any live hatchlings found during excavations will be released at dusk or after dark on the same day as excavation.</p> <p>For strandings, the following will be recorded: species, location (GPS), measurements, indications of human interactions, and disposition of animal/carcass. Samples and photos will be collected when necessary. Necropsies will be conducted when possible.</p>		

Management Activity	Sea Turtles
<b>Nest Closures/Buffers</b>	<p>A buffer approximately 10 × 10 meters will be established with symbolic fencing and signage around nest. Closure size may be modified depending on environmental conditions at the nest site. Approximately 50–55 days into incubation, closures will be expanded to the surf line. The width of the closure will be based on the type and level of use in the area of the beach where the nest was laid:</p> <ol style="list-style-type: none"> <li>1. VFAs with little or no pedestrian traffic—25 meters wide (i.e., 12.5 meters on either side of the nest).</li> <li>2. Village beaches or other areas with high levels of pedestrian and other non-ORV use—50 meters wide (i.e., 25 meters on either side of the nest).</li> <li>3. Areas with ORV traffic—105 meters wide (i.e., 52.5 meters on either side of the nest).</li> </ol> <p>On the landward side of the nest, the closed area will be expanded to 15 meters from the nest where possible, but no less than 10 meters landward from the nest. If appropriate, traffic detours behind the nest area will be established and clearly marked with signs and reflective arrows.</p> <p>Light-filtering fence will be used in a U-shaped configuration around nests nearing their hatch dates, with the open face of the U oriented toward the water, to block light pollution from the villages and vehicles operating on the beach after dark.</p> <p>Once the buffer expansion is implemented, NPS staff will use rakes or a steel mat attached to an ATV or UTV to smooth any vehicle tracks between the nest and the water, so that tracks do not impede hatchlings from reaching the water.</p> <p>If multiple nests are located near each other (within 50 meters), and have similar hatch dates (within 14 days of each other), then closures will encompass all nests in the area and will not be removed until all nests within the closure have hatched.</p>
<b>Nest Watch Program</b>	<p>A cadre of trained volunteers will be established to watch nests that have reached their hatch windows in order to monitor hatchling emergence success and success reaching the water, and to provide for the minimization of negative impacts from artificial lighting, predation, and human disturbance. Depending on the number of nests that may be ready to hatch and the availability of volunteers, it may be necessary for NPS turtle staff to prioritize which nests are watched on any particular night. Priority will be given to watching the nests that are most likely to be negatively impacted by manageable factors.</p>
<b>Nest Relocation</b>	<p>In general, NPS staff will follow guidance in the NCWRC handbook and FWS Loggerhead Sea Turtle Recovery Plan, which is to allow nests to incubate at their original location if there is any reasonable likelihood of survival. Relocation of a nest is considered only as an option of last resort. Accommodation of ORV access shall not be a factor in determining whether a nest needs to be relocated.</p> <p>When relocation is determined to be necessary, nests will be moved toward the dunes immediately behind the original nest location (when possible). Narrow beaches or beaches without nearby dunes (i.e., points and spits) may necessitate relocations to adjacent areas above the high tide line that are free of vegetation. If a choice for a relocation site must be made among adjacent areas that are equally suitable biologically, then accommodation of ORV access to a popular location may be considered as a factor in choosing an appropriate relocation site. An adjacent site that is less suitable biologically shall not be selected for a relocated nest to accommodate ORV access.</p> <p>By Apr 15, Seashore staff will conduct an annual sea turtle nesting habitat assessment to identify areas deemed unsuitable for turtle nests (e.g., those with a high erosion rate) and will discuss with NCWRC prior to nesting season to confirm the high erosion area(s) in which nest relocation would occur during the upcoming nesting season.</p> <p>When a nest is found, designated NPS staff members will assess the need for nest relocation. If it is determined that the nest will NOT be relocated, it will be immediately protected with symbolic fencing and signs approximately 10 × 10 meters in size. Closure size may vary at the discretion of NPS staff depending on the environmental factors at a nest location. If it is determined that the nest will be relocated, NPS will follow relocation procedures identified in the NCWRC handbook. A nest will be relocated only when one or more of the following situations exist:</p> <ul style="list-style-type: none"> <li>• The nest is located at or below the average high tide line, or within an existing “trough” or flooding pool above the average high tide line, where regular inundation or standing water will result in embryonic mortality.</li> <li>• The nest is laid in an area that is known to be susceptible to erosion, as identified by the annual habitat assessment. Such areas typically include the following locations where known erosion or water table issues are known to cause nest mortality, such as spits, points, manmade groins, and re-constructed beaches</li> <li>• When a nest is inspected to verify the presence of eggs and it is found that there are broken eggs in the nest resulting in yolk dripping down into the egg chamber. This situation can result from either predation or human impacts and can result in increased predation if the nest is left in place. NPS staff may “screen” a nest to further discourage additional predation from mammalian predators.</li> <li>• The nest is laid in an area in which unusual, but lawfully conducted, human activities pose a serious threat to nests, such as emergency “beach push” following a major storm event. When these situations arise, NPS will consult with NCWRC prior to conducting these activities to discuss the impact on existing turtle nests.</li> </ul> <p>If a nest is threatened by an imminent storm event, NPS will consult with NCWRC to determine appropriate action.</p>
<b>Strandings</b>	<p>The Seashore will respond to sea turtle strandings in a timely manner, and will forward or report all information, pictures, and signs of human interaction to NCWRC.</p> <p>Necropsies of stranded turtles will be done when possible.</p>
<b>Light Restrictions</b>	<p>From May 1 through Nov 15:</p> <ul style="list-style-type: none"> <li>• Portable lanterns, auxiliary lights, and powered fixed lights of any kind shining for more than 5 minutes at a time would be prohibited on Seashore ocean beaches.</li> <li>• Beach fires would be allowed/restricted as described in the respective alternatives.</li> </ul>
<b>Night-Driving Restrictions</b>	<p>From May 1 until Nov 15 all non-essential vehicle use is prohibited from 9:00 p.m. until 7:00 a.m., except from Sept 16 to Nov 15, ORV routes with no turtle nests remaining will reopen for night driving.</p>
<b>Light Management</b>	<p>By May 1, 2012, turtle-friendly lighting fixtures will be installed on all Seashore structures visible from the ocean beach (except where prevented by other overriding lighting requirements, such as lighthouses, which serve as aids to navigation) and fishing piers operated by NPS concessioners.</p> <p>Educational material will be developed to inform visitors about their impact on the success of sea turtle nests.</p> <p>The Seashore will work with the USFWS, the NCWRC, and Dare County to encourage development of a turtle-friendly lighting education program for villages within the Seashore on Hatteras Island.</p>

Management Activity	Sea Turtles
<b>Adaptive Management Initiatives</b>	<p>The NPS would take an adaptive management approach to the species management program in order to evaluate the effectiveness of and improve the measures identified above. During the course of this plan, the NPS would seek funding and assistance to develop the following adaptive management initiatives for sea turtles:</p> <ul style="list-style-type: none"> <li>• A study to develop a protocol for conducting an artificial lighting survey along the length of the Seashore, which can be used to assess artificial conditions before and after any management actions (such as a lighting ordinance) are implemented to reduce artificial lighting. After light management actions are implemented, levels of lighting will be reassessed and impacts on sea turtle nesting success will be monitored and evaluated.</li> <li>• An adaptive management study to evaluate the level of human disturbance, if any, that might be caused by designating night-driving routes to select points and spits, and to develop management tools to minimize impacts to an acceptable level. If supported by the findings, the NPS will work toward an incremental adjustment (i.e., increase) in nighttime ORV access to limited select locations where not in substantial conflict with turtle nesting and hatchling activity.</li> <li>• An adaptive management study to determine ways to increase the number of male hatchlings that emerge and reach the water. The NPS would seek funding for this study as a conservation measure to contribute to the sea turtle knowledge base pursuant to its <i>Endangered Species Act</i> recovery responsibilities.</li> </ul>
<b>Research</b>	In addition to the species management procedures outlined in this table, through the issuance of a research permit, the NPS may authorize qualified researchers associated with recognized academic or research institutions to conduct additional scientific research on turtle species that will add to the existing knowledge of sea turtles or improve resource protection within the Seashore. Establishment of research areas could be authorized under such a permit.
<b>Implementation of Adaptive Management and Research Initiatives</b>	Should adaptive management initiatives and other research provide information that NPS believes is an adequate basis for management changes, such changes would be evaluated and considered for implementation as part of the 5-year periodic review process.
Management Activity	Seabeach Amaranth
<b>Survey Time and Frequency</b>	<p>Jul to Sep: Before removing any shorebird closures, surveys will be conducted for seabeach amaranth seedlings/plants.</p> <p>Aug: A Seashore-wide annual survey for seabeach amaranth will be conducted in all potential habitats. Some shorebird closures may not be surveyed until just prior to reopening an area to ORV traffic to minimize disturbance of nesting birds or chicks.</p> <p>Observations will end when all known seabeach amaranth plants have died back.</p>
<b>Data Collection</b>	The location of all individual plants or plant clusters will be recorded using GPS. It will be noted whether the plant is located in an area open or closed to recreational use.
<b>Buffers/Closures</b>	<p>Prior to Jun 1, suitable seabeach amaranth habitat will be identified at points and spits where plants have observed within the last 5 years and delineated with symbolic fencing if such areas are not already protected within existing shorebird resource closures.</p> <p>If a plant/seedling is found outside of an existing closure, symbolic fencing with signage will be erected creating a 10- x 10-meter buffer around the plant. If plants are located next to one another, the area will be expanded to create one enclosure protecting several plants.</p> <p>If a seabeach amaranth plant is found during the survey prior to reopening a bird closure to ORV and pedestrian use, the Seashore will protect the plant as described above and reopen the portions of the bird closure where seabeach amaranth plants do not exist.</p> <p>If seabeach amaranth is not present by Sep 1, seabeach amaranth buffers will be removed. If seabeach amaranth is present, buffers will remain until after the plants have senesced, which is typically around Dec 1.</p>
<b>Adaptive Management Initiatives</b>	<p>NPS would take an adaptive management approach to the species management program in order to evaluate the effectiveness of and improve the measures identified above. During the course of this plan, NPS would seek funding and assistance to develop the following adaptive management initiatives for seabeach amaranth:</p> <ul style="list-style-type: none"> <li>• A study to assess the feasibility of seabeach amaranth restoration at up to four suitable sites. NPS would seek funding for this study as a conservation measure to contribute to the seabeach amaranth knowledge base pursuant to its <i>Endangered Species Act</i> recovery responsibilities.</li> </ul>
Management Activity	All Species
<b>Periodic Review</b>	A systematic review of data, annual reports, and other information would be conducted by NPS every 5 years, after a major hurricane, or if necessitated by a significant change in protected species status (e.g., listing or de-listing), in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives. Periodic review could result in changes to the management actions in order to improve effectiveness. When desired future conditions for resources are met or exceeded, periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remained stable. When progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may result in increased restrictions on recreational use.

TABLE 11. SHOREBIRD/WATERBIRD BUFFER SUMMARY FOR ALL ALTERNATIVES

Species	Alternative A		Alternative B		Alternatives C, D, and E		Alternative F	
	Breeding Behavior/Nest Buffer	Unfledged Chicks	Breeding Behavior/Nest Buffer	Unfledged Chicks	Breeding Behavior/Nest Buffer (ML1 / ML2)	Unfledged Chicks (ML1 / ML2)	Breeding Behavior/Nest Buffer	Unfledged Chicks
Piping plover	46 meters	183 meters	50 meters	1,000 meters ORV (300 meters for pedestrians)	75 meters / 75 meters	1,000 meters ORV (300 meters for pedestrians)	75 meters	1,000 meters ORV (300 meters for pedestrians)
Wilson's plover	n/a	n/a	n/a	n/a	300 meters / 150 meters	300 meters / 200 meters	75 meters	200 meters
American oystercatcher	Behavior-based	46-91 meters	150 meters	200 meters	300 meters / 150 meters	300 meters / 200 meters	150 meters	200 meters
Least tern	Same as other colonial waterbird	Same as other colonial waterbird	100 meters	200 meters	300 meters / 100 meters	300 meters / 200 meters	100 meters	200 meters
Other colonial waterbird species	Breeding based on behavior/nest 46-91 meters	46-91 meters	200 meters	200 meters	300 meters / 200 meters	300 meters / 200 meters	200 meters	200 meters

Note: Buffers apply to both ORVs and pedestrians, unless otherwise specified.

TABLE 12. ANALYSIS OF HOW ALTERNATIVES MEET OBJECTIVES

Objectives	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Management Methodology</b>						
Identify criteria to designate ORV routes and areas.	Meets objective to some degree. No criteria would be developed to designate routes and areas. The ocean and inlet shoreline and existing soundside routes would potentially be open to ORV use 24 hours a day, year-round.	Meets objective to some degree. No criteria would be developed to designate routes and areas. The ocean and inlet shoreline and existing soundside routes would potentially be open to ORV use, year-round.	Meets objective to a large degree. Routes and areas designated based on seasonal resource and visitor use characteristics of various areas in the Seashore.	Meets objective to a large degree. Routes and areas designated based on providing predictability for visitors and simplified management strategies.	Meets objective to a large degree. Routes and areas designated based on providing a wide variety of access opportunities for all users, while still protecting sensitive resources.	Meets objective to a large degree. Routes and areas designated based on providing a variety of access opportunities for all users, while still protecting sensitive resources. This alternative also provides more predictability than alternative E.
Establish ORV management practices and procedures that have the ability to adapt in response to changes in the Seashore's dynamic physical and biological environment.	Meets objective to a moderate degree. ORV use areas are determined by where resource management closures exist. Flexibility to adapt to changes, but lack of a framework to make these changes efficiently.	Meets objective to some degree. ORV use areas are set through resource management measures under the Consent Decree. Areas are set, but are rigid, and do not have flexibility to adapt as needed to respond to changing environment.	Meets objective to a large degree. Route, areas, and ORV management measures are established that are subject to Periodic Review of both ORV management and species management measures.	Meets objective to some degree. Route, areas, and ORV management measures are established that are subject to Periodic Review and species management measures, but not ORV management measures. The ability to implement safety closures would not be available.	Meets objective to a large degree. Route, areas, and ORV management measures are established that are subject to Periodic Review of both ORV management and species management measures.	Meets objective to a large degree. Route, areas, and ORV management measures are established that are subject to Periodic Review of both ORV management and species management measures.
Establish a civic engagement component for ORV management.	Meets objective to a moderate degree. The Seashore would conduct educational programs during bird and turtle hatching season, which would involve students from public schools, as well as other public involvement activities that engage the public.	Meets objective to a moderate degree. The Seashore would conduct educational programs during bird and turtle hatching season, which would involve students from public schools, as well as other public involvement activities that engage the public.	Meets objective to a large degree as the Seashore would implement more educational programs in local schools, expand the Junior Ranger program, and enlist volunteers for a Sea Turtle Nest Watch Program.	Meets objective to a large degree as the Seashore would implement more educational programs in local schools, expand the Junior Ranger program, and enlist volunteers for a Sea Turtle Nest Watch Program.	Meets objective to a large degree as the Seashore would implement more educational programs in local schools, expand the Junior Ranger program, and enlist volunteers for a Sea Turtle Nest Watch Program.	Meets objective to a large degree as the Seashore would implement more educational programs in local schools, expand the Junior Ranger program, and enlist volunteers for a Sea Turtle Nest Watch Program.
Establish procedures for prompt and efficient public notification of beach access status, including any temporary ORV use restrictions for such things as ramp maintenance, resource and public safety closures, storm events, etc.	Meets objective to some degree. Weekly beach access reports and online news releases provide prompt public notification.	Meets objective to a moderate degree. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates.	Fully meets objective. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates. Implementation of a permit system would provide ORV users with information regarding closed areas.	Fully meets objective. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates. Implementation of a permit system would provide ORV users with information regarding closed areas.	Fully meets objective. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates. Implementation of a permit system would provide ORV users with information regarding closed areas.	Fully meets objective. Weekly beach access reports, online news feeds, and Google Earth maps provide efficient beach access status updates. Implementation of a permit system would provide ORV users with information regarding closed areas.
Build stewardship through public awareness and understanding of NPS resource-management and visitor-use policies and responsibilities as they pertain to the Seashore and ORV management.	Meets objective to some degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness.	Meets objective to some degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Public opinion regarding the Consent Decree would detract from these efforts.	Meets objective to a large degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Additional programs would be implemented and information provided through the permit system would increase awareness of Seashore resources.	Meets objective to a large degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Additional programs would be implemented and information provided through the permit system would increase awareness of Seashore resources.	Meets objective to a large degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Additional programs would be implemented and information provided through the permit system would increase awareness of Seashore resources.	Meets objective to a large degree. Seashore programs would continue to provide information regarding resource management and aim to build stewardship through public awareness. Additional programs would be implemented and information provided through the permit system would increase awareness of Seashore resources.

Objectives	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Natural Physical Resources</b>						
Minimize impacts from ORV use to soils and topographic features, for example, dunes, ocean beach, wetlands, tidal flats, and other features.	Meets objective to some degree. ORV use not permitted on dunes, but permitted on the ocean and inlet shoreline and existing soundside routes would potentially be open to ORV use 24 hours a day, year-round. Lack of defined areas likely to lead to increased non-compliance and potential for these resources to be impacted.	Meets objective to a moderate degree. ORV use not permitted on dunes, but permitted on the ocean and inlet shoreline and existing soundside routes would potentially be open to ORV use, year-round. Night-driving restrictions reduce amount of disturbance from beach driving. Implementation of larger buffers and backshore closures would offer protection to resources.	Meets objective to a large degree, as ORV use not permitted on dunes, night-driving restrictions, and carrying capacity limits. However, a large amount of beach open to ORV use could result in impacts to physical resources.	Fully meets objective, as ORV use not permitted on dunes, night-driving restrictions, and beach parking limitations. Least amount of mileage open to ORV use year-round would minimize resource impacts.	Fully meets objectives, as ORV use not permitted on dunes, night-driving restrictions, carrying capacity limits, and soundside driving restrictions.	Meets objective to a large degree, as ORV use not permitted on dunes, night-driving restrictions, and carrying capacity limits. However, a large amount of beach open to ORV use could result in impacts to physical resources
<b>Threatened, Endangered, and Other Protected Species</b>						
Provide protection for threatened, endangered, and other protected species (e.g., state-listed species) and their habitats, and minimize impacts related to ORVs and other uses as required by laws and policies such as the <i>Endangered Species Act</i> , the <i>Migratory Bird Treaty Act</i> , and NPS laws and management policies.	Meets objective to some degree, as temporary resource closures provide protection for sensitive species but buffers would require frequent adjustments to provide adequate protection.	Meets objective to a moderate degree, as increased buffer distances and night-driving restrictions provide increased levels of species protection.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use 7 months per year provide proactive (prior to breeding season) protection.	Fully meets objective with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use year-round providing large areas of resource protection.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use 5.5 months per year provide proactive (prior to breeding season) protection.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, prenesting closures and large, pre-determined buffers for breeding/nesting activity would provide proactive (prior to breeding season) protection.
<b>Vegetation</b>						
Minimize impacts to native plant species related to ORV use.	Meets objective to some degree as driving on dune vegetation is prohibited, but lack of defined ORV areas or backshore closures could result in increased non-compliance and impacts to the resource.	Meets objective to a moderate degree as driving on dune vegetation is prohibited and ocean backshore closures are provided. Sensitive areas with marginal width may be open in the winter that would result in non-compliance problems.	Meets objective to a large degree by adding protective signage at soundside parking areas. Location of ORV corridor at the toe of the dune, with no buffer, may impact vegetation.	Fully meets objective as driving on dune vegetation is prohibited. Year-round SMAs protect large areas, reducing potential impacts to vegetation. ORV corridor would provide a 10 meter buffer from the toe of the dune, further protecting vegetation.	Fully meets objective by closing some soundside access areas and adding protective signage at remaining soundside parking areas. ORV corridor would provide a 10 meter buffer from the toe of the dune, further protecting vegetation.	Meets objective to a large degree by adding protective signage at soundside parking areas. However, there is the potential for damage to vegetation from new soundside access points. Location of ORV corridor at the toe of the dune, with no buffer, may impact vegetation.
<b>Other Wildlife and Wildlife Habitat</b>						
Minimize impacts to wildlife species and their habitats related to ORV use.	Meets objective to some degree, as temporary resource closures provide protection for other wildlife species but buffers are not as large as other alternatives and would not offer large levels of protection.	Meets objective to a moderate degree, as increased buffer distances and night-driving restrictions provide increased levels of species protection, which would include protection to other bird and invertebrate species.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use 7 months per year.	Fully meets objective with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use year-round, which would also offer protection to other bird species and invertebrates.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, and SMAs closed to ORV use 5.5 months per year.	Meets objective to a large degree with increased buffer distances, night-driving restrictions, pet regulations, prenesting closures, and year-round and seasonal VFAs that leave areas of the Seashore less disturbed for wildlife.

Objectives	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Cultural Resources</b>						
Protect cultural resources, such as shipwrecks, archeological sites, and cultural landscapes, from impacts related to ORV use.	Meets objective to some degree as Seashore protections would be put in place for cultural resources, such as shipwrecks, but allowing driving at night and allowing access to large areas of the Seashore would provide for more access to these resources and more possibility for these resources to be disturbed.	Meets objective to a moderate degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Large areas of the Seashore would still be accessible by ORV and would provide some level of access to these resources.	Meets objective to a large degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Further protection would be provided by the establishment of SMAs that limit access to certain areas of the Seashore during certain times of year and the addition of a permit system that could be revoked for non-compliance, decreasing the probability of drivers taking non-compliant actions.	Meets objective to a large degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Further protection would be provided by the establishment of SMAs that limit access to certain areas of the Seashore during certain times of year and the addition of a permit system that could be revoked for non-compliance, decreasing the probability of drivers taking non-compliant actions.	Meets objective to a large degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Further protection would be provided by the establishment of SMAs that limit access to certain areas of the Seashore during certain times of year and the addition of a permit system that could be revoked for non-compliance, decreasing the probability of drivers taking non-compliant actions.	Meets objective to a large degree as Seashore protection would be in place for cultural resources, such as shipwrecks, and seasonal restrictions on night driving would further limit access to these resources. Further protection would be provided by the establishment of year-round and seasonal VFAs that limit access to certain areas of the Seashore during certain times of year and the addition of a permit system that could be revoked for non-compliance, decreasing the probability of drivers taking non-compliant actions.
<b>Visitor Use and Experience</b>						
Ensure that ORV operators are informed about the rules and regulations regarding ORV use at the Seashore.	Meets objective to some degree as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. No permit system would be in place to convey information or provide a mechanism for ensuring regulations are followed.	Meets objective to a moderate degree as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, on the website, and within the required night-driving permit.	Fully meets objective as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. This alternative includes a required education component as part of the ORV permit.	Fully meets objective as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. This alternative includes a required education component as part of the ORV permit.	Fully meets objective as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. This alternative includes a required education component as part of the ORV permit.	Fully meets objective as ORV rules are posted at visitor centers, on ORV ramp bulletin boards, in the park newspaper, and on the website. This alternative includes a required education component as part of the ORV permit.
Manage ORV use to allow for a variety of visitor use experiences.	Meets objective to some degree as ORV and VFAs are not officially designated. VFAs occur through seasonal and safety closures throughout the Seashore, but no defined use areas exist to provide for a variety of visitor use experiences.	Meets objective to some degree as ORV and VFAs are not officially designated. VFAs occur through seasonal and safety closures throughout the Seashore, but no defined use areas exist to provide for a variety of visitor use experiences.	Meets objective to a moderate degree as more defined areas for ORV and vehicle free recreational opportunities are provided. New interdunal road access would be provided, offering additional options to ORV users. Some separation of uses and unique opportunities are provided for various user groups.	Meets objective to a moderate degree as more defined areas for ORV and vehicle free recreational opportunities are provided. New interdunal road access would be provided, offering additional options to ORV users. Some separation of uses and unique opportunities are provided for various user groups, but large areas would be closed to all visitors for most of the year, and would not be available to provide for the visitor experience.	Meets objective to a large degree as more defined areas for ORV and vehicle free recreational opportunities are provided. New interdunal road access would be provided, offering additional options to ORV users. Additional user opportunities would be provided including the addition of a park-and-stay options, as well as self-contained vehicle camping. The addition of pedestrian routes, additional parking on the soundside, as well as the potential for water taxi access would all contribute to offering a variety of visitor experiences.	Meets objective to a large degree as more defined areas for ORV and vehicle free recreational opportunities are provided. New interdunal road access would be provided, offering additional options to ORV users. Additional visitor experiences would be provided through pedestrian routes, extra trails, and new parking. Providing some areas of the Seashore that are vehicle-free year-round or seasonally would provide for a greater variety of visitor experiences.

Objectives	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
Minimize conflicts between ORV use and other visitor uses.	Meets objective to some degree as no designated areas for uses are established, which could result in real or perceived conflicts between ORV uses and other visitor uses.	Meets objective to some degree as no designated areas for uses are established, which could result in real or perceived conflicts between ORV uses and other visitor uses.	Meets objective to a large degree as designation of ORV and VFAs would help minimize conflicts. Implementation of a permit system would provide additional education and the ability to revoke permits would likely increase compliance with ORV use regulations and further reduce conflicts. Seasonal night-driving restrictions would also reduce potential visitor use conflicts.	Meets objective to a large degree as designation of ORV and VFAs would help minimize conflicts. Implementation of a permit system would provide additional education and the ability to revoke permits would likely increase compliance with ORV use regulations and further reduce conflicts. Seasonal night-driving restrictions would also reduce potential visitor use conflicts.	Meets objective to a large degree as designation of ORV and VFAs would help minimize conflicts. Implementation of a permit system would provide additional education and the ability to revoke permits would likely increase compliance with ORV use regulations and further reduce conflicts. Seasonal night-driving restrictions would also reduce potential visitor use conflicts.	Meets objective to a large degree as designation of ORV and VFAs would help minimize conflicts. Implementation of a permit system would provide additional education and the ability to revoke permits would likely increase compliance with ORV use regulations and further reduce conflicts. Seasonal night-driving restrictions would also reduce potential visitor use conflicts.
<b>Visitor Safety</b>						
Ensure that ORV management promotes the safety of all visitors.	Meets objective to a moderate degree as ORV safety closures would be provided, as well as right-of-way and unsafe operation regulations contained in the CFR.	Meets objective to a large degree as ORV safety closures would be provided, as well as right-of-way and unsafe operation regulations contained in the CFR. Increased signage, lower speed limits, and increased public awareness would contribute to visitor safety.	Fully meets objective as ORV safety closures would be provided. Reduced speed limits would also apply in all areas. Village beaches would be closed to ORV use during the summer. Permit requirement would provide further information for increasing visitor safety.	Fully meets objective. Although ORV safety closures would not be provided, areas where these occur would be closed year-round as SMAs. Village beaches would be closed to ORVs year-round. Reduced speed limits would also apply in all areas.	Fully meets objective as ORV safety closures would be provided. Reduced speed limits would also apply in all areas. Beach width requirements would limit some ORV use in narrow beach areas and village beaches would be closed to ORV use during the summer.	Fully meets objective. Speed limits, village beach closures, and safety closures would be provided. Also, additional pedestrian safety and right-of-way requirements would provide increased protection.
<b>Seashore Operations</b>						
Identify operational needs and costs to fully implement an ORV management plan.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.	Meets objective to a large degree as implementation costs have been identified, but carries a degree of uncertainty.
Identify potential sources of funding necessary to implement an ORV management plan.	Meets objective to a moderate degree. Funding expected under annual budget, but no additional funding source provided.	Meets objective to a moderate degree. Funding expected under annual budget, but no additional funding source provided.	Meets objective to a large degree. Funding expected under annual budget, additional funding would occur by from permit fees utilizing cost recovery.	Meets objective to a large degree. Funding expected under annual budget, additional funding would occur by from permit fees utilizing cost recovery.	Meets objective to a large degree. Funding expected under annual budget, additional funding would occur by from permit fees utilizing cost recovery.	Meets objective to a large degree. Funding expected under annual budget, additional funding would occur by from permit fees utilizing cost recovery.
Provide consistent guidelines, according to site conditions, for ORV routes, ramps, and signage.	Meets objective to some degree. Guidelines are not set and conditions would not be predictable.	Meets objective to a moderate degree. Increased signage would be consistent, but no consistent guidelines for routes and ramps would exist.	Meets objective to a large degree. Guidelines for ramp establishment and maintenance, signage, and routes would be established.	Meets objective to a large degree. Guidelines for ramp establishment and maintenance, signage, and routes would be established.	Meets objective to a large degree. Guidelines for ramp establishment and maintenance, signage, and routes would be established.	Meets objective to a large degree. Guidelines for ramp establishment and maintenance, signage, and routes would be established.

Note: Objectives are measured as fully meets objective, largely meets objective, moderately meets objective, or meets objective to some degree.



TABLE 13. ENVIRONMENTAL IMPACT SUMMARY BY ALTERNATIVE

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Wetlands and Floodplains</b>						
<b>Wetlands</b>	<b>Impacts of the Alternative on Marine Intertidal Wetlands:</b> Under all alternatives, there would be short term, negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas					
	<p><b>Impacts of the Alternative:</b> Under alternative A, there would be long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes.</p> <p>There would be no construction (or related impacts) under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative B, there would be long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes.</p> <p>There would be no construction (or related impacts) under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative C, there would be long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by the installation of signage.</p> <p>Construction activities would avoid wetland areas, resulting in indirect, long-term negligible adverse impacts to wetlands.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative D, there would be long-term negligible to minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side, which would not be protected with signage. Impacts to vegetated wetlands along interior ORV routes would continue.</p> <p>Construction activities would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative E, there would be long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by signage and closures of soundside access points.</p> <p>Construction activities would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative F, there would be long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the sound side and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by the installation of signage.</p> <p>Construction activities would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wetlands would be long-term minor to moderate adverse.</p>
<b>Floodplains</b>	<p><b>Impacts of the Alternative:</b> There would be no construction under alternative A. As a result, there would be no impacts to the functions or values of floodplains.</p> <p><b>Cumulative Impacts:</b> No cumulative impacts would occur.</p>	<p><b>Impacts of the Alternative:</b> There would be no construction under alternative B. As a result, there would be no impacts to the functions or values of floodplains.</p> <p><b>Cumulative Impacts:</b> No cumulative impacts would occur.</p>	<p><b>Impacts of the Alternative:</b> Under alternative C, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of seven parking areas in the floodplain.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to floodplains would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative D there would be long-term negligible adverse impacts to floodplains due to the location of four ORV access ramps in the 100-year floodplain.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to floodplains would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative E, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of 14 parking areas in the floodplain.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to floodplains would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Under alternative F, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of 12 surfaced and 2 unsurfaced parking areas in the floodplain.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to floodplains would be long-term minor to moderate adverse.</p>

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Federally Listed Threatened or Endangered Species</b>						
<p><b>Piping Plover</b></p>	<p><b>Impacts of the Alternative:</b> Overall, impacts to piping plover from resource management activities (primarily as a result of surveys and field activities) would be long-term minor to moderate adverse. Although the management of the species would provide a certain level of benefit, the manner in which buffers would be established, along with the need to adjust buffers frequently would have an adverse impact on the species.</p> <p>Overall, impacts to piping plover from ORV and other recreational use would be long-term moderate to major adverse as much of the Seashore would be open to recreational use, with an increased potential that piping plover could be impacted due to disturbance from ORV use and other recreational activities. Lack of a permit system for education and law enforcement, no night-driving restrictions, and lack of compliance with pet leash requirements would contribute substantially to these adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term moderate to major adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, impacts under alternative B from resource management activities (primarily resulting from the effects of surveying and field activities) would be long-term minor to moderate beneficial. Buffers for piping plover would be larger and provide more protection compared to buffers under alternative A. Minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures early in the breeding season, monitoring activities, education and outreach efforts, and establishment of prescribed buffers would provide long-term minor to moderate beneficial impacts to the species.</p> <p>Overall, impacts to piping plover from ORV and other recreational use would be long-term moderate adverse. While some buffers would be increased in an attempt to separate recreational uses from piping plover, access to these buffers would be provided at all Seashore beaches and could result in intentional or un-intentional non-compliance (i.e., when signs are washed out), which would impact the species. Adverse impacts would also occur due to limited prenesting protection outside of the points and spits, and the potential for protective buffers to be reduced during critical life stages of plover chicks.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall impacts under alternative C from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate beneficial. As with alternative B, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species.</p> <p>Overall, impacts to piping plover from ORV and other recreational use would be long-term minor adverse. The establishment of the SMAs which proactively reduce or preclude recreational use early in the breeding season, ORV permit requirements, seasonal night-driving restrictions, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact piping plovers, and the fact that alternative C would still include some level of pedestrian access to three SMAs during a portion of the breeding season, impacts to piping plover would be long-term minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall impacts to piping plover from resources management activities (primarily resulting from the effects of surveying and field activities) under alternative D would be long-term moderate to major beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring, but on the whole the implementation of SMAs that prohibit ORV use year-round and only allow pedestrian access outside of the breeding season, establishment of prenesting closures early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate to major beneficial impacts to the species.</p> <p>Overall impacts from ORV and other recreational use would be long-term minor adverse. The establishment of SMAs that are closed to ORVs year-round and managed under ML1 procedures during the breeding season would proactively preclude recreational use early in the breeding season from large areas of the Seashore, which would reduce the potential for disturbance to plovers during critical life stages. This protection, combined with ORV permit requirements, seasonal night-driving restriction, and pet and other recreational activities restrictions would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall impacts under alternative E from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species.</p> <p>Overall impacts from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of the SMAs which proactively reduce or preclude recreational use early in the breeding season, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. Although there would be benefits from seasonal night-driving restrictions, they would not be as great as other action alternatives because driving after dark (until 10:00 p.m.) would still be occurring, even during seasonal restrictions. The potential for adverse impacts would exist from the park-and-stay option under this alternative. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor to moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall impacts under alternative F from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate and beneficial for piping plovers. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species. Long-term moderate benefits to nonbreeding populations would be greater under alternative F than under alternatives C or E because of the addition of the year-round VFAs.</p> <p>Overall impacts under alternative F from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of prenesting closures, year-round and seasonal VFAs, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. As alternative F would provide for more flexible access to various areas of the Seashore, the potential for disturbance to piping plover is increased over alternatives C and D, resulting in long-term minor to moderate adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to piping plover would be long-term minor to moderate adverse.</p>

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Sea Turtles</b>	<p><b>Impacts of the Alternative:</b> Overall, resources management activities under alternative A would have long-term moderate benefits due to the protection provided to sea turtles. Overall, ORV and other recreational use under alternative A would result in long-term major adverse impacts to sea turtles due to the amount of Seashore available for ORV use and the lack of night-driving restrictions.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term moderate to major adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, resource management activities under alternative B would have long-term moderate benefits due to the protection provided to sea turtles. Although additional restrictions and regulations would help lessen some of the impacts from ORV use and other recreational activities, overall, the impacts would be long-term moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, resource management activities under alternative C would have long-term moderate to major beneficial impacts due to the added protection provided to sea turtles. Restrictions placed on nonessential, recreational ORV use under alternative C would provide substantial long-term benefits to sea turtles, including seasonal night-driving restrictions that close the beach before dark (7:00 p.m.), some adverse impacts would still occur in areas where their use is allowed. Therefore, overall, ORV and other recreational use would have long-term minor adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, similar to alternative C, management activities under alternative D would result in long-term moderate to major beneficial impacts. While restrictions placed on ORV use under alternative D would provide long-term moderate to major beneficial impacts, similar to alternative C, there would still be some level of adverse impact to sea turtles in areas where ORV use and beach fires are allowed; therefore, overall impacts from ORV and other recreational use would be long-term minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Management activities would provide long-term moderate to major beneficial impacts to sea turtles. While additional restrictions and regulations would help lessen some of the impacts from ORVs and other recreational activities, overall, the impacts would be long-term moderate adverse from allowing night driving until 10:00 p.m., and due to increased recreational access throughout the Seashore during the turtle nesting season, including a park-and-stay option for ORVs at selected points and spits.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, resource management activities would provide long-term moderate to major beneficial impacts to sea turtles. While additional restrictions, such as prohibiting night driving from 9:00 p.m. to 7:00 a.m and regulations would help lessen some of the impacts from ORV and other recreational use, overall, the impacts would be long-term minor to moderate adverse, due to not prohibiting night driving prior to 9:00 p.m. and the earlier re-opening of prenesting areas (after shorebird breeding activity has concluded), resulting in increased recreational access throughout the Seashore during the sea turtle nesting season.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to sea turtles would be long-term minor to moderate adverse.</p>
<b>Seabeach Amaranth</b>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative A, resources management actions would have long-term minor to moderate beneficial impacts, if plants are detected. Overall, ORV and other recreational use under alternative A would have long-term moderate adverse impacts as plants may go undetected and therefore unprotected from this use.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative B, resources management actions would have long-term minor to moderate beneficial impacts, if plants are detected. Overall, ORV and other recreational use would result in long-term moderate adverse impacts. Slightly more protection would be provided for the species when compared to alternative A, due to shorebird breeding closures being larger and lasting longer.</p> <p><b>Cumulative Impacts:</b> Cumulative to seabeach amaranth would be long-term moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative C, resources management actions would have long-term moderate beneficial impacts to seabeach amaranth as the establishment of SMAs and increased protection for the species would occur compared to alternatives A and B. Overall, ORV and other recreational use would result in long-term minor to moderate adverse impacts. Because of the establishment of SMAs and protection of approximately 40 miles of beach, the adverse impacts under alternative C would likely be long-term minor to moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the increased level of protection of seabeach amaranth habitat and plants under alternative D, when compared to other alternatives, resources management actions would have long-term moderate to major beneficial impacts. Overall ORV and other recreational use would result in long-term minor adverse impacts. Because the establishment of SMAs closed to ORVs year-round would protect approximately 40 miles of beach, the adverse impacts under alternative D would be greatly reduced compared to the other alternatives and result in long-term minor adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative E, resources management actions would have long-term minor to moderate beneficial impacts as ORV access to more areas would be allowed during the germination period, than under action alternatives C and D. Overall, ORV and other recreational use would have long-term minor to moderate adverse impacts to seabeach amaranth due to the increased level of recreational access allowed when compared to the other action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, because of the protection of seabeach amaranth habitat and plants under alternative F, resources management actions would have long-term minor to moderate beneficial impacts as ORV access to more areas would be allowed during the germination period, than under action alternatives C and D. Overall, ORV and other recreational use would be similar to those under alternative E and result in long-term minor to moderate adverse impacts to seabeach amaranth.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to seabeach amaranth would be long-term minor to moderate adverse.</p>

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>State-Listed and Special Status Species</b>						
<b>American Oystercatcher</b>	<b>Impacts of the Alternative:</b> Impacts would be long-term minor to moderate adverse as surveying and lack of specific prenesting closures for this species may miss early nesters. Piping plover prenesting closures, which could be utilized by this species as well, would not protect a number of American oystercatcher nest sites used in recent years. Also, buffer distances based on bird behavior may not provide adequate protection for the species.	<b>Impacts of the Alternative:</b> Establishment of piping plover prenesting closures earlier in the season that could be used by oystercatchers and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information and result in actions that would be beneficial to the species.	<b>Impacts of the Alternative:</b> Implementation of 10 SMAs that are closed to ORVs during the breeding season would provide a proactive resource closure early in the breeding season. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, on the whole, resources management activities would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to the American oystercatcher, greater than those provided under alternative B.	<b>Impacts of the Alternative:</b> Establishment of 10 SMAs that are closed to ORVs year-round and all managed under ML1 procedures during the breeding season would provide long-term benefits to breeding and wintering American oystercatchers, greater than those under alternative C. Additional benefits would be provided from surveying and closures outside of these established SMAs, as well as from the education and outreach provided. These surveying and field activities would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to this species, greater than those provided under alternative B.	<b>Impacts of the Alternative:</b> Implementation of 10 SMAs, 7 of which are closed to ORVs during the breeding season, would provide a proactive resource closure early in the breeding season. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts from human disturbance during field activities, resources management activities on the whole would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to this species, greater than those provided under alternative B.	<b>Impacts of the Alternative:</b> Implementation of prenesting closures would provide a proactive resource closure early in the breeding season. Seasonal and year-round VFAs that total 39 miles of Seashore would provide additional areas with less disturbance for shorebirds. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to the species, greater than those provided under alternative B.

Table 13. Environmental Impact Summary by Alternative

Impact Topic	Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>American Oystercatcher (continued)</b>	Impacts would be long-term moderate to major adverse as buffers that adjust frequently based on bird behavior are more subject to non-compliance. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets at the Seashore during breeding season would contribute to these adverse impacts.	Establishment of prenesting closures for piping plover earlier in the season, implementation of larger, more immediate buffers, longer lasting closures for American oystercatchers once breeding behavior occurs, and night-driving restrictions would benefit the American oystercatcher. However, recreational use, with no carrying capacity, would still occur in the vicinity of this species and the established buffers may not be large enough to afford adequate protection. Because the birds would not be under constant observation, disturbance may go undetected and implementation of adequate buffers may be delayed in some nesting locations. Compliance with closures may not be absolute, resulting in minor to moderate adverse impacts if non-compliance occurs. Further adverse impacts would result from allowing pets in the Seashore during breeding season, resulting in the possibility of non-compliance with these regulations. Because of these factors, impacts to American oystercatchers from ORV use and other recreational activities would be long term moderate adverse.	Implementation of a permit system with an educational component, larger buffer sizes, seasonal night-driving restrictions, establishment of breeding and nonbreeding SMAs, and not allowing pets in SMAs would benefit the American oystercatcher. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative C does manage three SMAs under ML2 procedures, which provide for some level of pedestrian access into these areas, and introduces the potential for impacts to the species. Although there would be some protection measures in place, ORV and other recreational use could still have impacts to the species, resulting in long-term minor to moderate adverse impacts to American oystercatchers.	Providing large SMAs that are closed year-round to ORVs and closed to pedestrians during the breeding season would provide large undisturbed areas for both breeding and nonbreeding oystercatchers. Further benefits would be provided by seasonal night-driving restrictions, the establishment of a permit system with an educational component, and prohibition of pets in SMAs year-round. With these measures in place, impacts to American oystercatchers from ORV and other recreational use would be long-term minor adverse, as the chance of disturbance still exists, but would be lower than that under the other alternatives evaluated.	Implementation of a permit system with an educational component, larger buffer sizes, seasonal night-driving restrictions, restrictions on pets in SMAs, and establishment of breeding and nonbreeding SMAs would benefit the American oystercatcher. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative E does allow an ORV access corridor at three SMAs managed under ML2 procedures during the breeding season (more than the other action alternatives), which provide for some level of pedestrian or ORV access into these area, which introduces the potential for impacts to the species. Although there would be some protection measures in place, recreational use could still result in long-term minor to moderate adverse impacts to American oystercatchers.	Implementation of a permit system with an educational component, prenesting closures, seasonal night-driving restrictions, allowing pets under the regulations of 36 CFR 2.15 with the additional prohibition of pets in resource closures and in pedestrian shoreline access areas in front of (i.e., seaward of) bird prenesting areas and establishment of seasonal and year-round VFAs that total 39 miles of Seashore would benefit the American oystercatcher. Prenesting closures would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species, with additional areas that are relatively less disturbed provided by prenesting closures. However, alternative F does manage all areas of the Seashore to allow for ORV and/or pedestrian access, which introduces the potential for impacts to the species. As there would be some protection measures in place, but recreational use could still have impacts to the species, impacts to American oystercatchers would be long-term minor to moderate adverse.

Impact Topic	Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<p><b>Colonial Waterbirds</b></p>	<p><b>Impacts of the Alternative:</b> Impacts would be long-term minor to moderate adverse as no prenesting closures would be established for colonial waterbirds. Some species, such as terns and black skimmers, may be able to utilize the prenesting closures established for piping plovers; however, those prenesting areas would not protect a number of colonial waterbird nest sites used in recent years. Also, buffer distances based on bird behavior may not provide adequate protection for the species.</p> <p>Impacts would be long-term moderate to major adverse as buffers may not be adequate to protect the species, and disturbance from recreational uses is more likely. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets in the vicinity of breeding birds would also contribute to adverse impacts.</p>	<p><b>Impacts of the Alternative:</b> Establishment of piping plover prenesting closures earlier in the season that would be used by some colonial waterbird species and establishment of larger, pre-set buffers would result in long-term beneficial impacts to colonial waterbirds. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information and result in actions that would be beneficial to the species.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term moderate adverse, for the same reasons as American oystercatchers under this alternative.</p>	<p><b>Impacts of the Alternative:</b> Impacts to colonial waterbirds from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as American oystercatchers under this alternative.</p>	<p><b>Impacts of the Alternative:</b> Impacts to colonial waterbirds from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor adverse, for the same reasons as American oystercatchers under this alternative.</p>	<p><b>Impacts of the Alternative:</b> Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as those discussed above for American oystercatchers under this alternative.</p>	<p><b>Impacts of the Alternative:</b> Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.</p> <p>Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as American oystercatchers under this alternative.</p>

Table 13. Environmental Impact Summary by Alternative

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<p><b>Wilson’s Plover</b></p>	<p><b>Impacts of the Alternative:</b>                      Impacts would be long-term minor adverse as the habitat for this species would be well surveyed during piping plover surveys and this species would be able to take advantage of management measures for piping plover as their breeding seasons and habitat requirements are similar. Also, buffer distances based on bird behavior may not provide adequate protection for the species. Some benefits may occur from incidental management of Wilson’s plover during piping plover management activities, both during breeding and nonbreeding seasons.</p> <p>Impacts would be long-term moderate to major adverse as no specific management would be provided for this species, although they could utilize buffers and closures established for piping plover. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets at the Seashore during breeding season would contribute to these adverse impacts.</p>	<p><b>Impacts of the Alternative:</b>                      Establishment of piping plover prenesting closures earlier in the season that could be used by other species and establishment of larger, pre-set buffers for piping plover, used by Wilson’s plover, would result in long-term beneficial impacts to Wilson’s plover. While there would still be minor adverse impacts related to human disturbance during field activities, species surveying and field activities on the whole would provide information and result in actions that would be beneficial to the species.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term minor to moderate adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover and would therefore be provided slightly more protection than other state-listed/special status species.</p>	<p><b>Impacts of the Alternative:</b>                      Impacts to Wilson’s plover from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term minor adverse, less than those under alternative A and B. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize the closures for piping plover, in addition to the specific buffers/closures provided for the species, and would therefore be provided slightly more protection than other state-listed/special status species.</p>	<p><b>Impacts of the Alternative:</b>                      Impacts to Wilson’s plover from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term negligible to minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.</p>	<p><b>Impacts of the Alternative:</b>                      Impacts to Wilson’s plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.</p>	<p><b>Impacts of the Alternative:</b>                      Impacts to Wilson’s plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.</p> <p>Impacts to Wilson’s plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.</p>

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Red Knot</b>	<b>Impacts of the Alternative Common to All:</b> Many of the surveying and field activities for other species would occur outside of the primary time when the red knot is a resident at the Seashore. Therefore, any impacts to this species from surveying and field activities for other species would be long-term negligible adverse.					
	<p>Impacts to nonbreeding red knot would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures, although the ability of this species to use wintering closures for piping plover at inlets and Cape Point would result in some benefit.</p> <p>Impacts would be long-term moderate adverse as no specific management would be provided for this species especially during a key life stage of wintering. The lack of designated VFAs, a permitting system, or night-driving restrictions when red knots are at the Seashore, and allowing pets at the Seashore during the migrating/nonbreeding season would contribute to these adverse impacts. Impacts to red knots would be lower than other species as they would not be subject to impacts during their breeding cycle and their use of the Seashore corresponds to times of lower visitation.</p>	<p>The red knot would benefit from extended breeding season closures for other species and from wintering closures for piping plover at the inlets and Cape Point. Impacts to nonbreeding red knot would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures.</p> <p>Impacts to red knots from ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species especially during a key life stage of wintering. Although this species may benefit from longer lasting breeding season closures for other species and from winter closures established for piping plovers, the lack of designated VFAs, a year-round permitting system, no night-driving restrictions when red knots are at the Seashore, and allowing pets at the Seashore during the migrating / nonbreeding season would contribute to these adverse impacts.</p>	<p>Nonbreeding Shorebird SMAs and the establishment of VFAs along the ocean shoreline would result in beneficial impacts to nonbreeding red knots. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, some of which are closed to ORVs year-round, would be beneficial to those red knot that happen to use those areas, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.</p> <p>Impacts to red knot from recreation and other activities would be long-term minor adverse due to the additional nonbreeding closures provided under alternative C that offer this wintering species further protection.</p>	<p>Nonbreeding Shorebird SMAs and the establishment of VFAs along the ocean shoreline would result in beneficial impacts to nonbreeding red knots. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, all of which are closed to ORVs year-round would result in long-term beneficial impacts to red knot when compared to all other alternatives.</p> <p>Impacts to red knot from recreation and other activities would be long-term negligible to minor adverse due to the additional nonbreeding closures provided under alternative D that offer this wintering species further protection, as well as the large year-round SMAs that would offer further protection during red knot wintering.</p>	<p>The ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, some of which are closed year-round, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.</p> <p>Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative E that offer this wintering species further protection; however, there would be greater adverse impacts than under alternatives D or F due to fewer miles of shoreline being closed to ORVs under alternative E during the nonbreeding season.</p>	<p>The ability of this species to use wintering closures that have been established for piping plover as well as the establishment of year-round and seasonal VFAs over 39 miles of the Seashore (of which 26 miles would be year-round and provide protection of nonbreeding habitat) would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.</p> <p>Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the wintering closures established for piping plover, as well as the 26 miles of year-round VFAs that provide less disturbed nonbreeding habitat.</p>
<b>All State-Listed and Special Status Species</b>	<p><b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term moderate to major adverse.</p>	<p><b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term moderate adverse.</p>	<p><b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term minor to moderate adverse.</p>	<p><b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term minor adverse.</p>	<p><b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term minor to moderate adverse.</p>	<p><b>Cumulative Impacts (for all State-listed and Special Status Species):</b> Cumulative impacts to state-listed and special status species would be long-term minor to moderate adverse.</p>



Impact Topic	Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Wildlife and Wildlife Habitat - Other Bird Species</b>	<b>Impacts of the Alternative Common to All:</b> Many of the surveying and field activities for protected species would occur outside of the primary time when other bird species are residents at the Seashore. Therefore, any impacts to other bird species from surveying and field activities for protected species would be long-term negligible adverse.					
	<p><b>Impacts of the Alternative:</b> Impacts to other bird species from resources management activities would be long-term minor adverse as nonbreeding closures would not be species-specific and therefore would not protect important habitat areas such as the ocean shoreline. Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species, increasing the possibility of disturbance to the species from recreational use. The lack of designated VFAs, a permitting system, or night-driving restrictions during the time period when these species are present at the Seashore, and allowing ORVs, people and pets at the Seashore during the nonbreeding season in the vicinity of these species would contribute to adverse impacts.  There would be no construction and therefore no construction-related to disturbance to other bird species under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Impacts to other bird species would be long-term minor adverse as nonbreeding closures would not be species-specific and therefore would not protect important habitat areas such as the ocean shoreline when many of these species are wintering or migrating. Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species, increasing the possibility of disturbance to the species from recreational use. The lack of designated VFAs, allowing night driving during the time period when other bird species are present at the Seashore, and allowing ORVs, people and pets at the Seashore during the nonbreeding season in the vicinity of these species would contribute to adverse impacts.  There would be no construction and therefore no construction-related to disturbance to other bird species under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> The establishment of both breeding and nonbreeding SMAs, some of which are closed to ORVs year-round, would result in long-term beneficial impacts to other bird species when compared to alternatives A and B. Impacts from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative C that offer wintering species further protection.  Impacts to other bird species from construction activities would be short-term negligible to minor and adverse due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> The establishment of SMAs, which would be closed to ORVs year-round, would result in long-term beneficial impacts to other bird species. Beneficial impacts would be greater than those under alternative C due to the amount of mileage closed to ORV use year-round. ORV and other recreational use would result in long term negligible to minor adverse impacts to other bird species due to the amount of beach closed to ORV use and the additional nonbreeding closures that offer wintering species further protection.  Impacts to other bird species from construction activities would be short-term negligible to minor and adverse due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term negligible to minor adverse.</p>	<p><b>Impacts of the Alternative:</b> The establishment of both breeding and nonbreeding SMAs, some of which are closed to ORVs year-round, would result in long-term beneficial impacts to other bird species. ORV and other recreational use would result in long term minor adverse impacts to other bird species due to additional nonbreeding closures provided under alternative E that offer species further protection, with greater adverse impacts than under alternatives D or F from fewer miles of shoreline being closed to ORVs under alternative E during the nonbreeding season. Adverse impacts would be greater than those under alternatives C or D due to the increased level of recreational access provided under alternative E.  Impacts to other bird species from construction activities would be short-term negligible to minor and adverse due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> The establishment of prenesting areas, seasonal and year-round VFAs, and wintering habitat closures would result in long-term beneficial impacts to other bird species. Additional benefits, when compared to the other alternatives, would be realized under alternative F from nonbreeding closures as well as the 26 miles of year-round VFAs that would provide protection during this time. Impacts to other bird species from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative F that offer wintering species further protection.  Impacts to other bird species from construction activities would be short-term negligible to minor and adverse due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (other bird species) would be long-term minor adverse.</p>

Impact Topic	Alternative A: No Action— Continuation of Management under the Interim Strategy	Alternative B: No Action— Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
Wildlife and Wildlife Habitat - Invertebrates	<b>Impacts of the Alternative Common to All:</b> The use of vehicles to conduct resources management activities would result in long-term negligible adverse impacts to invertebrates due to the potential for mortality of individual invertebrate species.					
	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term minor to moderate adverse impacts to invertebrate species primarily due to mortality arising from unlimited night driving in the intertidal and wrack areas.</p> <p>There would be no construction and therefore no construction-related to disturbance to invertebrates under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts would be reduced when compared to alternative A due to limitations on ORV use at night and within the larger resources management closures under alternative B.</p> <p>There would be no construction and therefore no construction-related to disturbance to invertebrates under the no-action alternatives.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term negligible to minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts would be reduced due to longer seasonal restrictions on vehicle use under alternative C.</p> <p>Short term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term negligible adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts to invertebrates would be reduced under this alternative due to the amount of beach closed to recreational use.</p> <p>Short term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term negligible to minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Adverse impacts would be greater than those under alternatives C or D due to the increased level of recreational access provided under alternative E.</p> <p>Short term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat.</p> <p>Short term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to wildlife and wildlife habitat (invertebrates) would be long-term minor adverse.</p>

Table 13. Environmental Impact Summary by Alternative

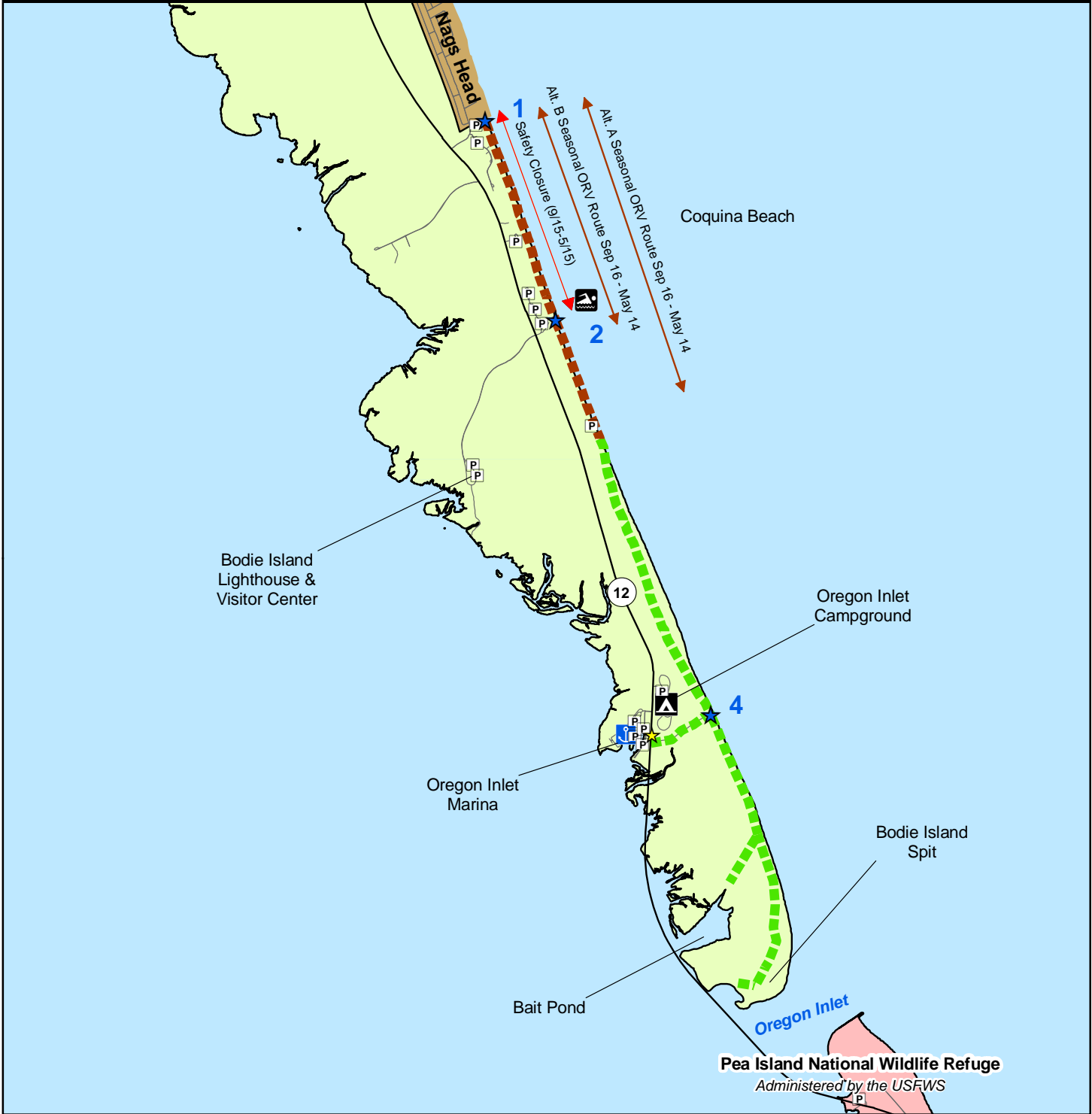
Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Soundscapes</b>	<p><b>Impacts of the Alternative:</b> Overall, minor to moderate impacts, depending upon vehicle speed, would occur along the beaches where most routes are established for ORV driving. While impacts over the majority of the Seashore beaches would be long-term adverse due to greater numbers of designated year-round ORV routes, impacts would be short-term adverse in the areas in front of village beaches, which are only opened seasonally to ORV use. Short-term adverse impacts would also result during other closure periods along any ORV route for resource protection, safety or administrative purposes. During closures, the potential for increased vehicle concentrations along remaining open ORV routes would increase the frequency of occurrence of single ORV pass-by events. Impacts would remain minor to moderate adverse, depending on vehicle speed, but vehicle noise may dominate the natural soundscape more frequently. In general, as ORV use would continue intermittently over the life of the management plan, vehicle noise would be a recurring, long-term minor to moderate adverse impact in all areas of the Seashore beaches open to ORV driving. Additionally, as closure periods, which have the potential to provide short-term benefits, would be implemented throughout the life of the management plan, long-term benefits would arise. As noise from ORV use would add at least 3 decibels (A-weighted scale) (dBA) to the natural ambient sound levels within the Seashore, wildlife would also experience adverse impacts.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to soundscapes would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative A, impacts to the natural soundscape within the Seashore would be minor to moderate, depending upon vehicle speed. Due to the slower speed limits proposed during the peak season when more visitors would be using beach areas, the potential for a greater reduction in visitor awareness would occur under this alternative as compared to alternative A. On beaches where ORV routes are open year-round, including the additional year-round route established under alternative B, impacts would be long-term and adverse, but would potentially become short-term adverse during closure periods. In locations where ORV routes are specifically designated as “seasonal,” impacts would be short-term adverse. As with alternative A, closures of any kind present the potential for increased concentrations of vehicles in areas where ORV routes remain open. In such areas, the potential for vehicle noise to more frequently dominate the sound energy would arise. Aside from the short-term benefits that would occur in areas undergoing closure periods of any kind, additional short-term benefits may occur under alternative B as a result of regulations imposed to seasonally eliminate night driving. Impacts to wildlife would be similar to those under alternative A.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to soundscapes would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative B, impacts to the natural soundscape resulting from a 15 mph speed limit would be minor adverse. However, the potential for wildlife and visitor use impacts, as well as the extent of such impacts, may be reduced due to seasonal restrictions and designated VFAs. Like under alternatives A and B, impacts would be long-term adverse for year-round ORV areas, potentially becoming short-term subject to temporary resource closures. As seasonal closures would limit ORV activity to less than a year, short-term adverse impacts would result. Closures of any kind, depending on the closure length, would also provide short-term benefits by providing noise-free periods. Under alternative C there would be areas of negligible impacts due to designated VFAs and greater opportunities for natural sounds to prevail due to longer seasonal closure periods as compared to alternatives A and B. Conversely, fewer open ORV areas and longer seasonal closure periods also present the potential for greater concentrations of ORVs in areas with open ORV routes, thereby increasing the frequency of vehicle noise in such areas. Construction activities would be localized and of short duration and would be minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to soundscapes would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative A, impacts to the natural soundscape resulting from a 15 mph speed limit would be minor adverse. However, the potential for impacts to wildlife and visitor use from ORV noise would be the least under this alternative, as compared to the no-action and all action alternatives due to larger areas of designated vehicle free use. During resource closures, short-term benefits would occur due to the lack of ORV noise and would also be long-term benefits since closures would recur throughout the life of the management plan. The key difference between this alternative and all other alternatives is that alternative D has the greatest extent of long-term negligible adverse impacts resulting from the number of year-round vehicle-free designations. Alternative D also has the greatest extent of long-term benefits to the natural soundscape, visitors and wildlife due to these VFAs. However, this alternative would also present the greatest potential for increased ORV pass-by events that dominate the sound energy in designated ORV areas due to the fewer number of open ORV areas in which vehicles may drive. Like under alternative C, construction related noise impacts from ramp improvements and the construction of a new ramp would be minor adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to soundscapes would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative A, impacts to the natural soundscape on the beaches resulting from a 15 mph speed limit would be minor adverse. However, like under alternative C, the potential for wildlife and visitor use impacts, as well as the extent of such impacts, may be reduced due to seasonal restrictions and designated VFAs. On the other hand, pass-through zones and earlier openings along seasonal routes under this alternative would potentially provide fewer “noise-free” periods for visitors and wildlife. Vehicle diversions to other open routes may not be as frequent under this alternative as under alternative C or D given that some seasonal routes are open longer than others, ORV pass-through zones would be established in certain areas, and water taxi service would be available as an alternative option to driving. Although under this alternative, more ramps would be constructed, as compared to alternatives C and D, construction-related impacts would remain minor adverse due to the localized nature and short duration of the activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts under alternative E would be long-term minor adverse.</p>	<p><b>Impacts of the Alternative:</b> As described under alternative A, impacts to the natural soundscape on the beaches resulting from a 15 mph speed limit would be minor adverse. Like under alternatives C and E, the potential for wildlife and visitor use impacts from ORV noise may be reduced due to seasonal closures and designated VFAs. “Noise-free” periods would be greater than alternatives C and E. Vehicle diversions to other open routes may not be as frequent under this alternative as under the other action alternatives given that some seasonal routes are open longer than others. Although under this alternative, more ramps would be constructed, as compared to alternatives C and D, construction-related impacts would remain minor adverse due to the localized nature and short duration of the activities.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts under alternative F would be long-term minor adverse.</p>

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<p><b>Visitor Use and Experience</b></p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term negligible to minor adverse impacts as some areas would be closed for resource protection, but alternative A would provide the most ORV access of any alternative. Should there be extensive resource closures in a given year, the potential for long-term moderate impacts exists. Those looking for a vehicle free experience at the Seashore would experience long-term moderate adverse impacts as alternative A does not provide for a specific separation of uses or designation of VFAs. Since night driving would be permitted under alternative A, there would be short-term minor adverse impacts to night skies.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term negligible to minor adverse for ORV users and long-term, moderate, and adverse for visitors who desire a vehicle free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term moderate to major adverse impacts as one or more spit or point would be closed for an extended period of time during the breeding season. During the remainder of the year, there would be negligible to minor adverse impacts to ORV users as limited areas would be closed for resource protection. Those looking for a vehicle free experience at the Seashore would experience long-term moderate adverse impacts as alternative B does not provide for a specific separation of uses outside of seasonal ORV closures of village beaches and no VFAs would be designated. Since night driving would be seasonally restricted under alternative B, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term moderate to major adverse for ORV users, and long-term moderate adverse for visitors who desire a vehicle free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term moderate to major adverse impacts as the designation of VFAs and the establishment of the SMAs would seasonally preclude ORV use from some areas of the Seashore that are popular ORV use areas. While three areas managed under ML2 procedures would have pedestrian access corridors, no ORV corridors would be provided in the SMAs, resulting in greater impacts to ORV users. Those looking for a vehicle free experience at the Seashore would experience long-term benefits as alternative C provides for pedestrian corridors in three SMAs under ML2 procedures, as well as providing additional VFAs. Since night driving would be seasonally restricted under alternative C, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term moderate to major adverse to ORV users, and long-term beneficial for visitors who desire a vehicle free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term major adverse impacts as all SMAs and village beaches would be designated as VFAs year-round, which would prohibit the use of ORV in many popular visitor use areas. Those looking for a vehicle free experience at the Seashore would experience long-term benefits as alternative D provides for many designated VFAs throughout the Seashore, although pedestrian access would be prohibited in the SMAs during the breeding season. Since night driving would be seasonally restricted under alternative D, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term major and adverse to ORV users, and long-term beneficial for visitors who desire a vehicle free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term moderate adverse impacts as the designation of VFAs and the establishment of the SMAs would preclude ORV use, either seasonally or year-round, from some areas of the Seashore that are popular visitor use areas. Three SMAs under ML2 management procedures would provide an ORV pass-through corridor at the start of the breeding season, subject to resource closures, lessening the impacts to this user group. Additional recreational opportunities such as park-and-stay and SCV camping would provide long-term benefits. Those looking for a vehicle free experience at the Seashore would experience long-term benefits as alternative E provides for designated year-round VFAs, as well as seasonal ORV closures in areas such as village beaches and some of the SMAs. Since night driving would be seasonally restricted, but allowed until 10:00 p.m., under alternative E, there would be long-term moderate adverse impacts to night skies due to the hours of night driving allowed, implementation of park-and-stay opportunities, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term moderate to major adverse to ORV users, and long-term beneficial for visitors who desire a vehicle free beach experience.</p>	<p><b>Impacts of the Alternative:</b>                      Those looking for an experience at the Seashore that includes ORV use would have long-term moderate adverse impacts as the designation of VFAs and carrying capacity limits could or would preclude ORV use, either seasonally or year-round, from some areas of the Seashore that are popular visitor use areas. Improved access would be provided to the soundside under this alternative as well. Those looking for a vehicle-free beach experience at the Seashore would experience long-term benefits as alternative F provides for year-round VFAs, as well as seasonal ORV closures in areas such as village beaches, two new pedestrian trails, 14 new or improved parking areas with pedestrian access, and pedestrian access seaward of prenesting closures (prior to observed breeding activity). Since night driving would be seasonally restricted under alternative F, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts year-round in VFAs and seasonally on ORV routes during times of seasonal night-driving restrictions.</p> <p><b>Cumulative Impacts:</b>                      Cumulative impacts would be long-term moderate to major and adverse to ORV users, and long-term beneficial for visitors who desire a vehicle free beach experience.</p>

Table 13. Environmental Impact Summary by Alternative

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<p><b>Socioeconomic Impacts</b></p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The region of influence (ROI) is expected to experience long-term negligible adverse impacts or long-term beneficial impacts depending on the extent of beach closures. The Seashore villages (the villages bordering the Seashore) would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term negligible to minor adverse impacts or long-term beneficial impacts depending on the extent of beach closures. Based on visitation statistics in 2007, there is a greater likelihood of negligible impacts.</p> <p><b>Impacts of the Alternative to Preservation Values:</b> As a result of the long-term minor to major impacts to protected species, impacts to preservation values would be long-term moderate adverse.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term negligible to minor adverse impacts depending on the extent of beach closures. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Based on the current visitation statistics, the probability of negligible impacts is greater than the probability of minor adverse impacts.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term negligible to moderate adverse impacts depending on the extent of beach closures. Based on current visitation statistics there is a greater likelihood of negligible or minor impacts.</p> <p><b>Impacts of the Alternative to Preservation Values:</b> As a result of the long-term minor to moderate impacts to protected species, and addition of protection from seasonal night-driving restrictions, impacts to preservation values would be long-term minor to moderate adverse.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term negligible to minor adverse impacts. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Efforts to improve access through pedestrian corridors, when compared to the no-action alternatives, and changes to access ramps would decrease the impacts on businesses that rely on visitors using the beaches affected by the new corridors and ramps relative to the no-action alternatives. However, the longer ORV closures in the fall months may reduce visitation under alternative C relative to the no-action alternatives and make the mid to high impact scenarios more likely.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term negligible to moderate adverse impacts, with a greater likelihood of adverse impacts relative to the no-action alternatives due to increased fall ORV closures.</p> <p><b>Impacts of the Alternative to Preservation Values:</b> Adverse impacts to preservation values would be less under alternative C, relative to alternatives A and B, and overall impacts to preservation values would be long-term minor adverse with long-term beneficial impacts from the measures taken to protect sensitive species at the Seashore.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term minor adverse impacts. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Compared to the other alternatives, alternative D provides the least access to the beach by ORVs resulting in larger projected adverse impacts.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term moderate to major adverse impacts. The adverse impacts are projected to be larger relative to the other alternatives because of the limits on beach access for ORVs.</p> <p><b>Impacts of the Alternative to Preservation Values:</b> Adverse impacts to preservation values would be less under alternative D, relative to alternatives A and B, and the overall impact to preservation values would be long-term minor adverse, with the closure of sensitive areas to ORVs under alternative D year-round substantially increasing the probability of long-term beneficial impacts relative to all other alternatives.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term negligible to minor adverse impacts. Based on the visitation statistics for 2008, the probability of negligible impacts is greater than the probability of minor adverse impacts. The Seashore villages would experience the majority of the impacts. Like alternative B, alternative E provides for more ORV access and the impacts would likely be on the lower end of the range compared to alternatives C and D.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses may experience long-term negligible to moderate adverse impacts, with a likelihood of adverse impacts in the lower end of the range relative to alternatives C and D due to increased ORV access. closures.</p> <p><b>Impacts of the Alternative to Preservation Values:</b> Adverse impacts to preservation values would be less under alternative E, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status species.</p>	<p><b>Impact of the Alternative to the Region of Influence:</b> The ROI is expected to experience long-term negligible to minor adverse impacts. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Alternative F provides less ORV access to the beach compared to the no-action alternatives, especially with 26 miles of the Seashore designated as year-round VFA. However, some popular areas, such as Cape Point, South Point and Bodie Island spit, would have designated year-round or seasonal ORV routes, subject to resource closures. There are more VFAs for pedestrians because of the ORV route designations, as well as increased parking for pedestrian access. Compared to the no-action alternatives, these measures could increase overall visitation and increase the probability that revenue impacts would be at the low end of the estimated range rather than the high end.</p> <p><b>Impact of the Alternative to Small Business:</b> Small businesses would experience long-term negligible to moderate adverse impacts. The extra efforts to increase ORV access and pedestrian access should increase the probability that the impacts are on the low rather than high end of the range.</p> <p><b>Impacts of the Alternative to Preservation Values:</b> Adverse impacts to preservation values would be less under alternative F, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse, with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status species.</p>

Impact Topic	Alternative A: No Action—Continuation of Management under the Interim Strategy	Alternative B: No Action—Continuation of Management under Consent Decree	Alternative C: Seasonal Management	Alternative D: Increased Predictability and Simplified Management	Alternative E: Variable Access and Maximum Management	Alternative F: NPS Preferred Alternative
<b>Socioeconomic Impacts (continued)</b>	<p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>	<p><b>Cumulative Impacts:</b> Cumulative Impacts for socioeconomics to the ROI would be long-term negligible to minor adverse or beneficial, depending on national economic conditions.</p>
<b>Seashore Operations and Management</b>	<p><b>Impacts of the Alternative:</b> Overall, each division could accomplish within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts to all areas of Seashore operations.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term negligible adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would be an increase in duties related to ORV management for staff in the park management/administration, visitor protection, and resources management divisions. Although these staff could accomplish these duties within existing budgets, it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the park outside of ORV management, resulting in long-term moderate adverse impacts. Staff in facility management and Interpretation would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts to these two divisions. Overall, impacts to Seashore operations would be long-term moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term negligible to minor adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would be an increase in duties related to ORV management for staff in the park management/administration, resources management, facility management divisions that could result in some re-prioritization of work, but would not be expected to impact overall duties resulting in long-term minor adverse impacts. In the visitor protection division, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the park outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts Overall, impacts to Seashore operations would be long-term, minor to moderate (but mostly minor) adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term, minor to moderate, adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would long-term negligible adverse impacts to all divisions as each division would be expected to execute their duties from existing, or expected, funding sources, without having to re-prioritize staff. These impacts are due, in part, to the expected cost recovery under the proposed permit program. Overall impacts to Seashore operations would be long-term negligible adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term negligible adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would be an increase in duties related to ORV management for staff in the facility management division that could result in some re-prioritization of work, but would not be expected to impact overall duties resulting in long-term minor adverse impacts. In the park management/administration division, the increase in ORV related responsibilities would be similar, but slightly greater with long-term minor to moderate adverse impacts. In the visitor protection and resources management divisions, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the park outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the Interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts. Overall impacts to Seashore operations would be long-term moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term minor to moderate adverse.</p>	<p><b>Impacts of the Alternative:</b> Overall, there would be an increase in duties related to ORV management for staff in the facility management and park management/administration divisions that could result in some re-prioritization of work, but would not be expected to impact overall duties resulting in long-term minor adverse impacts. In the visitor protection and resources management divisions, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the park outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts. Overall impacts to Seashore operations would be long-term minor to moderate adverse.</p> <p><b>Cumulative Impacts:</b> Cumulative impacts to Seashore Operations and Management would be long-term minor to moderate adverse.</p>



Legend

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route
- Safety Closure

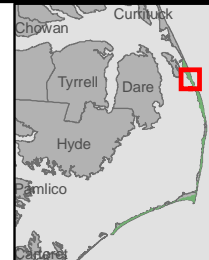
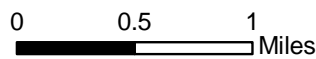
ORV Routes

- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

Alternatives A and B

Map 1 of 7





**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route
- Safety Closure

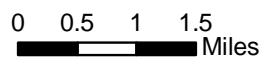
**ORV Routes**

- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternatives A and B**

Map 2 of 7







**Legend**

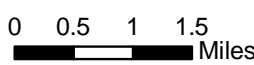
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- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches

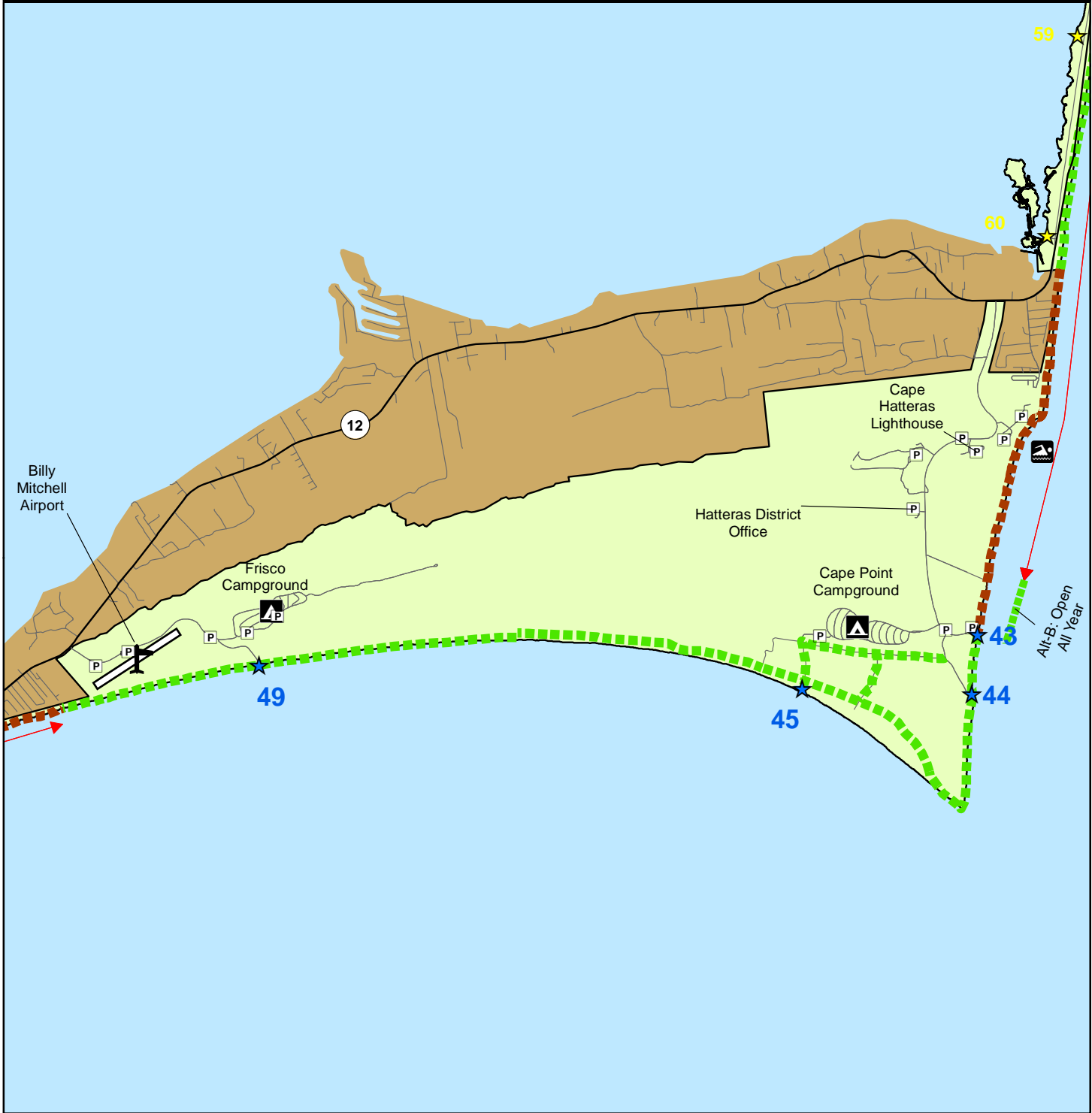
- ORV Ramps**
- Oceanside Ramps
  - Soundside Ramps
  - US Hwy
  - State Hwy
  - Other
  - Ferry Route
  - Safety Closure

- ORV Routes**
- Open to ORV all year\*
  - Seasonally open/closed\*
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternatives A and B**

Map 3 of 7





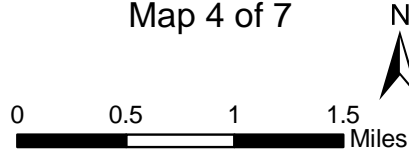
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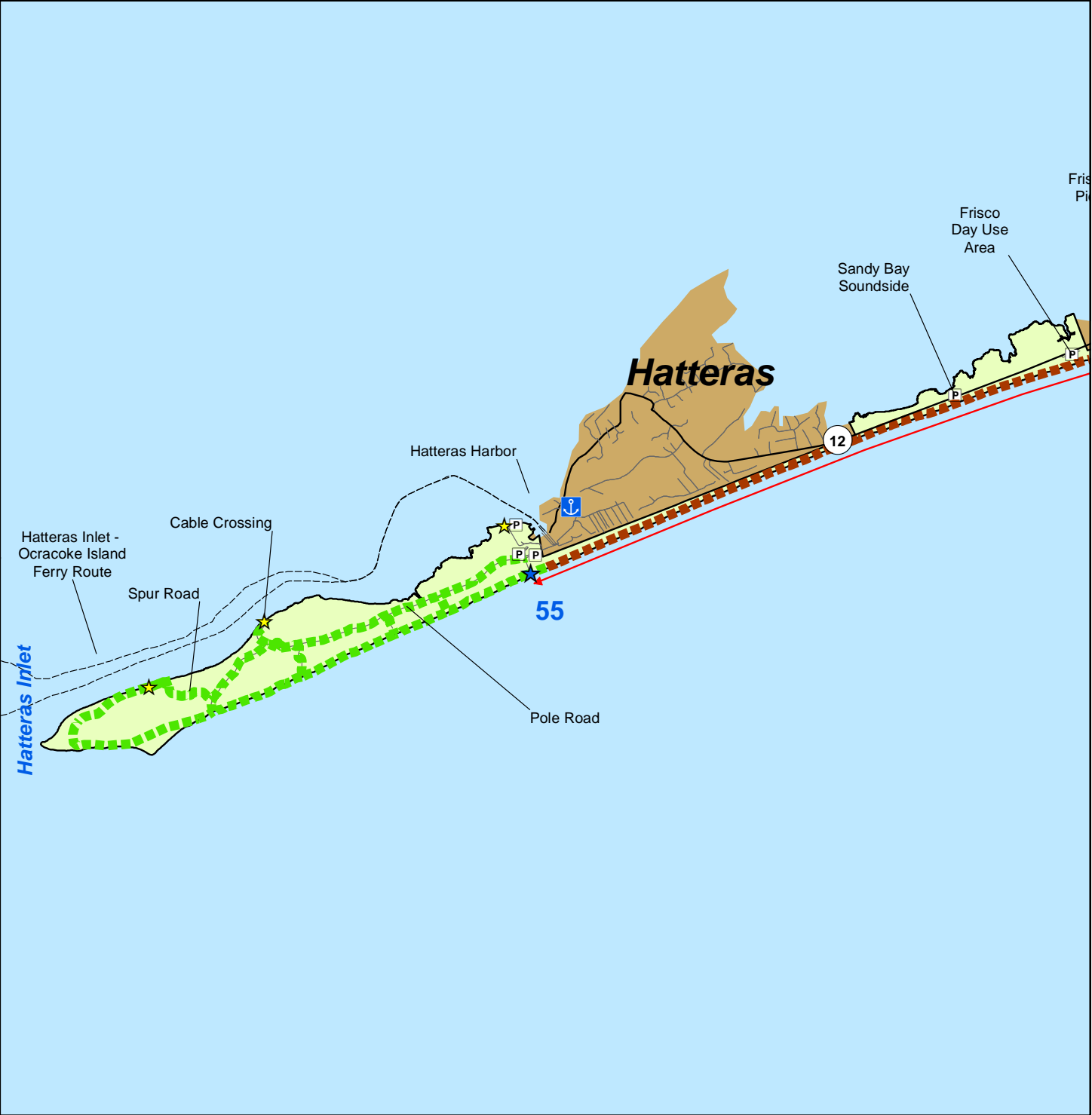
- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route
- Safety Closure

- ORV Routes**
- Open to ORV all year\*
- Seasonally open/closed\*
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternatives A and B**

Map 4 of 7





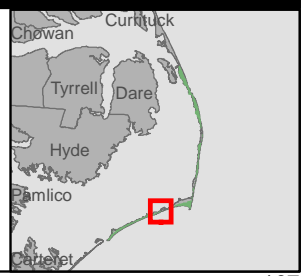
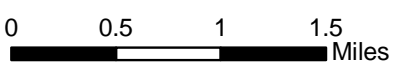
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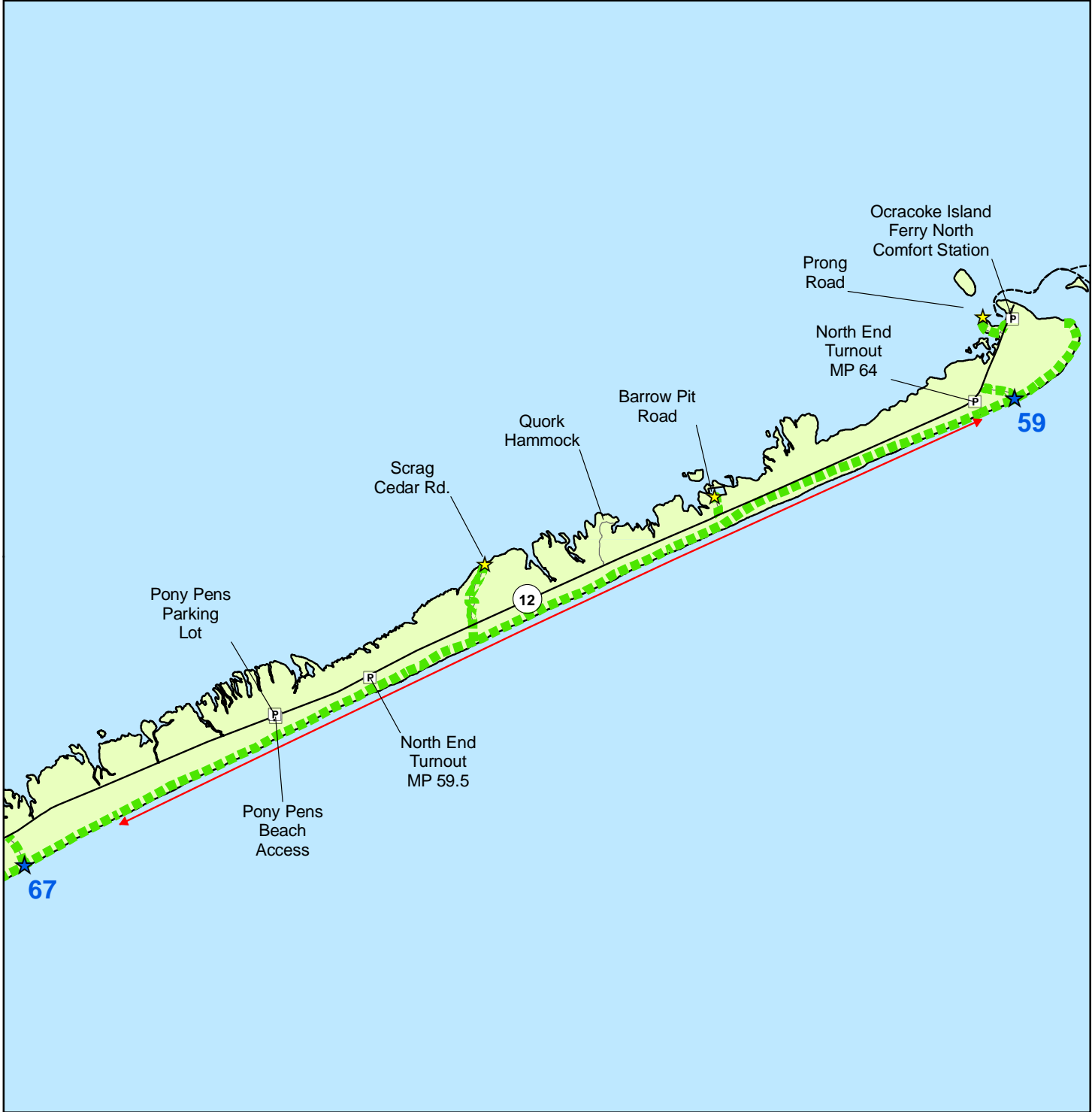
- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- ★ Oceanside Ramps
- ★ Soundside Ramps
- US Hwy
- State Hwy
- Other
- - - Ferry Route
- ← → Safety Closure

- ORV Routes**
- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternatives A and B**  
Map 5 of 7





**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps: Oceanside Ramps
- ORV Ramps: Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route
- Safety Closure

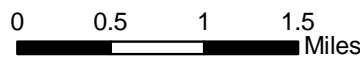
**ORV Routes**

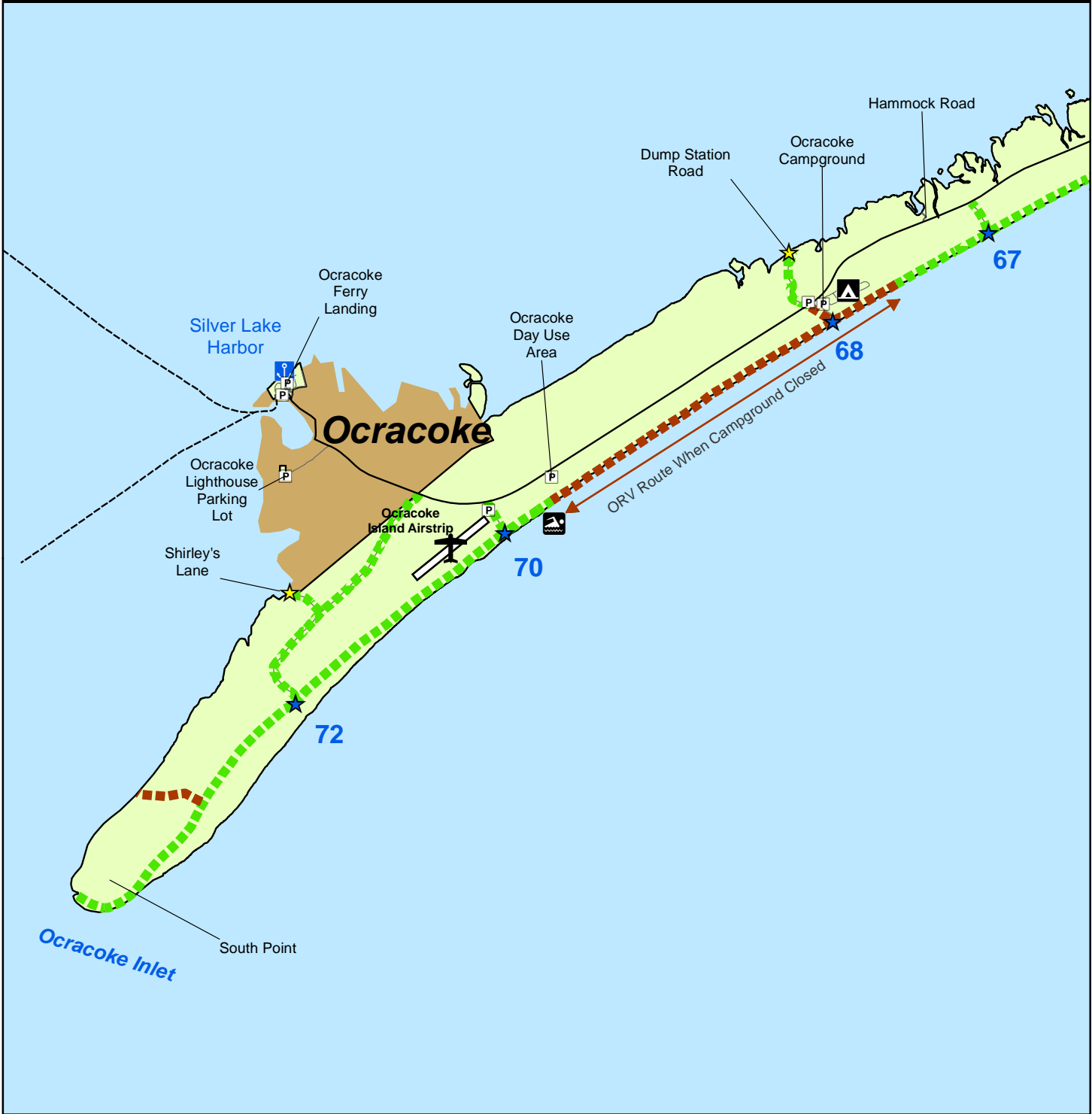
- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternatives A and B**

Map 6 of 7





**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route
- Safety Closure

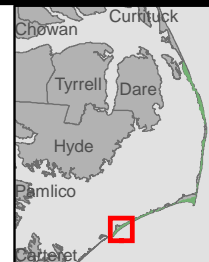
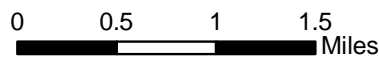
**ORV Routes**

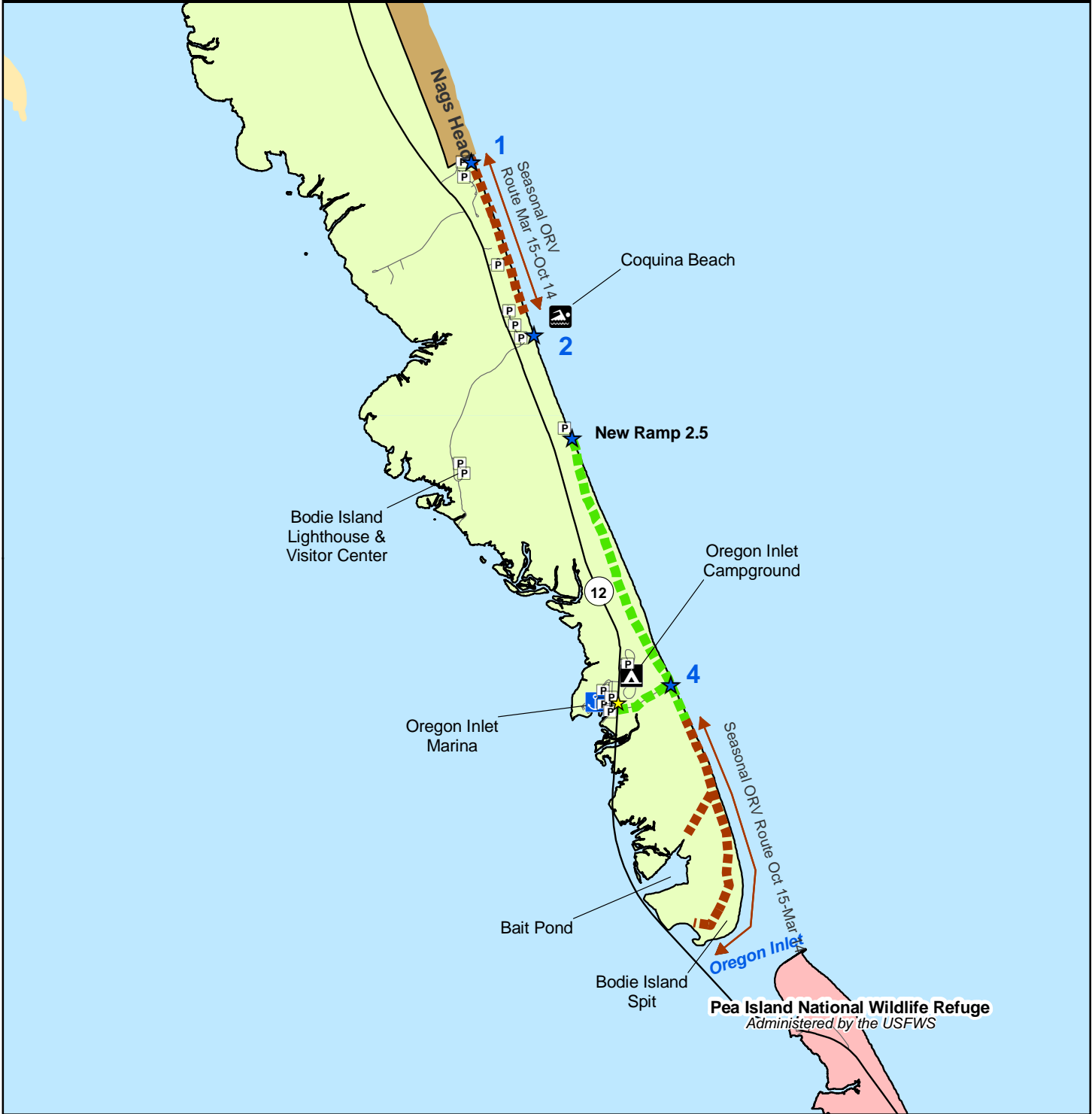
- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternatives A and B**

Map 7 of 7





**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

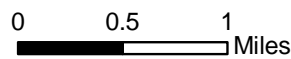
**ORV Routes**

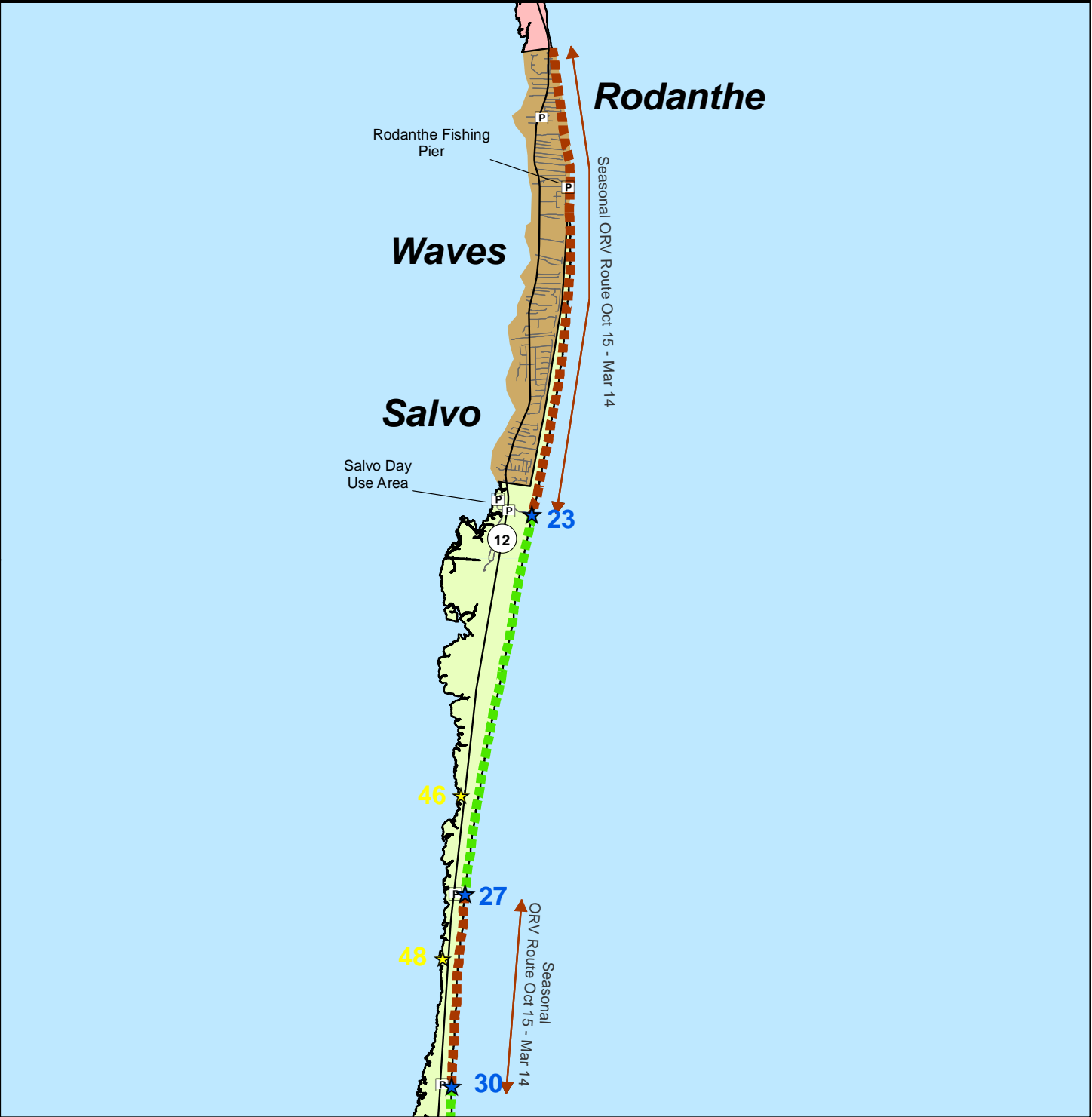
- Open to ORV all year\*
- Seasonally Open to ORV\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative C**

Map 1 of 7





**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

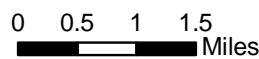
**ORV Routes**

- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative C**

Map 2 of 7





**Legend**

- CAHA Boundary
  - PINWR Boundary
  - Villages
  - Boat Ramps
  - Campgrounds
  - Existing Parking Lots
  - Swim Beaches
- ORV Ramps**
- Oceanside Ramps
  - Soundside Ramps
  - US Hwy
  - State Hwy
  - Other
  - Ferry Route

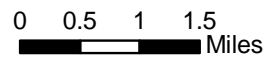
**ORV Routes**

- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative C**

Map 3 of 7







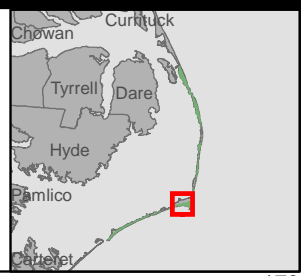
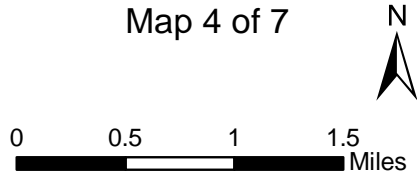
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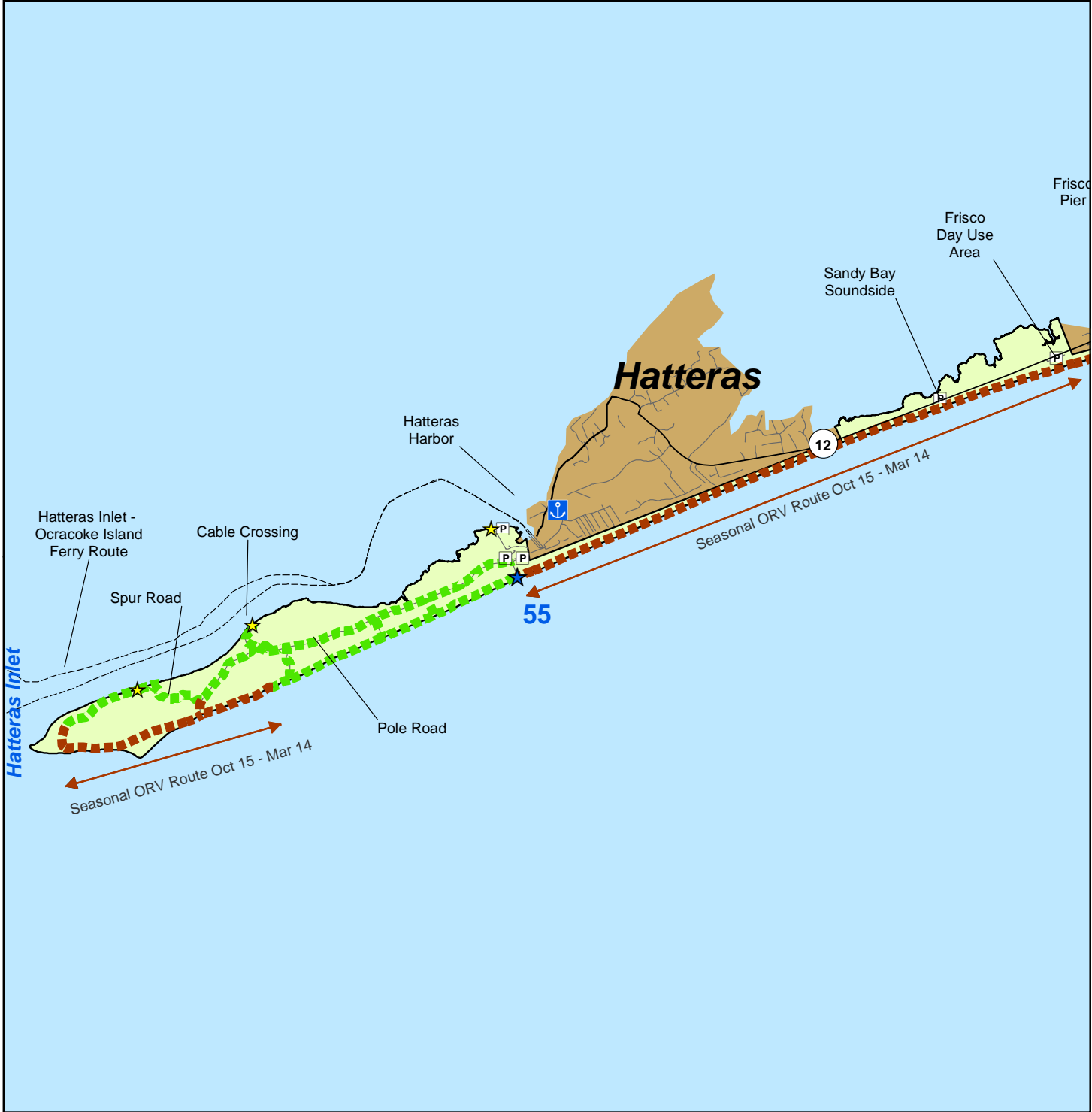
- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- ★ Oceanside Ramps
- ★ Soundside Ramps
- US Hwy
- State Hwy
- Other
- - - Ferry Route

- ORV Routes**
- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative C**  
Map 4 of 7





**Legend**

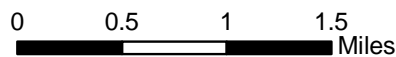
- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

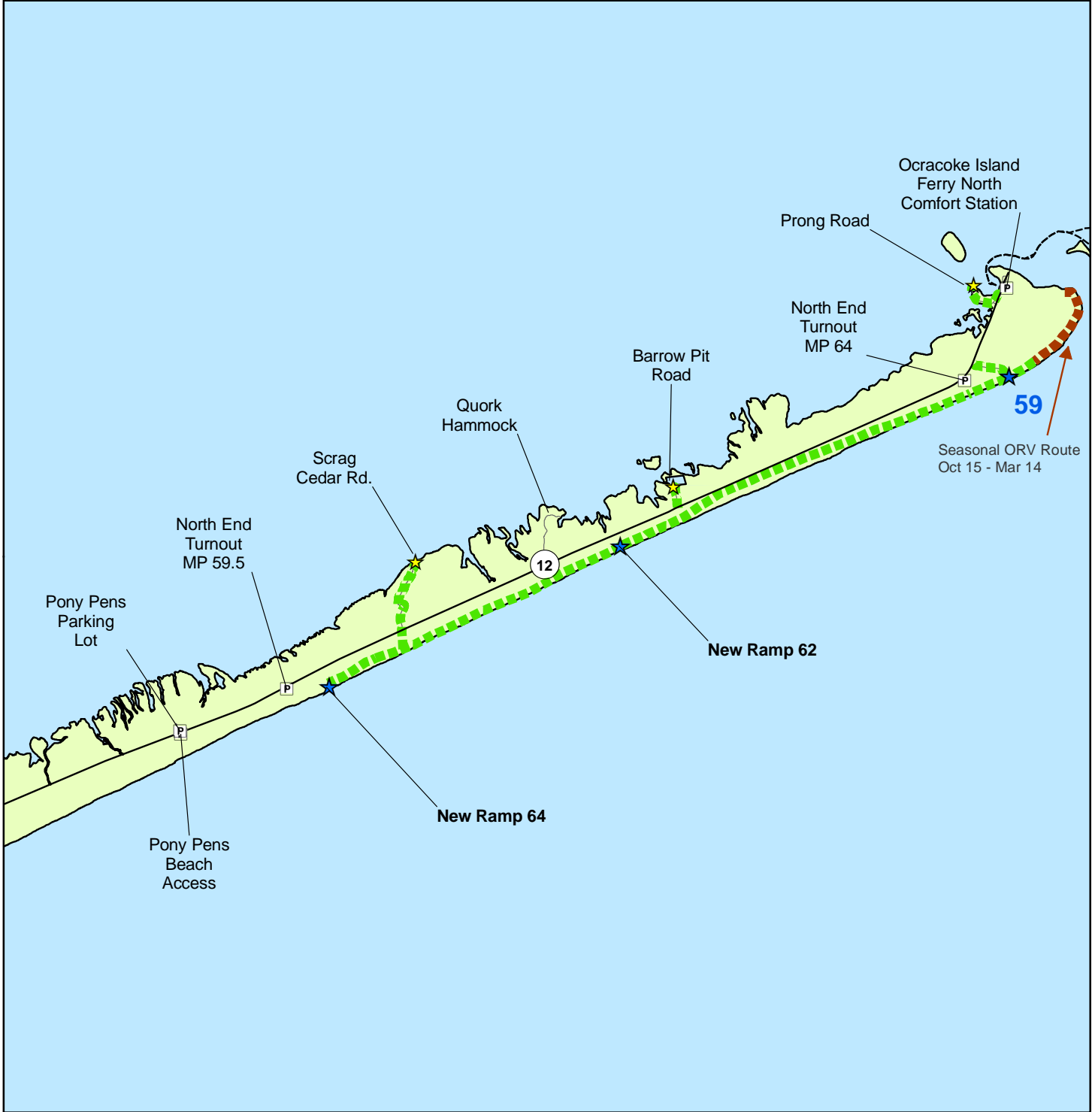
- ORV Routes**
- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative C**

Map 5 of 7





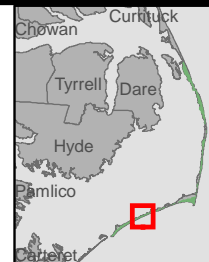
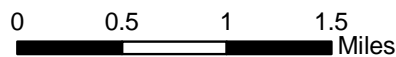
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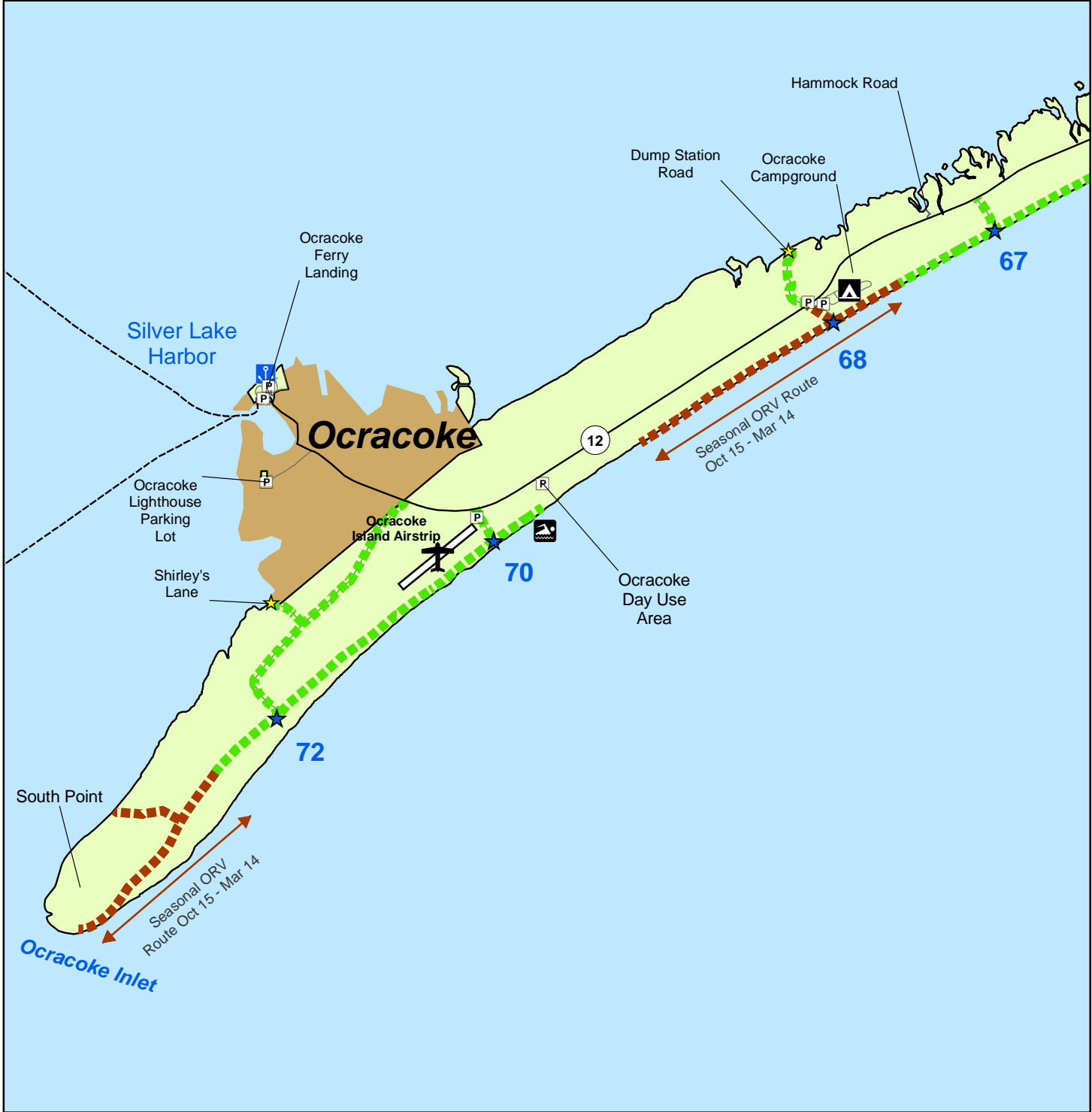
- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

- ORV Routes**
- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative C**  
Map 6 of 7





**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

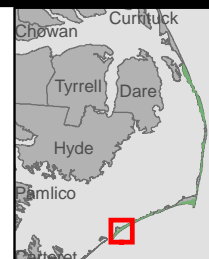
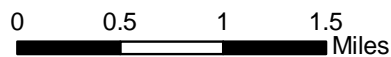
**ORV Routes**

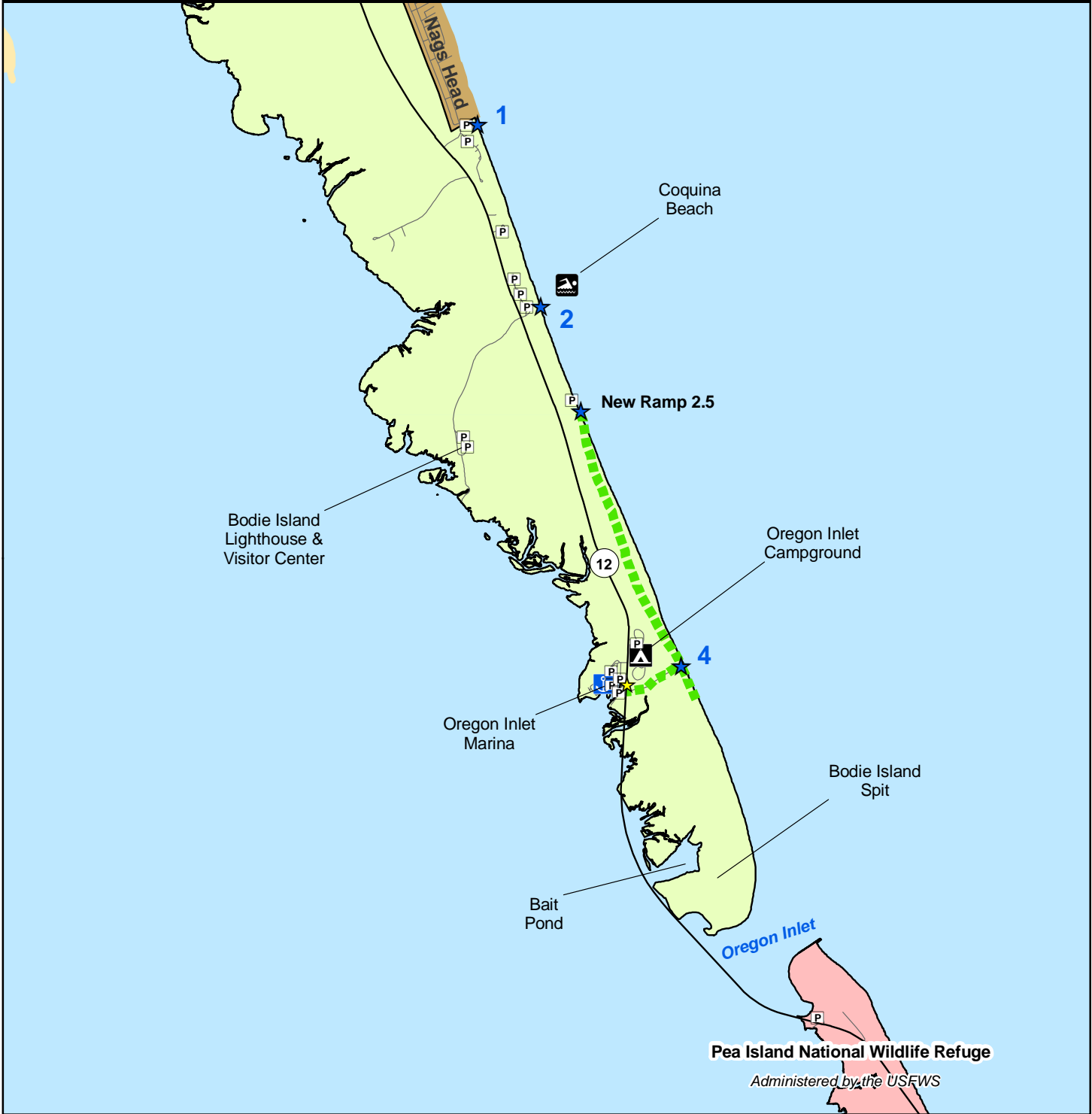
- Open to ORV all year\*
- Seasonally open/closed\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative C**

Map 7 of 7





**Legend**

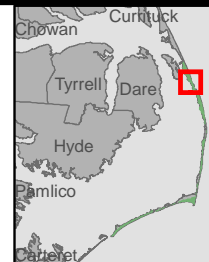
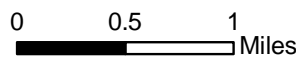
- CAHA Boundary
  - PINWR Boundary
  - Villages
  - Boat Ramps
  - Campgrounds
  - Existing Parking Lots
  - Swim Beaches
- ORV Ramps**
- Oceanside Ramps
  - Soundside Ramps
- ORV Routes**
- US Hwy
  - State Hwy
  - Other
  - Ferry Route

**ORV Routes**  
■ ■ ■ ■ Open to ORV all year\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative D**

Map 1 of 7





**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

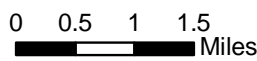
**ORV Routes**

Open to ORV all year\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative D**

Map 2 of 7





**Legend**

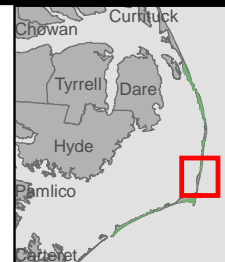
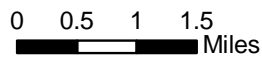
- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches

- ORV Ramps**
- Oceanside Ramps
  - Soundside Ramps
  - US Hwy
  - State Hwy
  - Other
  - Ferry Route

- ORV Routes**
- Open to ORV all year\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative D**  
Map 3 of 7





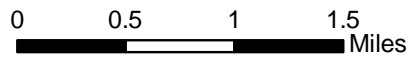
**Legend**

- CAHA Boundary
  - PINWR Boundary
  - Villages
  - Boat Ramps
  - Campgrounds
  - Existing Parking Lots
  - Swim Beaches
- ORV Ramps**
- ★ Oceanside Ramps
  - ★ Soundside Ramps
- US Hwy  
— State Hwy  
— Other  
- - - Ferry Route

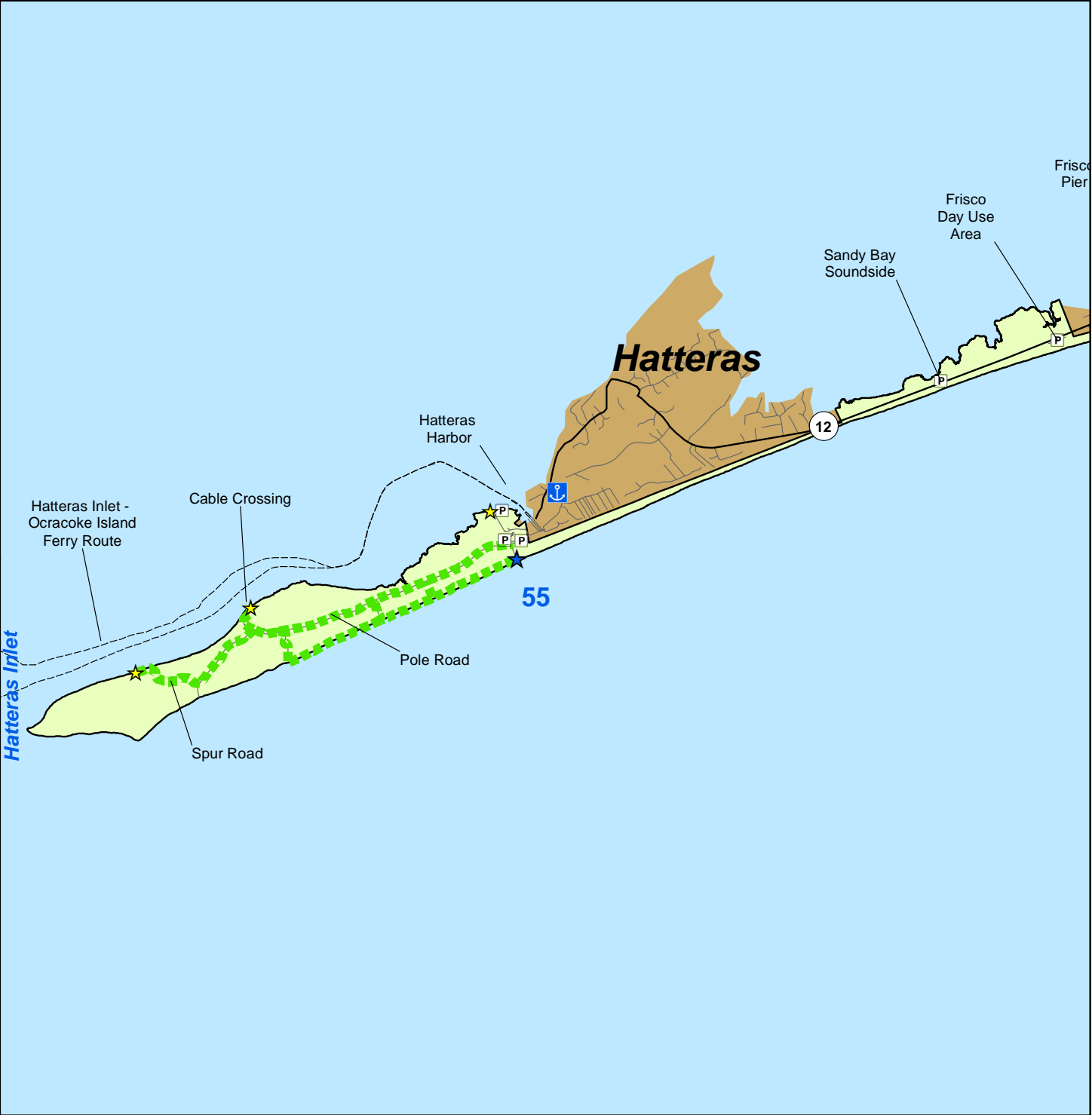
- ORV Routes**
- Open to ORV all year\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative D**  
Map 4 of 7







**Legend**

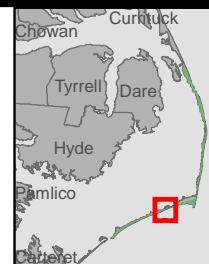
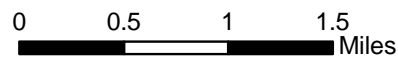
- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

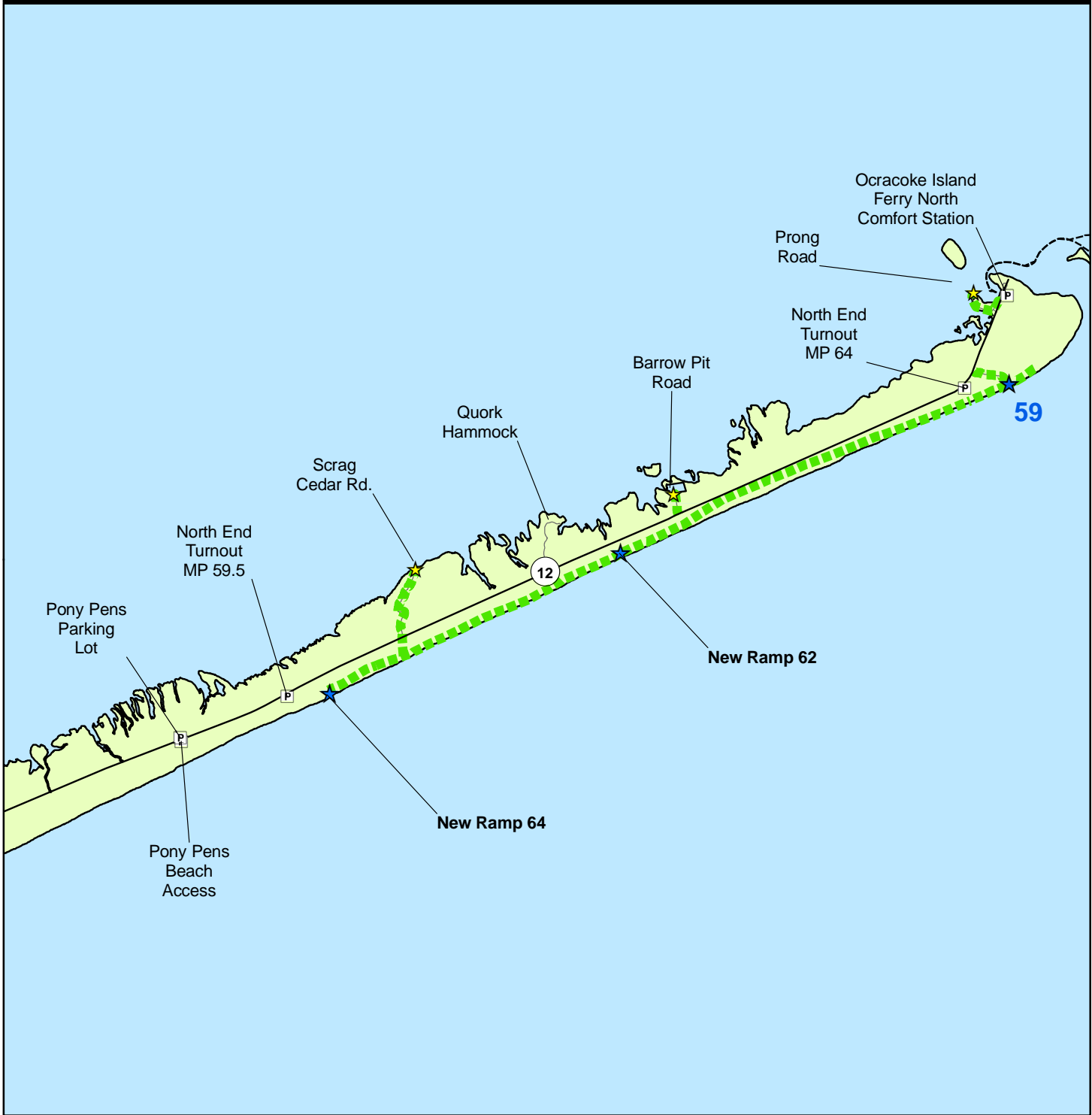
- ORV Routes**
- Open to ORV all year\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative D**

Map 5 of 7





**Legend**

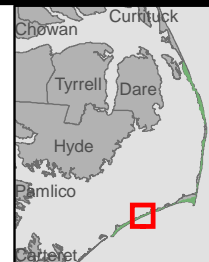
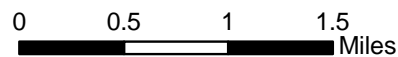
- CAHA Boundary
  - PINWR Boundary
  - Villages
  - Boat Ramps
  - Campgrounds
  - Existing Parking Lots
  - Swim Beaches
- ORV Ramps**
- Oceanside Ramps
  - Soundside Ramps
- ORV Routes**
- US Hwy
  - State Hwy
  - Other
  - Ferry Route

**ORV Routes**

Open to ORV all year\*

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative D**  
Map 6 of 7



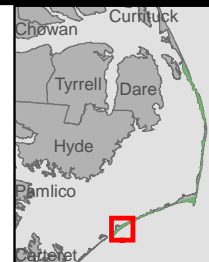
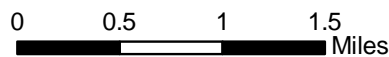


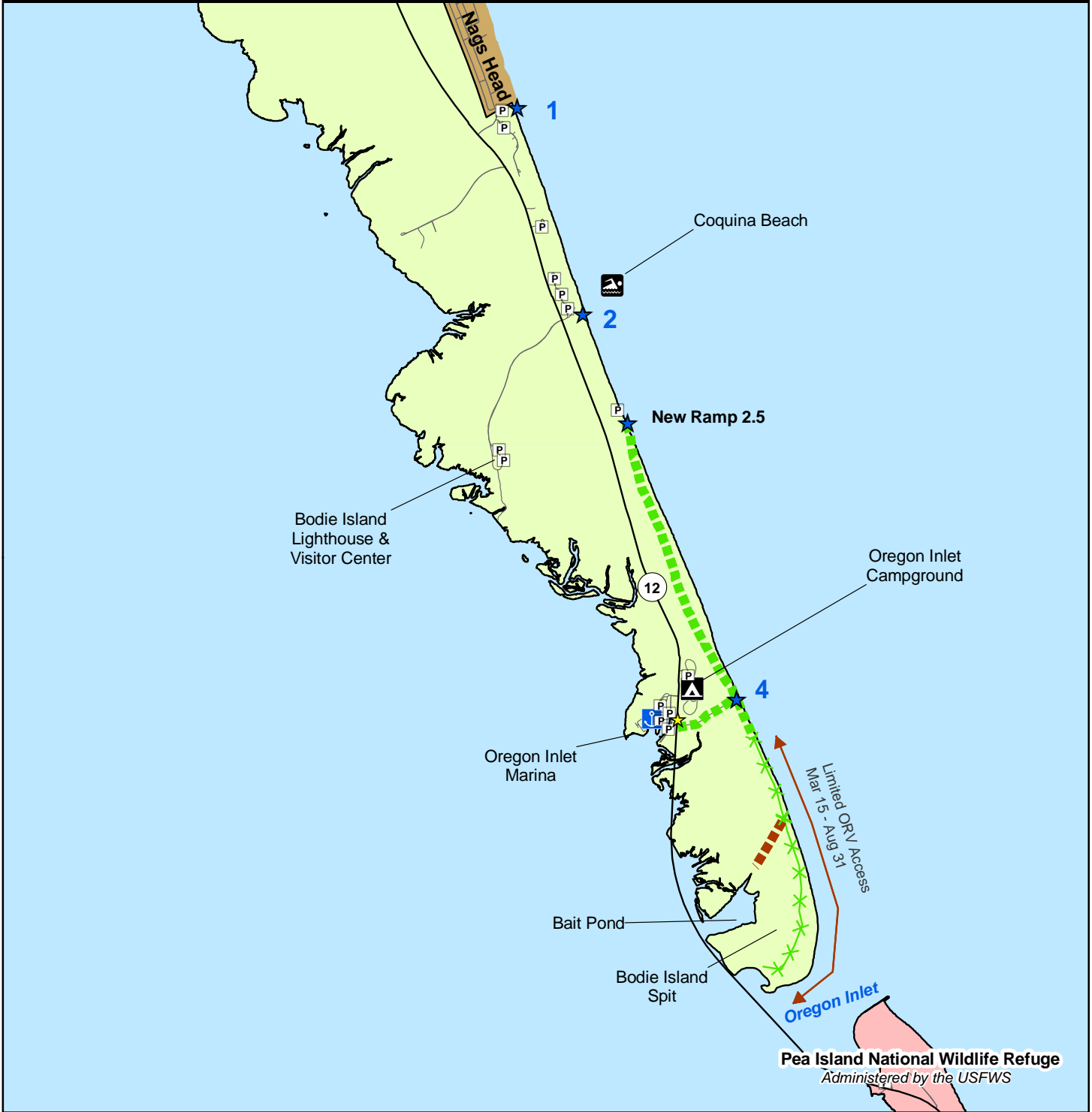
**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

- ORV Routes**
- Open to ORV all year\*
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative D**  
Map 7 of 7



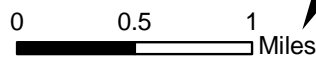


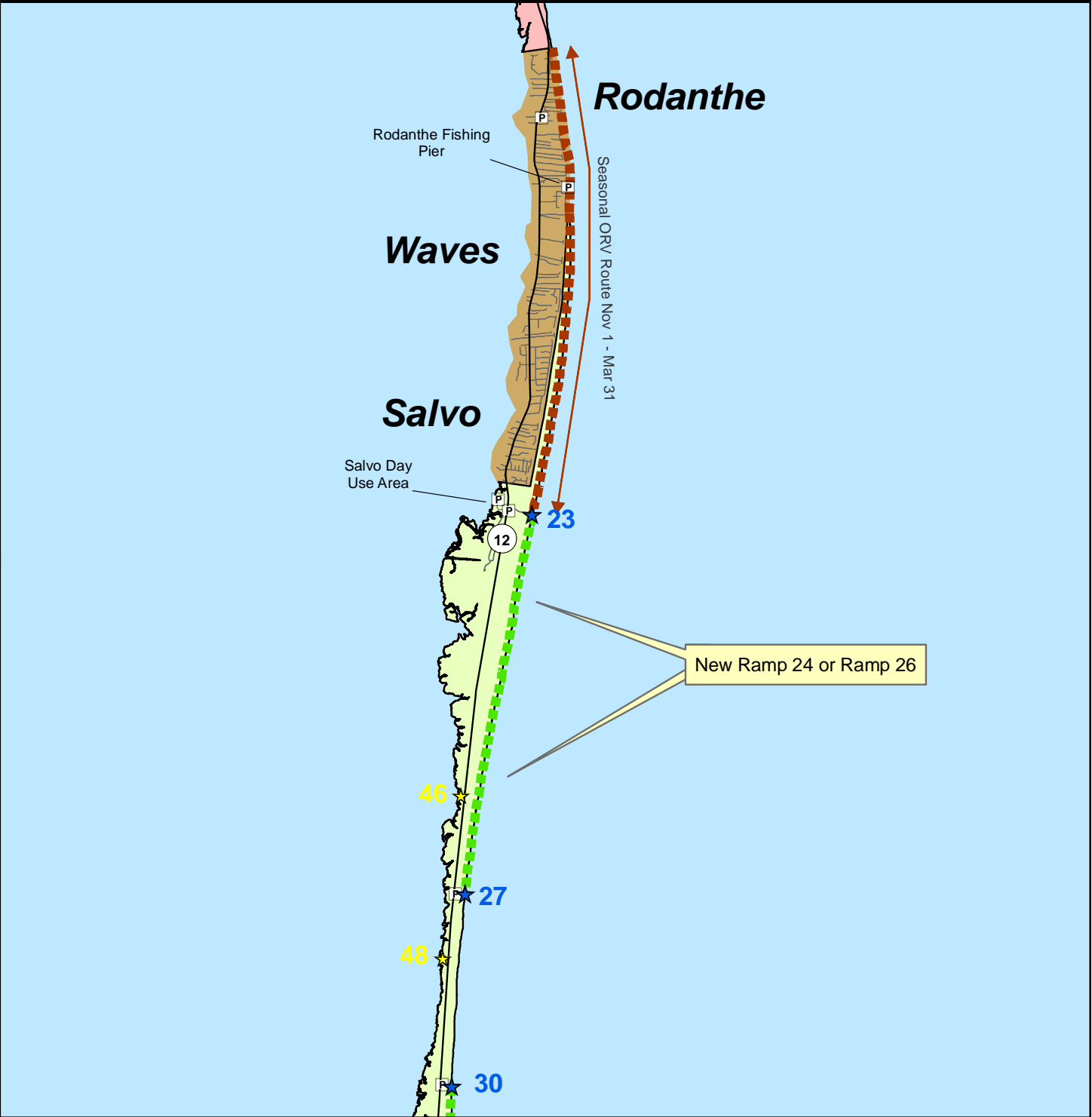
**Legend**

- |                       |                  |                               |
|-----------------------|------------------|-------------------------------|
| CAHA Boundary         | <b>ORV Ramps</b> | <b>ORV Routes</b>             |
| PINWR Boundary        | Oceanside Ramps  | Open to ORV all year          |
| Villages              | Soundside Ramps  | Seasonally open/closed        |
| Boat Ramps            | US Hwy           | ORV Year Round w/restrictions |
| Campgrounds           | State Hwy        |                               |
| Existing Parking Lots | Other            |                               |
| Swim Beaches          | Ferry Route      |                               |
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative E**

Map 1 of 7



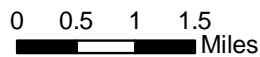


**Legend**

- |                       |                  |                               |
|-----------------------|------------------|-------------------------------|
| CAHA Boundary         | <b>ORV Ramps</b> | <b>ORV Routes</b>             |
| PINWR Boundary        | Oceanside Ramps  | Open to ORV all year          |
| Villages              | Soundside Ramps  | Seasonally open/closed        |
| Boat Ramps            | US Hwy           | ORV Year Round w/restrictions |
| Campgrounds           | State Hwy        |                               |
| Existing Parking Lots | Other            |                               |
| Swim Beaches          | Ferry Route      |                               |
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative E**

Map 2 of 7



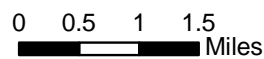


**Legend**

- |                       |                  |                               |
|-----------------------|------------------|-------------------------------|
| CAHA Boundary         | <b>ORV Ramps</b> | <b>ORV Routes</b>             |
| PINWR Boundary        | Oceanside Ramps  | Open to ORV all year          |
| Villages              | Soundside Ramps  | Seasonally open/closed        |
| Boat Ramps            | US Hwy           | ORV Year Round w/restrictions |
| Campgrounds           | State Hwy        |                               |
| Existing Parking Lots | Other            |                               |
| Swim Beaches          | Ferry Route      |                               |
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative E**

**Map 3 of 7**



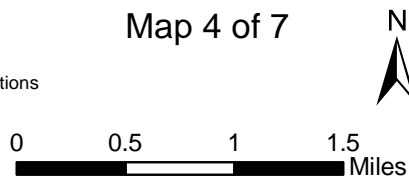


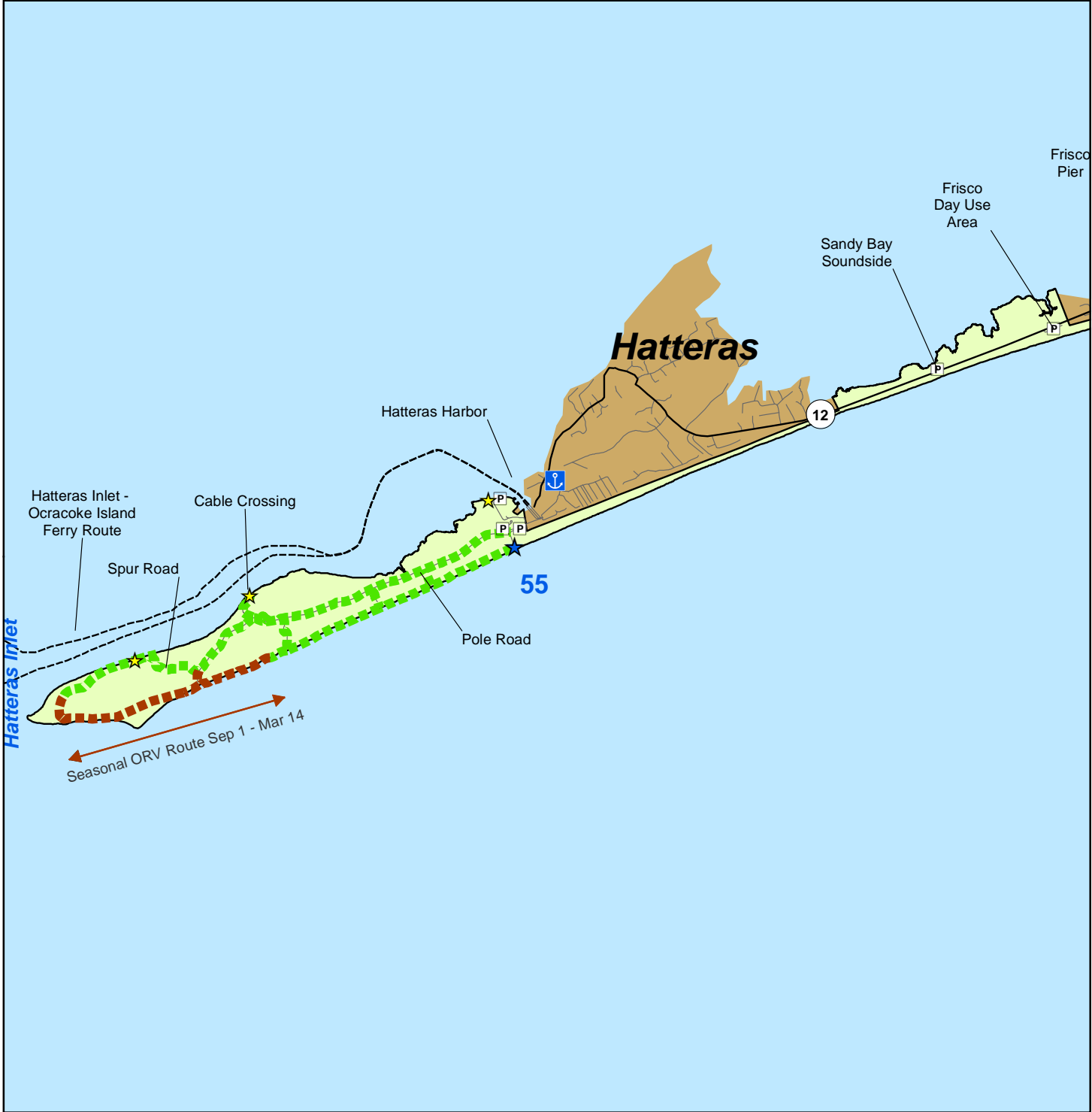
**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

- ORV Routes**
- Open to ORV all year
- Seasonally open/closed
- ORV Year Round w/restrictions
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative E**  
Map 4 of 7





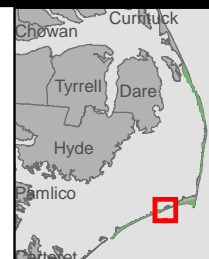
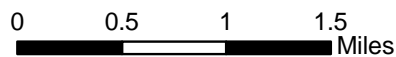
**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

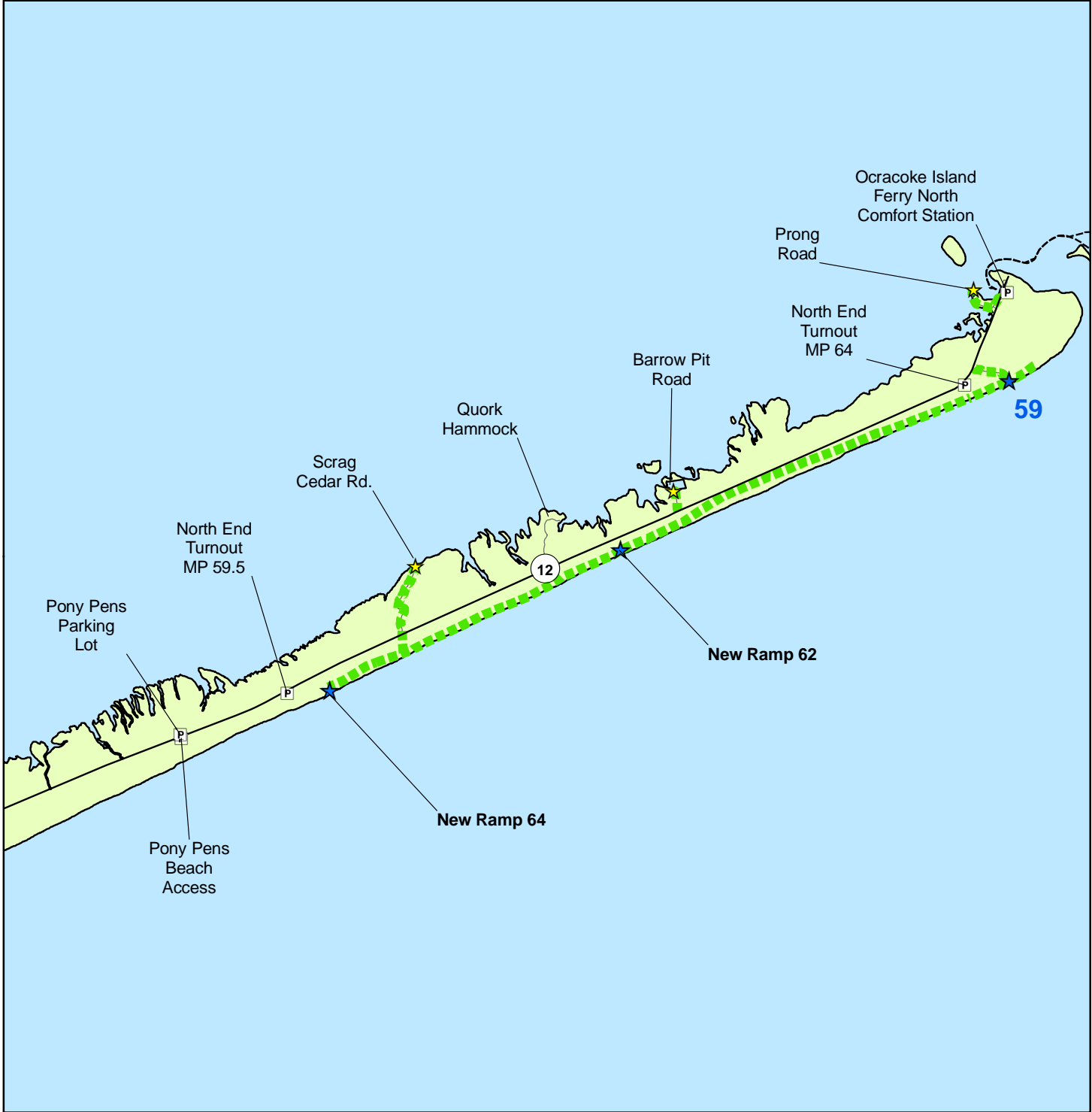
- ORV Routes**
- Open to ORV all year
- Seasonally open/closed
- ORV Year Round w/restrictions

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative E**  
Map 5 of 7



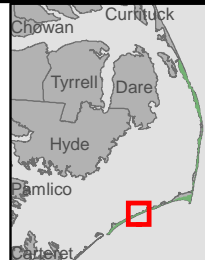
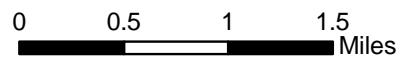


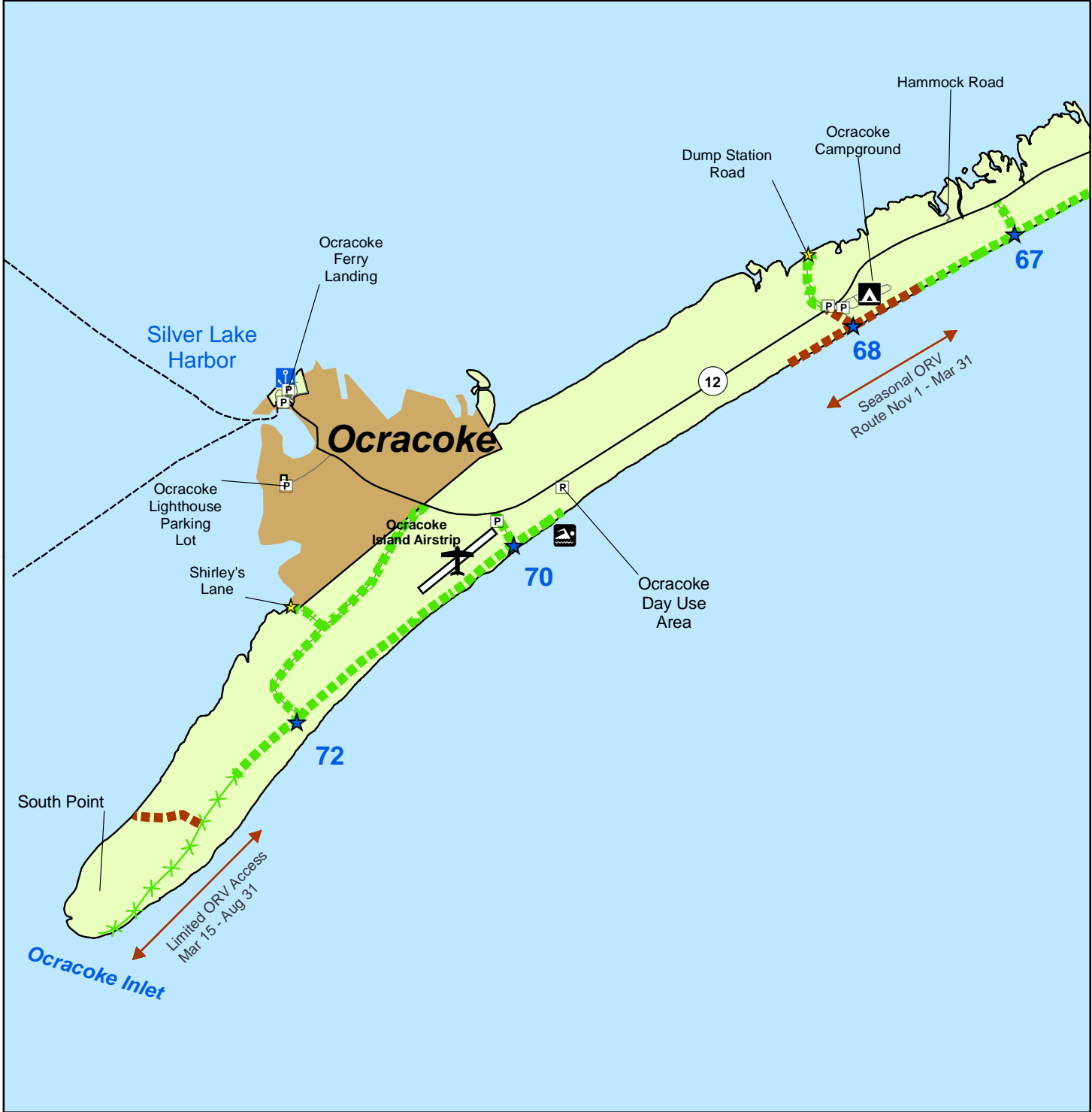


**Legend**

- |                       |                  |                               |
|-----------------------|------------------|-------------------------------|
| CAHA Boundary         | <b>ORV Ramps</b> | <b>ORV Routes</b>             |
| PINWR Boundary        | Oceanside Ramps  | Open to ORV all year          |
| Villages              | Soundside Ramps  | Seasonally open/closed        |
| Boat Ramps            | US Hwy           | ORV Year Round w/restrictions |
| Campgrounds           | State Hwy        |                               |
| Existing Parking Lots | Other            |                               |
| Swim Beaches          | Ferry Route      |                               |
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative E**  
Map 6 of 7





**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

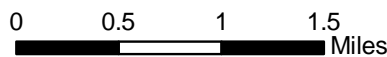
**ORV Routes**

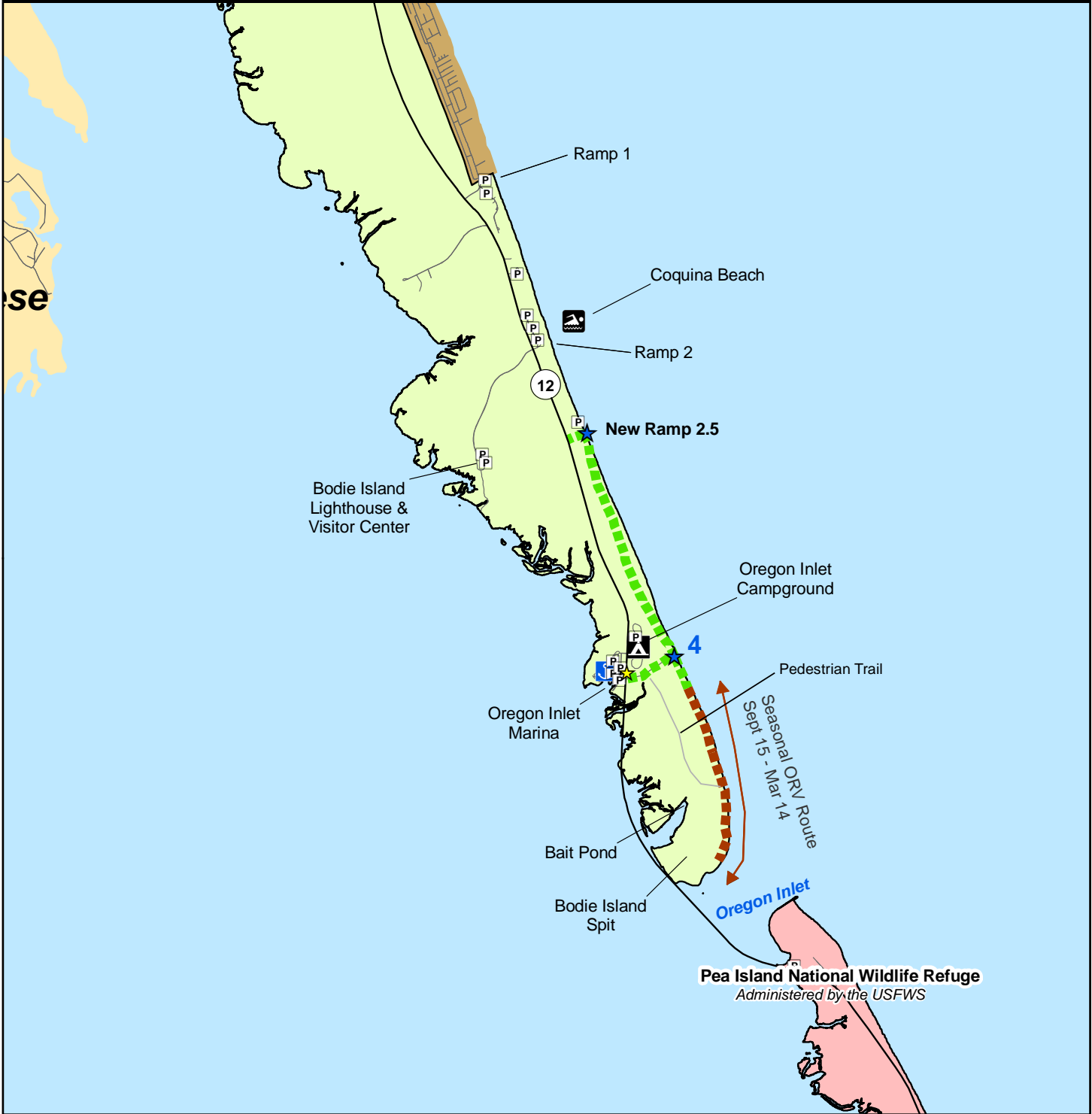
- Open to ORV all year
- Seasonally open/closed
- x ORV Year Round w/restrictions

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative E**

Map 7 of 7



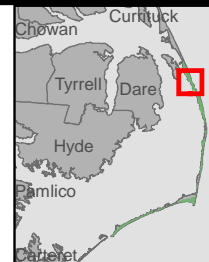
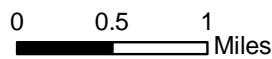


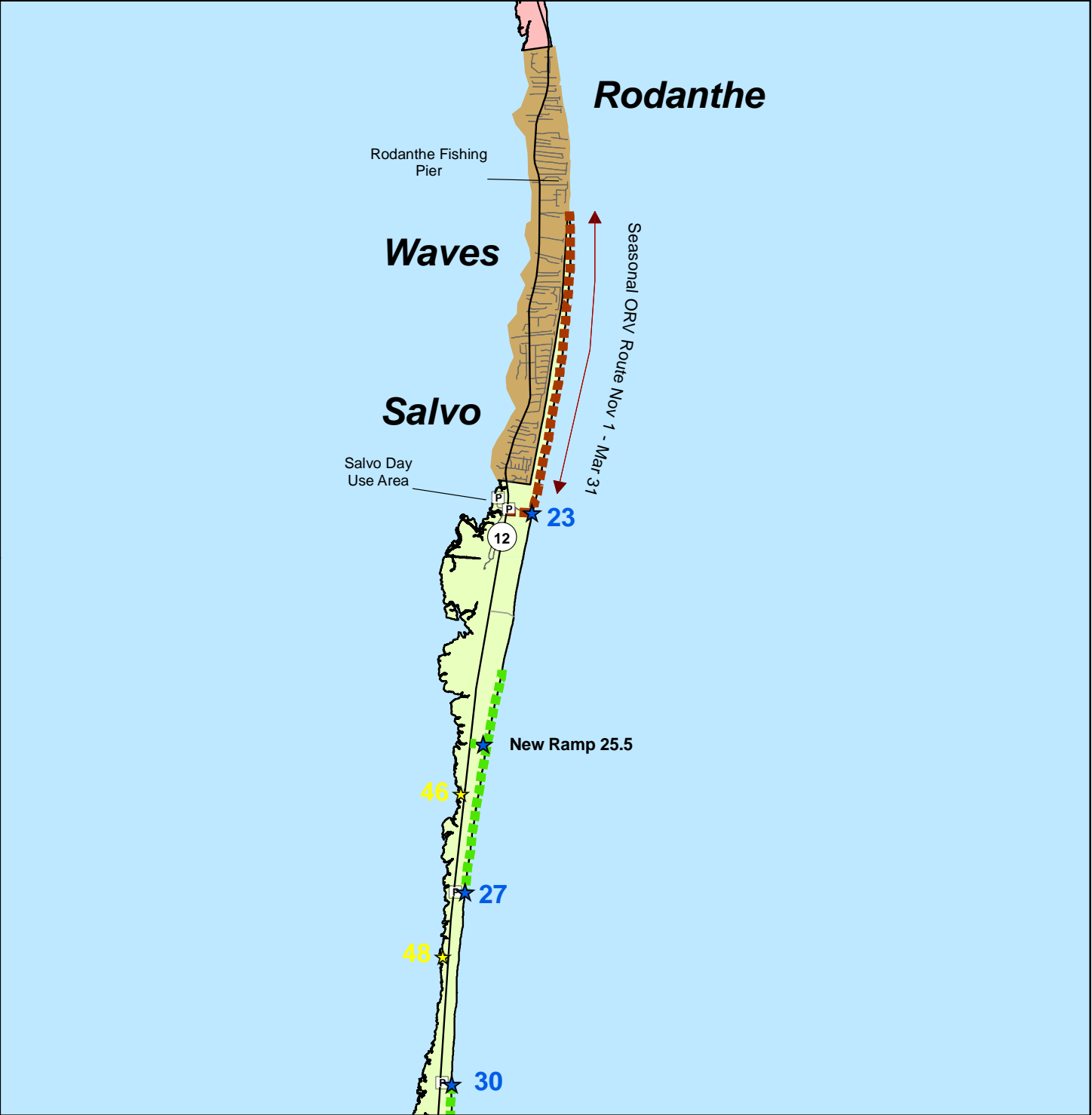
**Legend**

- |                       |                  |                        |
|-----------------------|------------------|------------------------|
| CAHA Boundary         | <b>ORV Ramps</b> | <b>ORV Routes</b>      |
| PINWR Boundary        | Oceanside Ramps  | Open to ORV all year   |
| Villages              | Soundside Ramps  | Seasonally open/closed |
| Boat Ramps            | US Hwy           |                        |
| Campgrounds           | State Hwy        |                        |
| Existing Parking Lots | Other            |                        |
| Swim Beaches          | Ferry Route      |                        |
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative F**

Map 1 of 7





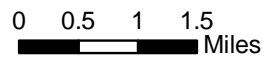
**Legend**

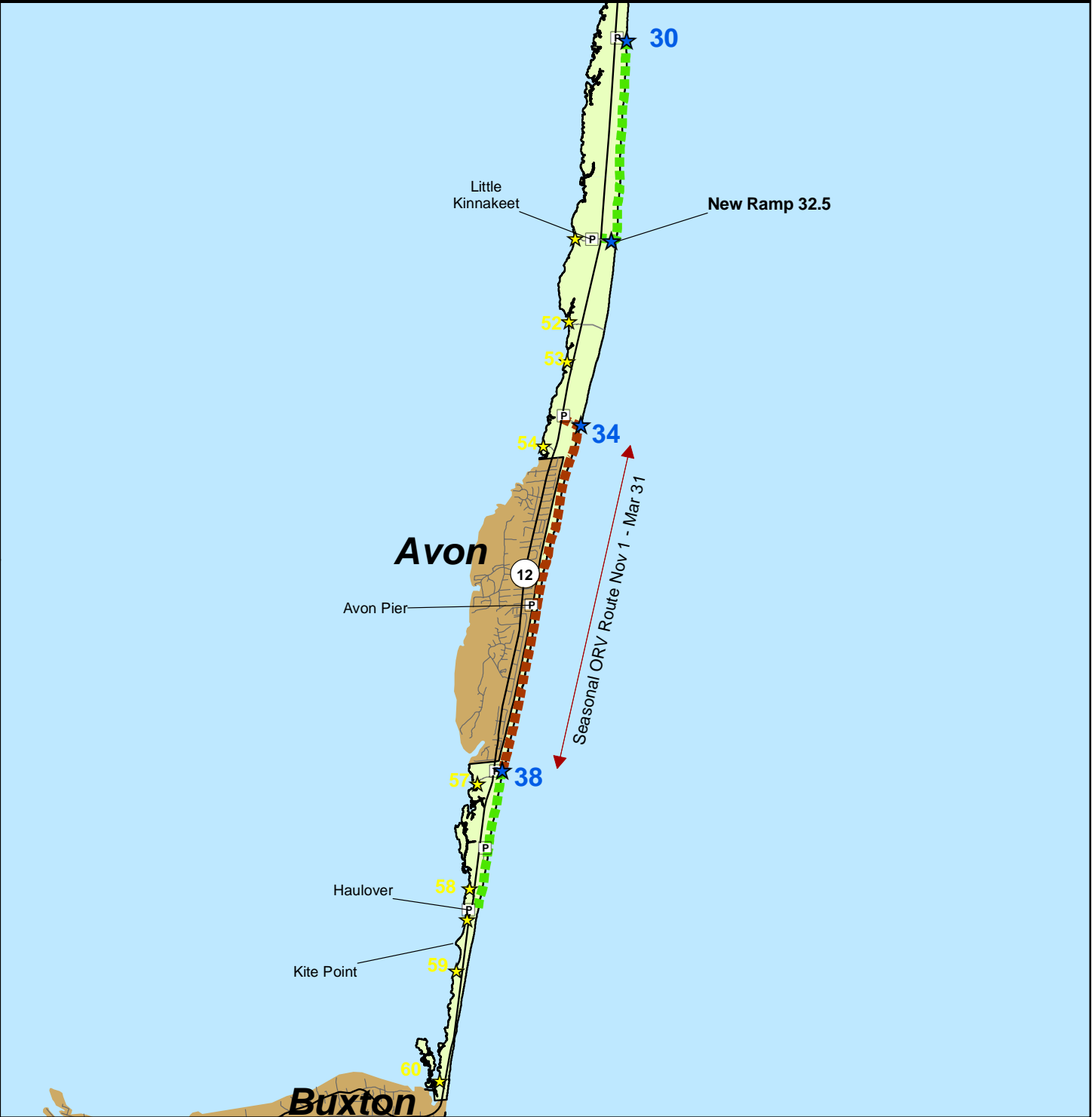
- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

- ORV Routes**
- Open to ORV all year
- Seasonally open/closed

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative F**  
Map 2 of 7





**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

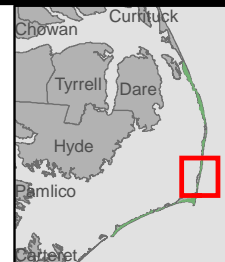
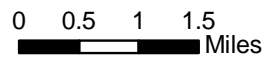
**ORV Routes**

- Open to ORV all year
- Seasonally open/closed

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative F**

Map 3 of 7





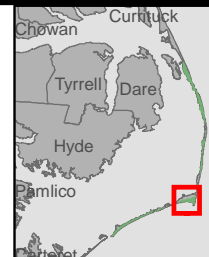
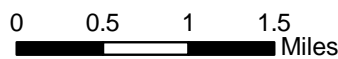
**Legend**

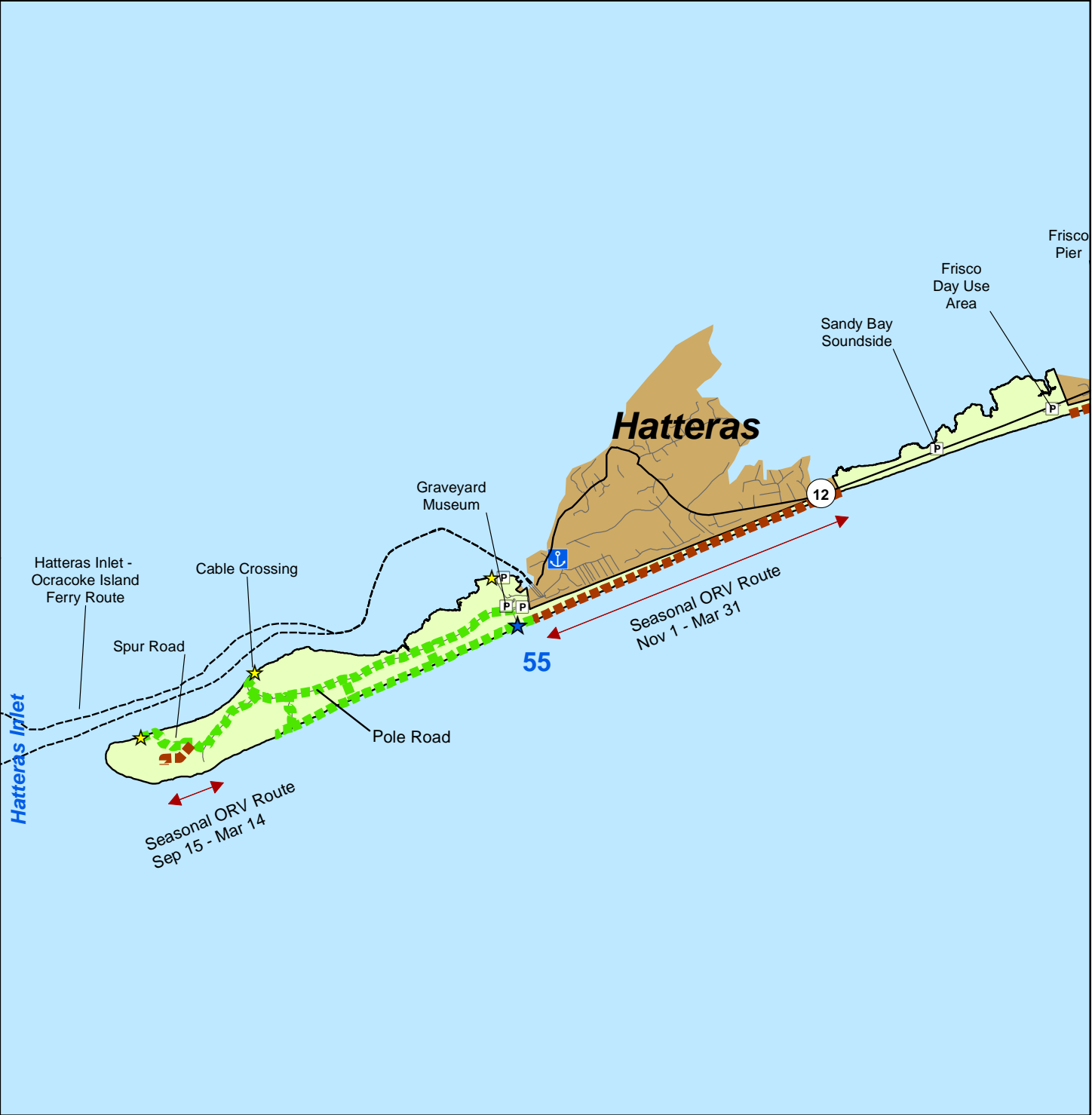
- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

- ORV Routes**
- Open to ORV all year
- Seasonally open/closed

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative F**  
Map 4 of 7

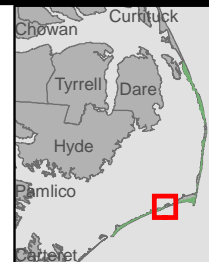
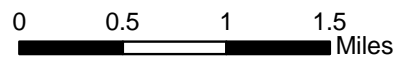


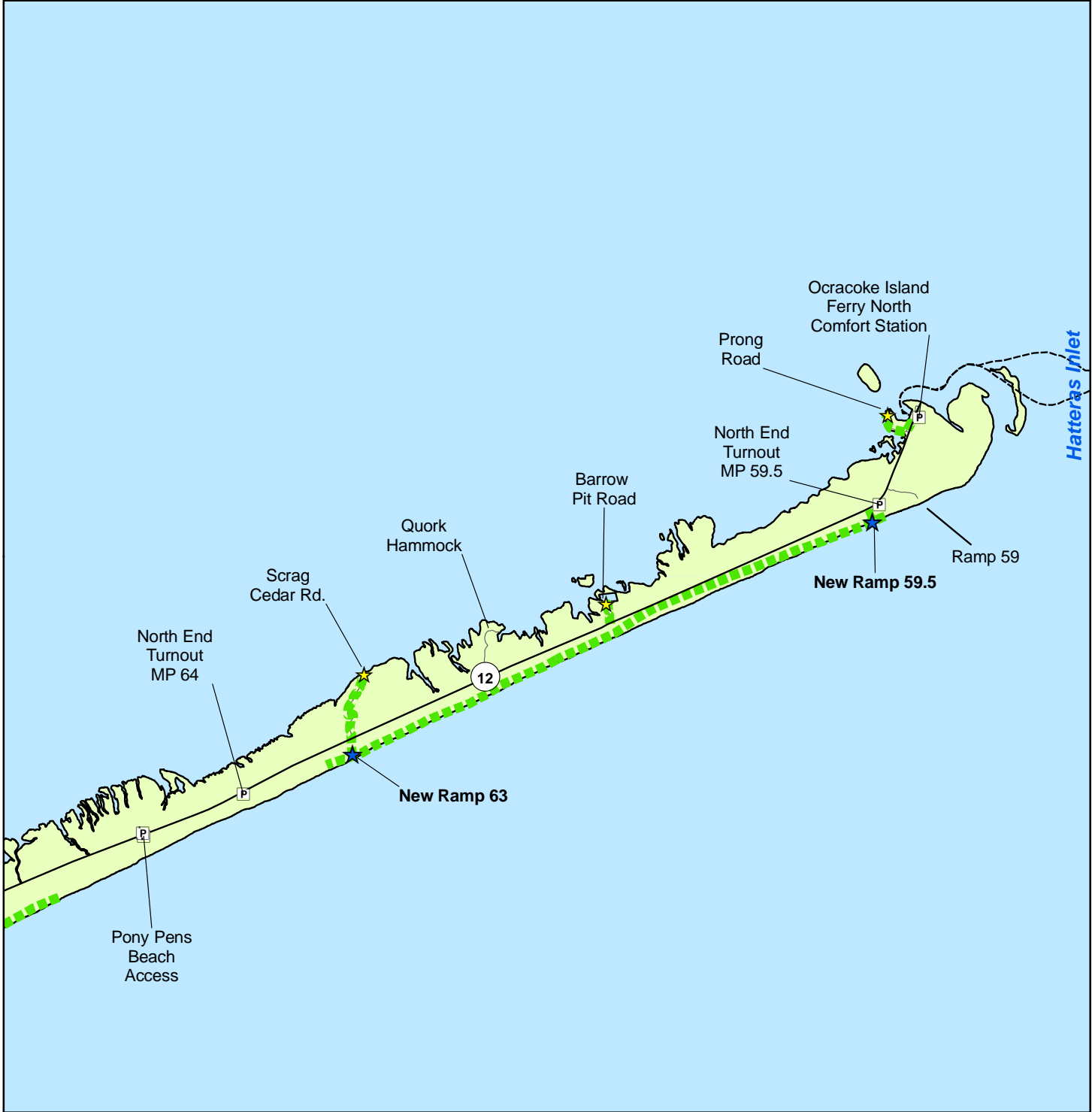


**Legend**

- |                       |                  |                        |
|-----------------------|------------------|------------------------|
| CAHA Boundary         | <b>ORV Ramps</b> | <b>ORV Routes</b>      |
| PINWR Boundary        | Oceanside Ramps  | Open to ORV all year   |
| Villages              | Soundside Ramps  | Seasonally open/closed |
| Boat Ramps            | US Hwy           |                        |
| Campgrounds           | State Hwy        |                        |
| Existing Parking Lots | Other            |                        |
| Swim Beaches          | Ferry Route      |                        |
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative F**  
Map 5 of 7





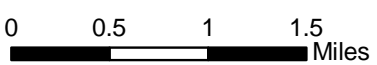
**Legend**

- CAHA Boundary
- PINWR Boundary
- Villages
- Boat Ramps
- Campgrounds
- Existing Parking Lots
- Swim Beaches
- ORV Ramps**
- Oceanside Ramps
- Soundside Ramps
- US Hwy
- State Hwy
- Other
- Ferry Route

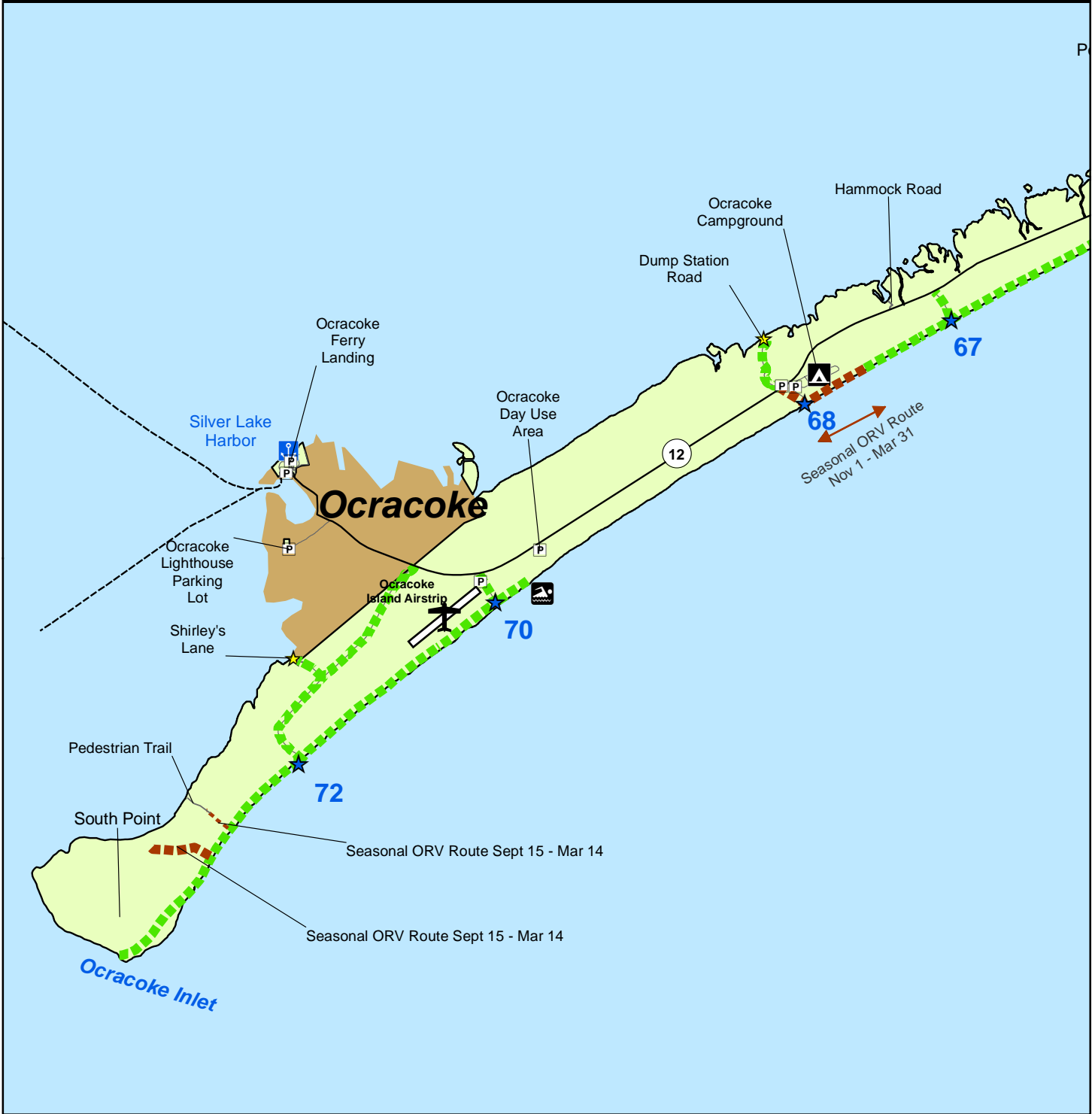
- ORV Routes**
- Open to ORV all year
- Seasonally open/closed

\*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative F**  
Map 6 of 7



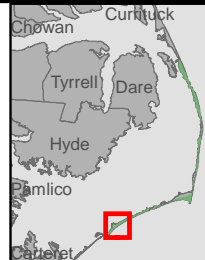
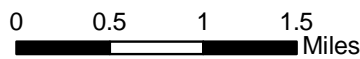




**Legend**

- |                       |                  |                        |
|-----------------------|------------------|------------------------|
| CAHA Boundary         | <b>ORV Ramps</b> | <b>ORV Routes</b>      |
| PINWR Boundary        | Oceanside Ramps  | Open to ORV all year   |
| Villages              | Soundside Ramps  | Seasonally open/closed |
| Boat Ramps            | US Hwy           |                        |
| Campgrounds           | State Hwy        |                        |
| Existing Parking Lots | Other            |                        |
| Swim Beaches          | Ferry Route      |                        |
- \*Areas open to ORV are subject to temporary resource or safety closures.

**Alternative F**  
Map 7 of 7



0037958

## CHAPTER 3: AFFECTED ENVIRONMENT

The “Affected Environment” describes existing conditions for those elements of the natural and cultural environments that would be affected by the implementation of the actions considered in this plan/EIS. The natural environment components addressed include wetlands and floodplains; federally listed threatened or endangered species; state-listed and special status species; wildlife and wildlife habitats (with a focus on birds and invertebrate species that could be affected by ORV use or management); soundscapes; visitor use and experience (including night skies); socioeconomic resources; and Seashore management and operations. Impacts for each of these topics are analyzed in “Chapter 4: Environmental Consequences.”

### WETLANDS AND FLOODPLAINS

#### WETLANDS

Wetlands include areas inundated or saturated by surface or groundwater for a sufficient length of time during the growing season to develop and support characteristic soils and vegetation. The NPS classifies wetlands based on the USFWS Classification of Wetlands and Deepwater Habitats of the United States (the Cowardin classification system). Based on this classification system, a wetland must have one or more of the following attributes:

- The habitat at least periodically supports predominantly hydrophytic (wetland) vegetation.
- The substrate is predominantly undrained hydric soil.
- The substrate is nonsoil and saturated with water, or is covered by shallow water at some time during the growing season (Cowardin et al. 1979).

The majority of the undeveloped acreage within the Seashore can be classified as a wetland. The predominant wetland types at the Seashore are marine and estuarine. Marine wetlands occur along the beaches on the oceanside of the Seashore, and estuarine wetlands generally occur along the soundside, adjacent to the many tidal creeks that are prevalent along the islands. Non-wetland or “upland” areas of the Seashore include areas landward of the dune line, areas around NC-12, and other developed areas such as those in and around villages and Seashore facilities.

Marine wetlands at the Seashore are located in the intertidal zone (from extreme high tide to extreme low tide) and in the subtidal zone, which includes areas permanently submerged below coastal waters (Cowardin et al. 1979). Generally, areas of the Seashore’s beaches between the toe of the dune and the extreme low tide water line are considered intertidal marine wetlands. Marine wetlands are found along the entire length of the ocean shoreline and are typical of a sandy beach environment, subject to high wind and wave energy. Estuarine wetlands consist of deepwater and adjacent tidal wetland areas that are often partially enclosed by land but are influenced by marine waters and freshwater runoff from adjacent uplands (Cowardin et al. 1979). Estuarine wetlands at the Seashore typically fall into two classes: emergent or scrub–shrub. Emergent wetlands, also referred to as tidal marshes, are characterized by herbaceous perennial vegetation such as saltmarsh cordgrass (*Spartina alterniflora*), black needlerush (*Juncus roemerianus*), bulrush (*Scirpus* spp.), and cattail (*Typha* spp.) (NCDENR 2008a). Scrub–shrub wetlands are typically dominated by woody vegetation less than 20 feet tall. Typical vegetation species found in these wetlands include wax myrtle (*Myrica cerifera*) and eastern red cedar (*Juniperus virginiana*) (Sutter 1999). Although most wetlands at the Seashore are tidal, there are also some areas of nontidal wetlands, located primarily on Hatteras Island near the village of Buxton and Buxton Woods

Coastal Reserve. These wetland areas include forested and emergent wetlands and are predominantly freshwater swamps and marshes that are not influenced by the tides.

Wetland areas provide substantial environmental and economic benefits to the Seashore and surrounding areas of coastal North Carolina. For example, wetlands trap sediment and pollutants from stormwater runoff and provide a natural filter before this runoff can enter local waterways. Wetlands also store large volumes of water and function like sponges to reduce the likelihood of flooding during storm events. Wetlands also protect the shoreline from erosion and provide excellent habitat for fish and wildlife species, many of which are threatened or endangered (NCDENR 2008b).

## **FLOODPLAINS**

North Carolina's barrier islands have historically been and continue to be affected by coastal forces and flooding events. The barrier islands that comprise the Seashore are flat and narrow and lie adjacent to the shallow and wide Pamlico Sound. The widest part of the Seashore islands is near Cape Point, between Buxton and Frisco (Pendleton et al. 2005). According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, most of the Seashore is within the 100-year floodplain, with the exception of some areas within the 500-year floodplain (Shaded X Zone) located at the Navy tower site on Bodie Island and a larger area near Buxton.

Generally, lands along the ocean beaches and adjacent to the sound (at wide points) are in flood zone "VE," which is the flood insurance rate zone that corresponds to 100-year coastal floodplains that have additional hazards associated with storm waves. Zone "VE" is also referred to as the "Coastal High Hazard Area." The remainder of the Seashore that is located within the 100-year floodplain and not directly adjacent to the ocean or sound lies within the "AE" zone, which is subject to waves less than 3 feet high (NCDCCPS 2008).

Because the Seashore is almost entirely within the 100-year floodplain and is subject to high water table conditions and high wave action, many areas are subject to drainage and flooding problems that often result from storm events. Areas near Buxton Woods and Cape Point Campground have been documented as historically flood-prone and are examples of popular Seashore destinations that experience flooding during times of above-average precipitation events (Martin pers. comm. 2003).

## **FEDERALLY LISTED THREATENED OR ENDANGERED SPECIES**

This section addresses species present at the Seashore that are listed by the USFWS as either endangered or threatened. In some cases, the species may also be listed by the State of North Carolina. These species include the federally and state-listed piping plover (*Charadrius melodus*); federally and state-listed loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*) sea turtles; and federally and state-listed seabeach amaranth (*Amaranthus pumilus*).

Species listed only by the state, and not federally listed as threatened and endangered, are discussed in the "State-Listed and Special Status Species" section of this chapter.

### **PIPING PLOVER**

The piping plover is a small (6 to 7 inches long, weighing 1.5 to 2.2 ounces), highly camouflaged, sand-colored shorebird endemic to North America. The USFWS recognizes three distinct piping plover population segments: (1) the Atlantic Coast (from the Maritime Provinces of Canada to the Outer Banks of North Carolina); (2) the Great Lakes (along Lake Superior and Lake Michigan); and (3) the Great Plains (from southern, prairie Canada to Nebraska).

Wintering populations are found on the Atlantic Coast from North Carolina to Florida, on the Gulf Coast from Florida to Mexico, and in the Caribbean, with the greatest number of wintering birds found in Texas. Fewer than 3,000 breeding pairs of piping plovers were detected in the United States and Canada in 2001, although the most recent breeding census estimated breeding pairs in excess of 3,500 (Elliott-Smith et al. 2009). Piping plovers were common along the Atlantic Coast during much of the 19th century, but nearly disappeared due to excessive hunting for decorative feathers. Following passage of the MBTA in 1918, plover numbers recovered to a 20th century peak in the 1940s. Increased development and beach recreation after World War II caused a population decline that led to federal protection for the plover (USFWS 2007b). Habitat loss caused by human development and recreation, and low reproductive rates caused by disturbance and predation, were considered to be the primary causes of the decline (Elliot-Smith and Haig 2004). The Atlantic Coast population was federally listed in 1986 as threatened (FR 1985). At the time of listing, there were approximately 790 Atlantic Coast pairs, and the species was in decline. Therefore, a recovery target of 2,000 pairs was established in the 1996 Revised Recovery Plan for the Atlantic Coast population (USFWS 1996a). Disturbance and predation were intensively managed after the listing, and the Atlantic Coast population rose to 1,890 pairs by 2007 (USFWS 2007c), but was still short of the recovery goal of 2,000 pairs (USFWS 1996a; Hecht pers. comm. 2008; USFWS 2009a).



**Piping Plover**

Credit: Gene Neiminen / USFWS

The population for the Atlantic Coast Southern Region (or Recovery Unit), which comprises the states of Delaware, Maryland, Virginia, and North Carolina, was estimated at 333 pairs in 2007, which was the highest since 1986, but still short of the regional goal of 400 pairs (table 14). North Carolina experienced more than a 50% decline in breeding pairs from 1989 (55 pairs) to 2004 (20 pairs) (USFWS 2004a) for reasons discussed in the “Risk Factors” section later in this chapter; however, the number of breeding pairs was estimated at 64 pairs in 2008, which represents the highest number recorded in North Carolina in the years that complete surveys have been conducted (1989–2008) (NCWRC 2008a). For the 2009 season there were a total of 54 pairs in the state (USFWS 2009b); in 2010, there were an estimated 51 pairs in the state (Schweitzer pers. comm. 2010).

### **Piping Plover in North Carolina**

North Carolina is currently the only state on the Atlantic Coast that hosts piping plovers during all phases of their annual cycle, including the establishment and holding of territories, courtship and copulation, nest scraping and nest building, egg laying and incubation, chick rearing and fledging, and migration and wintering (Cohen et al. 2010). Plovers from the endangered Great Lakes population have been observed in fall and spring migration and during the wintering period (Cohen et al. 2008). Early nesting records indicate that plovers were nesting at Pea Island in 1901 and 1902 (Golder 1986). The first published account of breeding piping plovers in North Carolina is from 1960, when a young bird was photographed in early June on Ocracoke Island (Golder 1985).

**TABLE 14. SOUTHERN REGION (INCLUDING NORTH CAROLINA) PIPING PLOVER POPULATION TRENDS, NUMBERS OF BREEDING PAIRS**

	Delaware	Maryland	Virginia	North Carolina	South Carolina	Southern Region Total
1986	8	17	100	30 <sup>a</sup>	3	158
1987	7	23	100	30 <sup>b</sup>	—	160
1988	3	25	103	40	—	171
1989	3	20	121	55 <sup>a</sup>	—	199
1990	6	14	125	55	1	201
1991	5	17	131	40	1	194
1992	2	24	97	49	—	172
1993	2	19	106	53	1	181
1994	4	32	96	54	—	186
1995	5	44	118	50	—	217
1996	6	61	87	35	0	189
1997	4	60	88	52	—	204
1998	6	56	95	46	—	203
1999	4	58	89	31	—	182
2000	3	60	96	24	—	183
2001	6	60	119	23	0	208
2002	6	60	120	23	—	209
2003	6	59	114	24	—	203
2004 <sup>c</sup>	7	66	152	20	—	245
2005 <sup>d</sup>	8	63	192	37	—	300
2006 <sup>e</sup>	9	64	202	46	—	321
2007 <sup>f</sup>	9	64	199	61	—	333
2008 <sup>g</sup>	10	49	208	64	—	331
2009 <sup>h</sup>	10	45	193	54	—	302
2010 <sup>i</sup>	—	—	—	51	—	—

Source of 1986–2001 data is USFWS 2002

Source of 2002–2003 data is USFWS 2004a

<sup>a</sup> The recovery team believes that the apparent 1986–1989 increase in the North Carolina population was because of an intensified survey effort.

<sup>b</sup> No actual surveys were made in 1987; estimate is that from 1986.

<sup>c</sup> USFWS 2004b, Preliminary 2004 Atlantic Coast Piping Plover Abundance and Productivity Estimates (Updated March 2007); Figures are preliminary estimates.

<sup>d</sup> USFWS 2005a. Preliminary 2005 Atlantic Coast Piping Plover Abundance and Productivity Estimates.

<sup>e</sup> USFWS 2006c. 2006 Atlantic Coast Piping Plover Abundance and Productivity Estimates.

<sup>f</sup> USFWS 2007c. 2007 Atlantic Coast Piping Plover Abundance and Productivity Estimates.

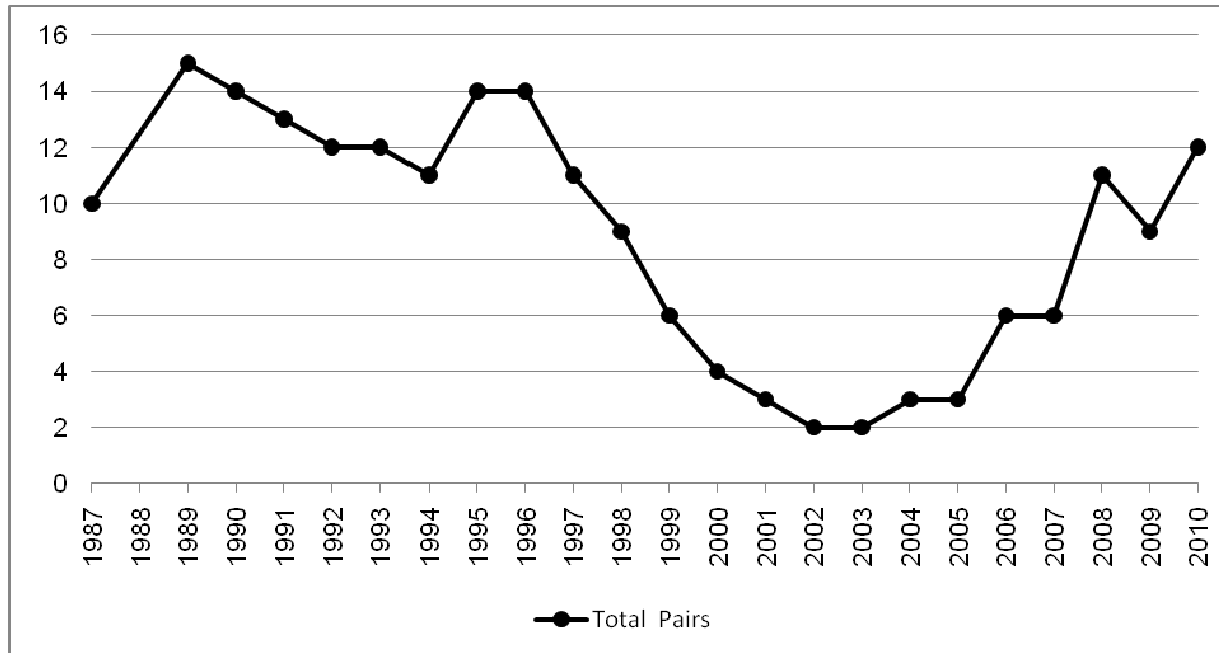
<sup>g</sup> USFWS 2008c. 2008 Preliminary Atlantic Coast Piping Plover Abundance and Productivity Estimates.

<sup>h</sup> USFWS 2009b. 2009 Preliminary Atlantic Coast Piping Plover Abundance and Productivity Estimates.

<sup>i</sup> Schweitzer pers. comm. 2010

— = No data available.

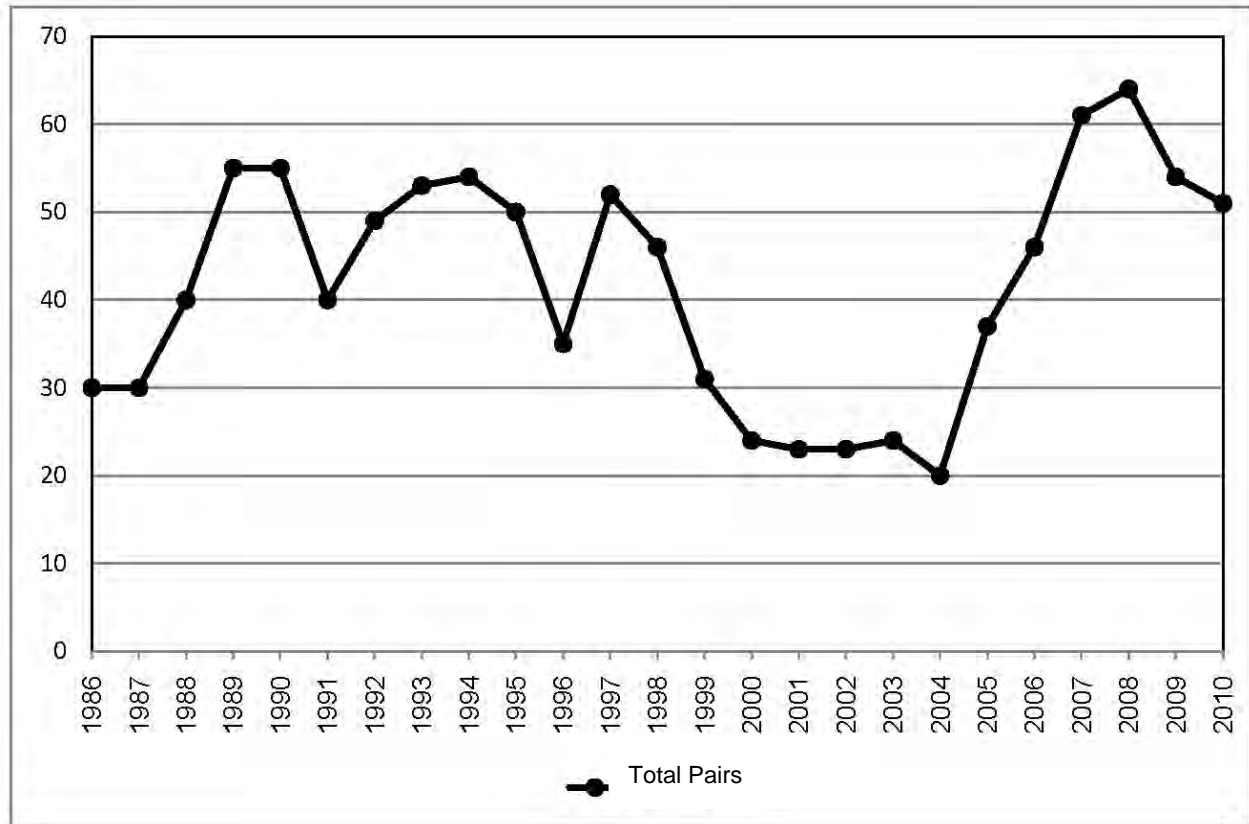
At the Seashore, four nests and one brood were observed in 1984, and five chicks were confirmed to have fledged that year. All four nests were located adjacent to least tern (*Sterna antillarum*) colonies on wide, open, sandy flats (Golder 1985). Nine pairs were counted in 1985 (Golder 1986), and 10 pairs in the summer of 1987 (Cooper 1990). The piping plover population reached a high of 15 pairs at the Seashore in 1989, and subsequently varied between 11 and 14 pairs through 1996, after which a sharp decline began (see figure 3). The population at the Seashore reached a low of two breeding pairs in 2002 and 2003, with only three breeding pairs reported in 2004 and 2005 (NPS 2009b). The population increased to 6 pairs in 2006 and 2007 and to 11 pairs by 2008 (NPS 2009b). The Seashore recorded nine piping plover breeding pairs during the 2009 season and 12 breeding pairs in the 2010 season (Muiznieks pers. comm. 2009; Muiznieks pers. comm. 2010a).



Source: NPS 2009b; Muiznieks pers. comm. 2009; Muiznieks pers. comm. 2010a

**FIGURE 3. NUMBERS OF PIPING PLOVER BREEDING PAIRS, CAPE HATTERAS NATIONAL SEASHORE, 1987–2010**

NCWRC staff conducted a piping plover breeding census along the coast of North Carolina during the June 1 through June 9, 2008, census window. The census included all suitable habitat on ocean and inlet beaches with the exception of Browns Island, which lies within a military live-fire training range. Sixty pairs and seven individual birds were counted during the census window. The end-of-season best estimate, which includes pairs discovered after the census window, was 64 pairs and 5 individuals, which was a 5% increase from the 2007 estimate of 61 pairs and is the highest number recorded in North Carolina in the years that complete surveys have been conducted (1986–2008; see figure 4). However, the end of season estimates indicated a total of 54 breeding pairs in the state in 2009 and 51 in 2010 (USFWS 2009b; Schweitzer pers. comm. 2010). Statewide, the distribution of piping plovers in 2008 was similar to previous years, with the majority of nesting pairs found at Cape Lookout National Seashore (NCWRC 2008a).



Source: USFWS 2004a, 2004b, 2005a, 2006b, 2007c, 2008c; USFWS 2009b; Schweitzer pers. comm. 2010  
Data reflect total season estimates, which includes birds found after the census window had closed

**FIGURE 4. NUMBERS OF PIPING PLOVER BREEDING PAIRS IN NORTH CAROLINA, 1986–2010**

### Habitat Description

On the Atlantic Coast, piping plovers nest in sand, gravel, or cobble substrates in backshore, dune, interdune blowout, overwash fan, and barrier flat zones of open or sparsely vegetated beaches. Nest sites may have little or no slope (Cairns 1982; Burger 1987), although nesting does occur on lower-elevation dunes (Cairns 1982). On wide beaches, piping plovers nest in the open to maintain a wide field of view, but on narrower beaches nests can be established under clumps of vegetation (Cairns 1982; USFWS 1996a). Where beaches are wide, piping plovers tend to nest far from the tide line to reduce risk of nest overwash, but this can place nests closer to vegetated dunes where the risk of predation is higher (Burger 1987). Piping plovers have also been observed nesting within least tern colonies, which could provide an added defense against predators due to the antipredator behavior of least terns (Burger 1987).



**Plover Habitat**

Credit: NPS

In the winter and on migration, piping plovers tend to be found in areas with wide beaches and inlet habitats, foraging in moist, substrate habitat that includes both low- and high-wave-energy intertidal zones, mudflats, moist sand flats, ephemeral pools, shores, and brackish ponds (Cohen et al. 2010; Elliot-



Smith and Haig 2004; Nicholls and Baldassarre 1990; Wilkinson and Spinks 1994; USFWS 2009a). During winter distribution surveys on the Atlantic Coast from 1986 to 1987, piping plovers were almost always found associated with other species of shorebirds, such as sanderlings (*Calidris alba*), least sandpipers (*C. minutilla*), or western sandpipers (*C. mauri*), in addition to other piping plovers (Nicholls and Baldassarre 1990).

### Critical Habitat Designation

All piping plover breeding sites at the Seashore were designated as critical habitat for wintering birds, as defined by the federal ESA (FR 2001) until 2004, when a court decision vacated the designation for Oregon Inlet, Cape Point, Hatteras Inlet, and Ocracoke Island (*Cape Hatteras National Seashore Access Preservation Alliance versus U.S. Dept. of the Interior*, 344 F. Supp. 2d 108 [D.D.C. 2004]). A rule to revise designated critical habitat for the wintering population of the piping plover in North Carolina was proposed in 2006 (Federal Register (FR) notice 71 FR 33703). That proposed rule described four coastal areas (named Units NC-1, NC-2, NC-4, and NC-5), totaling approximately 739 hectares (1,827 acres) entirely within the Seashore, as critical habitat for the wintering population of the piping plover. The USFWS also proposed to add 87 hectares (215 acres) of critical habitat to two previously proposed units. As a result, the proposed revised critical habitat designation for the species now includes four revised critical habitat units totaling approximately 826 hectares (2,042 acres). The final rule for the revised critical habitat designation became effective on November 20, 2008 (73 FR 62816). On February 6, 2009, Cape Hatteras Access Preservation Alliance and Dare and Hyde Counties, North Carolina, filed a legal challenge to the revised designation. On August 18, 2010, a U.S. District Court granted the government's motion for summary judgment and dismissed the case with prejudice, and the critical habitat designation for these four units remains in effect.



**Piping Plover Nest Site**

Credit: NPS

Critical habitat identifies specific areas that are essential to the conservation of a listed species, or that contain physical and biological features that are essential to the species and that may require special management considerations or protection. Approximately 2,043 acres in Dare and Hyde counties are designated as critical habitat for the wintering population of the piping plover (73 FR 62816).

Section 7 of the ESA requires federal agencies to ensure that actions they authorize, fund, or carry out are not likely to destroy or adversely modify designated critical habitat. Activities that may destroy or adversely modify critical habitat include those that alter the primary constituent elements (PCEs) to an extent that the value of critical habitat for both the survival and recovery of the species is appreciably reduced (65 FR 41793).

The PCEs for the wintering population of the piping plover are the habitat components that support foraging, roosting, and sheltering and the physical features necessary for maintaining the natural processes that support these habitat components. Specifically, the PCEs are

- (1) Intertidal sand beaches (including sand flats) or mud flats (between the mean lower low water line and annual high tide) with no or very sparse emergent vegetation for feeding. In some cases, these flats may be covered or partially covered by a mat of blue-green algae.
- (2) Unvegetated or sparsely vegetated sand, mud, or algal flats above annual high tide for roosting. Such sites may have debris or detritus and may have micro-topographic relief (less than 20

inches (50 centimeters) above substrate surface) offering refuge from high winds and cold weather.

- (3) Surf-cast algae for feeding.
- (4) Sparsely vegetated backbeach, which is the beach area above mean high tide seaward of the dune line, or in cases where no dunes exist, seaward of a delineating feature such as a vegetation line, structure, or road. Backbeach is used by plovers for roosting and refuge during storms.
- (5) Spits, especially sand, running into water for foraging and roosting.
- (6) Salterns, or bare sand flats in the center of mangrove ecosystems that are found above mean high water and are only irregularly flushed with sea water.
- (7) Unvegetated washover areas with little or no topographic relief for feeding and roosting. Washover areas are formed and maintained by the action of hurricanes, storm surges, or other extreme wave actions.
- (8) Natural conditions of sparse vegetation and little or no topographic relief mimicked in artificial habitat types (e.g., dredge spoil sites).

Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries as of November 20, 2008 (50 CR 17.95 b (1)(2)).

Of the 2,043 acres of designated critical habitat in Dare and Hyde counties, approximately 1,827 acres are located within the boundaries of the Seashore and are located at Bodie Island Spit, Cape Point, Hatteras Inlet Spit, Ocracoke Inlet Spit, and South Point (73 FR 62816).

The four units of designated critical habitat that include acreage within the Seashore are described below:

NC-1: This unit extends from the southern portion of Bodie Island through Oregon Inlet to the northern portion of Pea Island. It begins at ramp 4 near the Oregon Inlet Fishing Center on Bodie Island and extends approximately 7.6 kilometers (4.7 miles) south to the intersection of NC-12 and Salt Flats Wildlife Trail on Pea Island. The unit is bounded by the Atlantic Ocean on the east and Pamlico Sound on the west and includes lands from the MLLW (mean lower low water) on the Atlantic Ocean shoreline to the line of stable, densely vegetated dune habitat (which is not used by piping plovers and where PCEs do not occur) and from the MLLW on the Pamlico Sound side to the line of stable, densely vegetated habitat, or (where a line of stable, densely vegetated dune habitat does not exist) lands from MLLW on the Atlantic Ocean shoreline to the MLLW on the Pamlico Sound side. Any emergent sandbars south and west of Oregon Inlet, including Green Island and lands owned by the State of North Carolina are included.

NC-2: This unit is entirely within the Seashore and encompasses Cape Point. The unit extends south approximately 4.5 kilometers (2.8 miles) from the ocean groin near the old location of the Cape Hatteras Lighthouse to the point of Cape Hatteras, and then extends west 7.6 km (4.7 miles) along South Beach to the edge of ramp 49 near the Frisco Campground. The unit includes lands from the MLLW on the Atlantic Ocean to the line of stable, densely vegetated dune habitat (which is not used by the piping plover and where PCEs do not occur).

NC-4: This unit extends from the western end of Hatteras Island to the eastern end of Ocracoke Island. The unit extends approximately 7.6 kilometers (4.7 miles) southwest from the first beach access point at the edge of ramp 55 at the end of NC-12 near the Graveyard of the Atlantic Museum on the western end of Hatteras Island to the edge of the beach access at the oceanside parking lot (approximately 0.1 mile south of ramp 59) on NC-12, approximately 1.25 kilometers (0.78 miles) southwest of the ferry terminal on the northeastern end of Ocracoke Island. The unit includes lands from the MLLW on the Atlantic Ocean shoreline to the line of stable, densely vegetated dune habitat (which is not used by the piping plover and where PCEs do not occur) and from the MLLW on the Pamlico Sound side to the line of stable, densely vegetated habitat, or (where a line of stable, densely vegetated dune habitat does not exist) lands from MLLW on the Atlantic Ocean shoreline to the MLLW on the Pamlico Sound side. All emergent sandbars within Hatteras Inlet between Hatteras Island and Ocracoke Island, including lands owned by the State of North Carolina are included.

NC-5: This unit is entirely within the Seashore and includes the western portion of Ocracoke Island beginning at the beach access point at the edge of ramp 72, extending west approximately 3.4 kilometers (2.1 miles) to South Point and then back east on the Pamlico Sound side to a point where stable, densely-vegetated dune habitat meets the water. This unit includes lands from the MLLW on the Atlantic Ocean shoreline to the line of stable, densely-vegetated dune habitat (which is not used by the piping plover and where PCEs do not occur) and from the MLLW on the Pamlico Sound side to the line of stable, densely vegetated habitat, or (where a line of stable, densely vegetated dune habitat does not exist) lands from MLLW on the Atlantic Ocean shoreline to the MLLW on the Pamlico Sound side. All emergent sandbars within Ocracoke Inlet are also included.

## Diet

Piping plovers feed primarily on freshwater, marine, terrestrial, and benthic invertebrates (Elliot-Smith and Haig 2004) such as marine worms, fly larvae, beetles, crustaceans, or mollusks (USFWS 1996a, 2009a). Adults forage both day and night (Staine and Burger 1994), but young chicks are brooded during the night and therefore feed by day (Wolcott and Wolcott 1999). During territory establishment, foraging adults exhibit a preference for a moist substrate habitat that particularly includes mudflats, sand flats, ephemeral pools, and shores of brackish ponds and excludes the high-wave-energy intertidal zone (Cohen et al. 2010). Broods forage primarily on damp sand flats or moist substrate habitat, where the abundance of prey is much higher than in other habitats (Kuklinski et al. 1996).



**Piping Plovers Foraging along Shoreline**

Credit: Gene Nieminen / USFWS

Chicks with access to moist substrate habitat survived better than chicks without such access in Virginia (Loefering and Fraser 1995) and Rhode Island (Goldin and Regosin 1998). A study in New York in 1992 and 1993 found that piping plover broods had higher foraging rates in areas with ephemeral pools and tidal flats, which suggested that these habitats were superior. This study also documented higher incidences of arthropods in the moist substrate habitat, which could explain the increased plover numbers and survival rates in these habitat types. Management implications of this study include conserving a variety of foraging habitat (Elias et al. 2000). Burger (1994) found that when broods had access to a diversity of foraging habitat zones, the impact of human disturbance was reduced because chicks had opportunities to escape disturbances and still forage.

## Breeding Biology

On the Atlantic Coast, breeding territory establishment and courtship generally begin in late March, the first nests are initiated in late April, and the brood-rearing period extends from late May to mid-August (Cohen 2005). On beaches with more birds in the northern end of the Atlantic Coast breeding range, most pairs establish breeding territory within a day or two of the birds' arrival in early spring, whereas pairs on sites with fewer birds can take several days or weeks longer to become established (Elliot-Smith and Haig 2004).

Piping plovers are primarily monogamous during the breeding season but often change mates between seasons. The nest is built by the male and consists of a shallow scrape in sandy substrate that may or may not be lined with pebbles and shell fragments.



**Piping Plover Chicks**

Credit: Mary Hake / NPS – Cape Cod National Seashore

The normal clutch size is four (USFWS 2007b, 2009a), and the average duration for egg laying is six days (Elliot-Smith and Haig 2004). Replacement of lost or destroyed eggs has not been reported. If one or more eggs are lost, the pair continues to incubate the remaining eggs. Incubation is shared by males and females and typically commences the day of clutch completion, but sometimes occurs when the next-to-last egg is laid (Elliott-Smith and Haig 2004).

The length of incubation ranges from 25 to 29 days, and a pair will re-nest multiple times if successive clutches are destroyed, but re-nesting after the chicks hatch is rare (Elliott-Smith and Haig 2004). Chicks leave the nest scrape within a few hours of hatching, except when a nest hatches

at night, and they never return (Wolcott and Wolcott 1999). Broods may move hundreds of meters away from the nest site during the first week after hatching (USFWS 1996a, 2009a). Chicks are vulnerable soon after hatching, and survival rates are lower if the brood is forced to move. Members of a breeding pair share brood-rearing duties, though some females desert broods within 5 to 17 days (Elliott-Smith and Haig 2004). Although chicks follow adults to a foraging habitat, chicks forage for themselves. Fledging time ranges from 25 to 35 days (USFWS 1996a, 2009a), and most adults and young depart the breeding grounds between mid-July and early September (Cohen et al. 2010).

## Breeding Chronology and Performance at Cape Hatteras National Seashore

Locally breeding piping plovers arrive at the Seashore in mid-March, begin courting and pairing in April, and begin to scrape and/or build nests by the third week of April. Bodie Island Spit, Cape Point, South Beach, Hatteras Inlet Spit, North Ocracoke Spit, and South Point Ocracoke (South Point) all contain potential nesting habitat. As of 2010, nesting has been documented in all of these areas within the last 10 years. Although breeding pairs or nests had not been identified on the north end of Ocracoke Island since 1996, resource management staff members continued monitoring this area for potential plover activity and identified one breeding pair and one nest in 2010. Under the Interim Strategy, Seashore personnel would generally begin monitoring for piping plover arrival and prenesting behavior in late March and early April. Monitoring and surveys of these sites were conducted a minimum of three times per week. However, the 2008 consent decree required staff to begin monitoring these sites on March 15, and monitor every two days from March 15 to April 15, and daily from April 16 to July 15. Bodie Island Spit had to be monitored daily from March 15 to July 15. All known nests are protected by predator exclosures, which have been in use at the Seashore since 1994. Once nests are located, they are briefly approached once a week to inspect the exclosure, count eggs, and search for predator tracks. Morning and evening observations begin when clutches are expected to hatch. Monitors observe from a distance for

evidence of hatching or chicks. After hatching, in areas not open to ORV use, the broods are monitored a few hours in the morning and a few hours in the afternoon until the chicks have fledged or are lost. Seashore personnel document brood status, behavior, individual bird and/or brood movements, human disturbance, predator interactions, and other significant environmental events.

Table 15 shows the numbers of breeding pairs of piping plovers at the six known nesting sites from 1987 to 2010. Table 16 provides data on piping plover hatching and fledging success at the Seashore from 1992 through 2010. The 11 breeding pairs identified in 2008 marks an 83% increase from the 6 pairs identified in 2007, and the 12 breeding pairs identified in 2010 marks a 100% increase from the 2007 total (NCWRC 2008a; Muiznieks pers. comm. 2010a). In 2010, 15 piping plover chicks successfully fledged, which represents the greatest number of fledged plover chicks ever documented at the Seashore.

**TABLE 15. NUMBERS OF PIPING PLOVER BREEDING PAIRS BY SITE, CAPE HATTERAS NATIONAL SEASHORE, 1987–2010**

Year	Bodie Island Spit	Cape Point	South Beach	Hatteras Inlet Spit	North Ocracoke Spit	South Point	Total Pairs
1987	0	4	0	4	1	1	10
1989	—	—	—	—	—	—	15
1990	0	8	0	4	2	0	14
1991	0	5	0	3	5	0	13
1992	0	4	0	4	4	0	12
1993	0	5	1	3	3	0	12
1994	0	5	1	3	2	0	11
1995	0	6	1	4	2	1	14
1996	1	5	1	5	1	1	14
1997	1	4	1	3	0	2	11
1998	0	4	1	3	0	1	9
1999	0	3	1	1	0	1	6
2000	0	2	0	2	0	0	4
2001	1	1	0	1	0	0	3
2002	1	0	0	1	0	0	2
2003	0	0	0	1	0	1	2
2004	1	0	0	1	0	1	3
2005	0	0	1	1	0	1	3
2006	1	2	1	1	0	1	6
2007	1	4	0	0	0	1	6
2008	1	5	1	0	0	4	11
2009	0	5	0	0	0	4	9
2010	0	6	1	0	1	4	12
Total (% of total pairs)	8 (4.3 <sup>a</sup> )	78 (41.7 <sup>a</sup> )	11 (5.9 <sup>a</sup> )	45 (24.1 <sup>a</sup> )	21 (11.2 <sup>a</sup> )	24 (12.8 <sup>a</sup> )	202 (100)

Source: NPS 2009b; Muiznieks pers. comm. 2010a

<sup>a</sup> Total number of pairs was 202, but locations were not available in 1989. Therefore, percentages from the specific sites are based on the 187 nests that were recorded at one of the six specific nesting areas.

— = No data available.

**TABLE 16. PIPING PLOVER HATCHING AND FLEDGING SUCCESS AT  
CAPE HATTERAS NATIONAL SEASHORE, 1992–2010**

Year	# Total Pairs	# Nests	# Eggs	Nests Hatched		Eggs Hatched		Chicks Fledged		Fledge Rate <sup>b</sup>
				#	%	#	% <sup>a</sup>	#	%	
1992	12	14	49 <sup>c</sup>	8	57.1	17	34.7	8	47.1	0.67
1993	12	21	69	9	42.9	27	39.1	8	29.6	0.67
1994	11	18	65 <sup>d</sup>	10	55.6	32 <sup>e</sup>	49.2	9	28.1	0.82
1995	14	19	63	13	68.4	30	47.6	7	23.3	0.50
1996	14	16	56 <sup>f</sup>	10	62.5	30	53.6	3	10.0	0.21
1997	11	16	47 <sup>f</sup>	10	62.5	32	68.1	3	9.4	0.27
1998	9	8	31	6	75.0	20	64.5	12	60.0	1.33
1999	6	6	23	3	50.0	11	47.8	7	63.6	1.17
2000	4	6	23	3	50.0	10	43.5	3	30.0	0.75
2001	3	3	10	1	33.3	3	30.0	2	66.7	0.67
2002	2	3	8	1	33.3	1	12.5	0	0.0	0.00
2003	2	2	5 <sup>f</sup>	2	100.0	5 <sup>f</sup>	100.0	1	20.0	0.50
2004	3	2	6	1	50.0	4	66.7	0	0.0	0.00
2005	3	2	8	2	100.0	8	100.0	6	75.0	2.00
2006	6	4	15	3	75.0	9	60.0	3	33.3	0.50
2007	6	10 <sup>g</sup>	29	6	60.0	17	58.6	4	23.5	0.67
2008	11	13	43	8	61.5	22	51.2	7	31.8	0.64
2009	9	9	34	6	66.7	22	64.7	6	27.3	0.67
2010	12	15	52	11	73.3	33	63.5	15	48.4	1.25
Average Fledge Rate at Cape Hatteras National Seashore = 0.70										

Source: NPS 2009b; NPS 2010d; Muiznieks pers. comm. 2010a

<sup>a</sup> Percentage of all known eggs.

<sup>b</sup> Fledge rate is defined as the number of fledged chicks per breeding pair (number of total pairs).

<sup>c</sup> Assumes three eggs from a brood whose nest was not found.

<sup>d</sup> Assumes two eggs from a brood whose nest was not found.

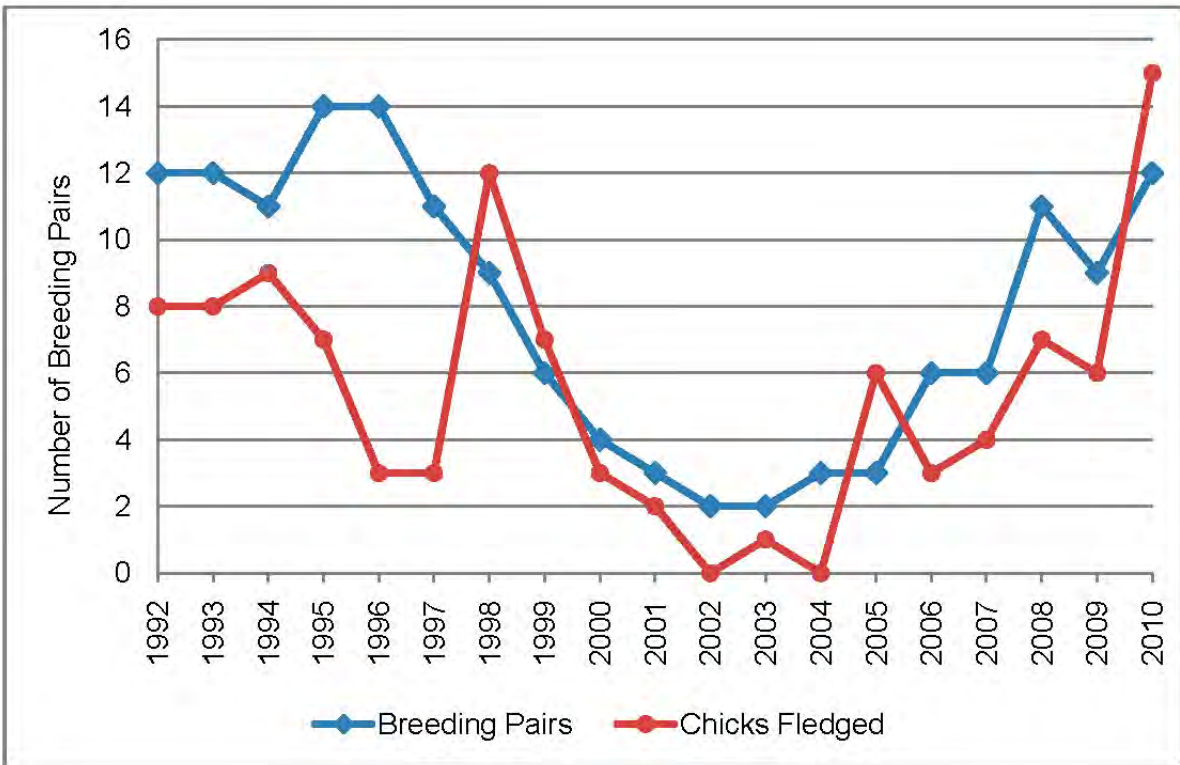
<sup>e</sup> Includes those presumed hatched.

<sup>f</sup> Assumes one egg from a brood whose nest was not found.

<sup>g</sup> Based on consultation with USFWS, it was determined that Nest 1 and Nest 2 were a single nesting attempt.

Fledge rate (or reproductive rate) is defined as the number of chicks that survive until fledging age per breeding pair. Since 1989, reproductive rates at the Seashore have ranged from 0.00 to 2.00 chicks per breeding pair, with an average rate over the 19 years from 1992 to 2010 of 0.70 chicks per breeding pair (NPS 2009b; Muiznieks pers. comm. 2010a). During 2009, a total of 9 breeding pairs fledged 6 chicks, which is a rate of 0.67 chicks per pair (NPS 2010d). However, a rate of 1.25 fledged chicks per breeding pair annually would be needed to sustain the population (USFWS 1996a), and the recovery goal set by the USFWS is 1.50 fledged chicks per breeding pair. Although a fledge rate of 1.25 chicks per breeding pair was achieved at the Seashore in 2010, the fledge rate at the Seashore has averaged less than half the recovery goal since 1992, but in 2010 was at the level needed to sustain the population.

The decline in the local breeding population (figure 5) from 1995 to 2003 is likely a reflection of the low reproductive rate (NPS 2005a) and resultant lack of recruitment. However, the increase in the numbers of piping plover breeding pairs since 2003 is encouraging.



Source: NPS 2009b; NPS 2010d; Muiznieks pers. comm. 2010a

**FIGURE 5. NUMBERS OF PIPING PLOVER BREEDING PAIRS AND FLEDGED CHICKS AT CAPE HATTERAS NATIONAL SEASHORE, 1992–2010**

### Hatching and Fledging Success at Primary Nesting Sites

The following tables (table 17 through table 22) provide a summary of hatching and fledging success at each of the individual primary breeding sites from the early 1990s through 2010. Average fledge rates<sup>5</sup> across the six breeding sites ranged from 0.13 at Bodie Island Spit to 0.90 at South Beach. In 2010, Cape Point achieved a 2.50 average fledge rate, the only site in 2010 to be above the 1.50 goal set by the 1996 revised recovery plan. In addition, there were eight instances of years when one or more sites did meet or exceed this goal, indicating that despite poor Seashore-wide recruitment, some primary nesting sites performed at or above this expectation in some years.

<sup>5</sup> “Annual fledge rate” is defined as the number of chicks fledged per breeding pair. “Average fledge rate” is the average of the annual fledge rates for years when there was at least one breeding pair.

**TABLE 17. PIPING PLOVER HATCHING AND FLEDGING SUCCESS AT BODIE ISLAND SPIT, 1992–2010**

Year	Total Pairs	# Nests	# Eggs	Nests Hatched		Eggs Hatched		Chicks Fledged		Fledge Rate
				#	%	#	%	#	%	
1992	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1993	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1994	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1995	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1996	1	1	4	1	100.0	3	75.0	0	0.0	0.00
1997	1	2	6	0	0.0	0	0.0	0	0.0	0.00
1998	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1999	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2000	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2001	1	1	3	0	0.0	0	0.0	0	0.0	0.00
2002	1	1	3	1	100.0	1	33.3	0	0.0	0.00
2003	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2004	1	1	2	0	0.0	0	0.0	0	0.0	0.00
2005	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2006	1	0	0	0	0.0	0	0.0	0	0.0	N/A
2007	1	1	3	1	100.0	3	100.0	1	33.3	1.00
2008	1	1	3	0	0.0	0	0.0	0	0.0	0.00
2009	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2010	0	0	0	0	0.0	0	0.0	0	0.0	N/A
Average Fledge Rate at Bodie Island Spit = 0.14										

Muiznieks pers. comm. 2010a



**TABLE 18. PIPING PLOVER HATCHING AND FLEDGING SUCCESS AT CAPE POINT, 1992–2010**

Year	Total Pairs	# Nests	# Eggs	Nests Hatched		Eggs Hatched		Chicks Fledged		Fledge Rate
				#	%	#	%	#	%	
1992	4	5	19	4	80.0	11	57.9	4	36.4	1.00
1993	5	6	23	5	83.3	15	65.2	3	20.0	0.60
1994	5	6	24	5	83.3	16	66.7	5	31.3	1.00
1995	6	9	33	5	55.6	15	45.5	2	13.3	0.33
1996	5	5	16	3	60.0	7	43.8	3	42.9	0.60
1997	4	6	18	5	83.3	15	83.3	3	20.0	0.75
1998	4	5	19	3	60.0	10	52.6	6	60.0	1.50
1999	3	3	12	2	66.7	7	58.3	5	71.4	1.67
2000	2	3	11	2	66.7	6	54.5	2	33.3	1.00
2001	1	1	3	0	0.0	0	0.0	0	0.0	0.00
2002	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2003	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2004	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2005	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2006	2	2	7	2	100.0	6	85.7	3	50.0	1.50
2007	4	8	22	4	50.0	10	45.5	3	30.0	0.75
2008	5	6	22	4	66.7	12	54.5	4	33.3	0.80
2009	5	5	20	5	100.0	19	95.0	4	21.1	0.80
2010	6	6	24	6	100.0	21	87.5	15	71.4	2.50
Average Fledge Rate at Cape Point = 0.99										

Muiznieks pers. comm. 2010a

**TABLE 19. PIPING PLOVER HATCHING AND FLEDGING SUCCESS AT SOUTH BEACH, 1992–2010**

Year	Total Pairs	# Nests	# Eggs	Nests Hatched		Eggs Hatched		Chicks Fledged		Fledge Rate
				#	%	#	%	#	%	
1992	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1993	1	2	7	1	50.0	4	57.1	0	0.0	0.00
1994	1	1	2	1	100.0	2	100.0	1	50.0	1.00
1995	1	1	3	1	100.0	1	33.3	1	100.0	1.00
1996	1	1	3	1	100.0	2	66.7	0	0.0	0.00
1997	1	2	8	2	100.0	7	87.5	0	0.0	0.00
1998	1	1	4	1	100.0	4	100.0	2	50.0	2.00
1999	1	1	4	1	100.0	4	100.0	2	50.0	2.00
2000	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2001	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2002	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2003	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2004	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2005	1	1	4	1	100.0	4	100.0	3	75.0	3.00
2006	1	1	4	0	0.0	0	0.0	0	0.0	0.00
2007	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2008	1	1	4	1	100.0	2	50.0	0	0.0	0.00
2009	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2010	1	1	3	1	100.00	1	33.3	0	0	0.00
Average Fledge Rate at South Beach = 0.82										

Muiznieks pers. comm. 2010a

TABLE 20. PIPING PLOVER HATCHING AND FLEDGING SUCCESS AT HATTERAS INLET SPIT, 1992–2010

Year	Total Pairs	# Nests	# Eggs	Nests Hatched		Eggs Hatched		Chicks Fledged		Fledge Rate
				#	%	#	%	#	%	
1992	4	5	16	2	40.0	5	31.3	2	40.0	0.50
1993	3	4	16	2	50.0	7	43.8	4	57.1	1.33
1994	3	6	24	3	50.0	10	41.7	3	30.0	1.00
1995	4	6	17	5	83.3	11	64.7	3	27.3	0.75
1996	5	7	26	4	57.1	14	53.8	0	0.0	0.00
1997	3	4	8	1	25.0	4	50.0	0	0.0	0.00
1998	3	1	4	1	100.0	2	50.0	0	0.0	0.00
1999	1	1	4	0	0.0	0	0.0	0	0.0	0.00
2000	2	3	12	1	33.3	4	33.3	1	25.0	0.50
2001	1	1	4	1	100.0	3	75.0	2	66.7	2.00
2002	1	2	5	0	0.0	0	0.0	0	0.0	0.00
2003	1	1	4	1	100.0	4	100.0	0	0.0	0.00
2004	1	1	4	1	100.0	4	100.0	0	0.0	0.00
2005	1	1	4	1	100.0	4	100.0	3	75.0	3.00
2006	1	0	0	0	0.0	0	0.0	0	0.0	N/A
2007	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2008	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2009	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2010	0	0	0	0	0.0	0	0.0	0	0.0	N/A
Average Fledge Rate at Hatteras Inlet Spit = 0.61										

Muiznieks pers. comm. 2010a

**TABLE 21. PIPING PLOVER HATCHING AND FLEDGING SUCCESS AT NORTH OCRACOKE SPIT, 1992–2010**

Year	Total Pairs	# Nests	# Eggs	Nests Hatched		Eggs Hatched		Chicks Fledged		Fledge Rate
				#	%	#	%	#	%	
1992	4	4	14	2	50.0	5	35.7	2	40.0	0.50
1993	3	9	23	1	11.1	1	4.3	1	100.0	0.33
1994	2	5	15	1	20.0	4	26.7	0	0.0	0.00
1995	2	2	6	2	100.0	3	50.0	1	33.3	0.50
1996	1	1	3	0	0.0	0	0.0	0	0.0	0.00
1997	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1998	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1999	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2000	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2001	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2002	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2003	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2004	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2005	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2006	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2007	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2008	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2009	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2010	1	1	3	1	100.0	3	100.0	0	0.0	0.00
Average Fledge Rate at North Ocracoke Spit = 0.22										

Muiznieks pers. comm. 2010a

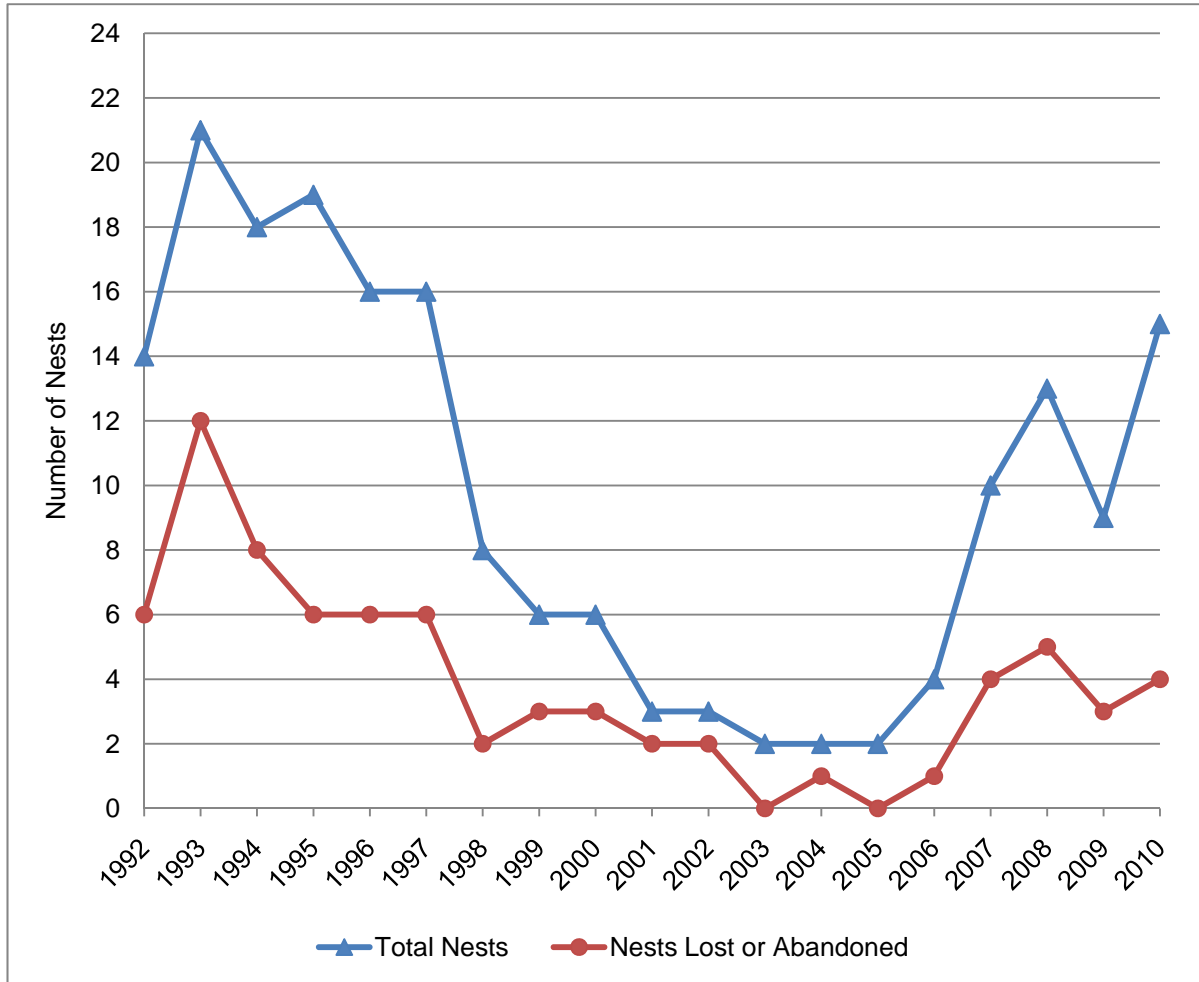
TABLE 22. PIPING PLOVER HATCHING AND FLEDGING SUCCESS AT SOUTH POINT, 1992–2010

Year	Total Pairs	# Nests	# Eggs	Nests Hatched		Eggs Hatched		Chicks Fledged		Fledge Rate
				#	%	#	%	#	%	
1992	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1993	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1994	0	0	0	0	0.0	0	0.0	0	0.0	N/A
1995	1	1	4	0	0.0	0	0.0	0	0.0	0.00
1996	1	1	4	1	100.0	4	100.0	0	0.0	0.00
1997	2	2	7	2	100.0	6	85.7	0	0.0	0.00
1998	1	1	4	1	100.0	4	100.0	4	100.0	4.00
1999	1	1	3	0	0.0	0	0.0	0	0.0	0.00
2000	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2001	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2002	0	0	0	0	0.0	0	0.0	0	0.0	N/A
2003	1	1	1	1	100.0	1	100.0	1	100.0	1.00
2004	1	0	0	0	0.0	0	0.0	0	0.0	N/A
2005	1	0	0	0	0.0	0	0.0	0	0.0	N/A
2006	1	1	4	1	100.0	3	75.0	0	0.0	0.00
2007	1	1	4	1	100.0	4	100.0	0	0.0	0.00
2008	4	5	14	3	60.0	8	57.1	3	37.5	0.75
2009	4	4	14	1	25.0	3	21.0	2	66.7	0.50
2010	4	7	22	3	42.9	8	36.4	0	0.0	0.00
Average Fledge Rate at South Point = 0.57										

Muiznieks pers. comm. 2010a

### Nest Loss/Abandonment

Nest loss and abandonment have had significant impacts on piping plover reproduction at the Seashore. In the 19 seasons from 1992 through 2010, 40% of nests (of 187 discovered) were lost or abandoned (figure 6). Factors contributing to nest loss and abandonment include weather, predation, and human disturbance, which are discussed in detail under the “Risk Factors” section later in this chapter.



Source: NPS 2009b; NPS 2010d; Muiznieks pers. comm. 2010a

**FIGURE 6. PIPING PLOVER NEST LOSS / ABANDONMENT AT CAPE HATTERAS NATIONAL SEASHORE, 1992–2010**

### Nonbreeding Population

In addition to supporting a local breeding population, the Seashore also hosts migrating and wintering piping plovers from the threatened Atlantic Coast population and the endangered Great Lakes population). The Outer Banks is an important stopover area for migrating shorebirds along the Atlantic Coast. Fall migrants arrive at the Outer Banks in July, peak in August and September, and depart by November (Dinsmore et al. 1998). The distribution and abundance of nonbreeding populations at the Seashore are less well documented than the local breeding population. Documenting and protecting nonbreeding piping plovers and their habitats are priorities articulated in the recovery plans for all three North American breeding populations (USFWS 1988, 1996a, 2003, 2009a). Recognizing the importance of the Outer Banks to wintering piping plovers, the USFWS designated 2,043 acres of critical habitat in Dare and Hyde counties in November 2008 (FR 2008).

Wintering piping plovers on the Atlantic Coast select wide beaches in the vicinity of inlets that are associated with a high percentage of moist substrate habitat (Nicholls and Baldassarre 1990; Wilkinson and Spinks 1994). Because tidal regimes and fall and winter storm patterns often cause piping plovers to

move among habitat patches, a diversity of habitat patches may be important to wintering populations (Burger 1994; Nicholls and Baldassarre 1990).

Cohen and others (2010) studied nonbreeding piping plovers at the Seashore from 2000 to 2005. The results of this study indicated that the greatest number of nonbreeding piping plovers at the Seashore occurs during the fall migration, which begins in July and peaks between July and September (see table 23). The fall migration counts were highest at South Point, followed by Oregon Inlet (Bodie Island Spit, Pea Island NWR, and, formerly, Green Island, which is now largely unusable for plovers because of vegetation growth), then Hatteras Inlet Spit, and finally Cape Point (Cohen et al. 2010).

**TABLE 23. MONTHLY MEDIAN AND MAXIMUM NONBREEDING BIRDS SEEN DURING FALL, WINTER, AND SPRING SURVEYS, SELECTED SITES AT CAPE HATTERAS NATIONAL SEASHORE, 2000–2005**

	Month	Bodie Island Spit	Cape Point / South Beach	Hatteras Inlet Spit	South Point	All Sites
Median	Jul	0.49	0.18	0.45	2.21	5.7
	Aug	0.68	0.31	0.13	3.76	6.4
	Sep	0.66	0.07	0.38	4.22	5.7
	Oct	0.36	0.00	0.86	1.81	3.3
	Nov	0.82	0.00	0.07	1.00	4.2
	Dec	0.77	0.00	0.00	2.07	2.9
	Jan	0.25	0.00	0.00	1.00	1.2
	Feb	3.33	0.00	0.00	1.00	4.3
	Mar	1.25	0.00	0.00	0.75	2.8
	Apr	1.89	0.00	0.62	1.31	3.6
Maximum	Jul	32	5	21	56	56
	Aug	34	6	14	72	72
	Sep	16	5	4	37	37
	Oct	12	1	28	31	31
	Nov	15	0	8	12	15
	Dec	17	0	7	15	17
	Jan	18	0	1	11	18
	Feb	14	0	0	18	18
	Mar	12	3	4	8	12
	Apr	25	3	7	11	25

Source: Cohen et al. 2010

NOTE: Not all sites were surveyed during the designated survey days (typically, only one or two sites were surveyed on a given survey day), so the numbers in the table provide only a rough idea of the total size of the nonbreeding population.

During this time, the first banded winter residents appeared in August; however, other wintering birds could have arrived in July. Cohen suggested that the nonbreeding population from December to January probably consisted entirely of winter residents and estimated that although the size of the resident wintering population at the Seashore was not precisely known, it may be on the order of 20 to 35 birds (Cohen et al. 2010). In the winter of 2004–2005, the maximum numbers seen were about 50% of the

recent norm; however, whether this observed difference was because of a difference in survey methodology is unknown. The highest counts of wintering residents were at Bodie Island Spit and South Point. Based on a sample of banded birds, winter residents can be present until April (Cohen et al. 2010). Spring piping plover migrants first appear in February or early March, and their numbers peak in late March or April (table 23). Sites at Bodie Island Spit have had the highest abundance of spring migrants, followed by South Point, with fewer at Hatteras Inlet Spit and Cape Point / South Beach (Cohen et al. 2010).

NPS staff documented nonbreeding piping plovers' use of the Seashore throughout 2006. Migratory birds appeared to peak in August and September, with a high count of 93 birds at South Point on August 10 (table 24). South Point revealed the highest counts during fall migration. Three surveys at South Point were coordinated with Seashore surveys on North Core Banks to investigate bird abundance around Ocracoke Inlet (table 24).

**TABLE 24. COUNTS OF PIPING PLOVER ON BOTH SIDES OF OCRACOKE INLET DURING FALL MIGRATION, 2006**

Date	South Point	North Core Banks	Total	Tide
Aug 10, 2006	93	7	100	Mid
Aug 14, 2006	69	16	85	Low
Oct 2, 2006	15	16	31	Low

Source: NPS 2007c

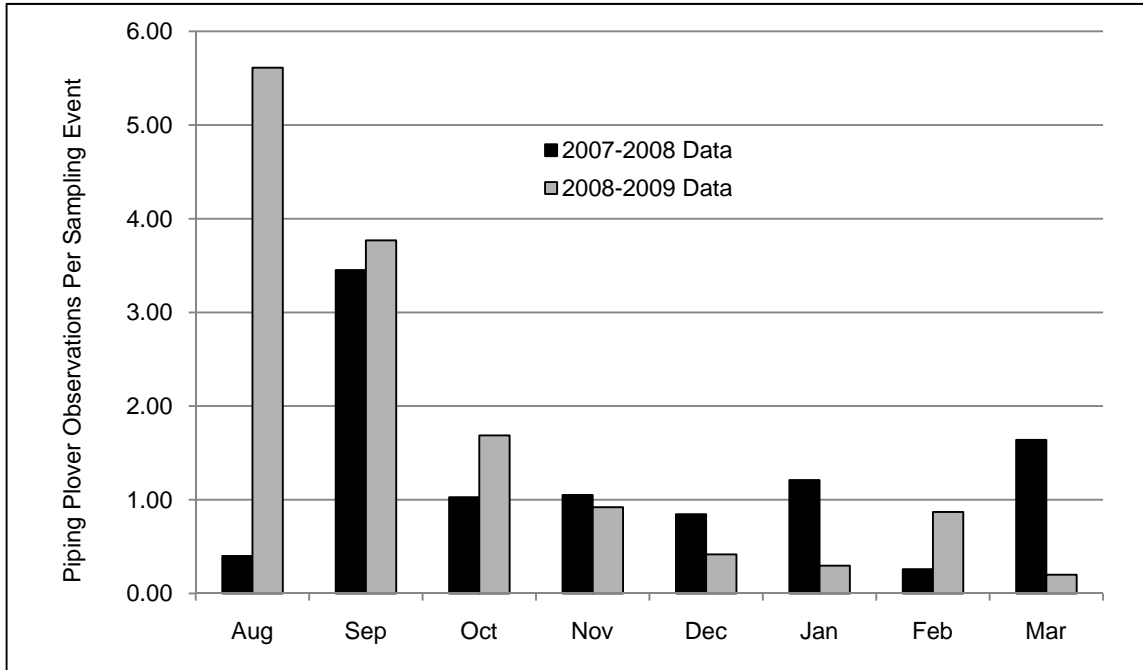
Seashore staff also documented nonbreeding plovers' use of the Seashore beginning at the end of the breeding season in August 2007 through March 2008 and from August 2008 to March 2009 (see figure 7), although surveys were limited to the points and spits. Figure 7 indicates the number of piping plover observations recorded per sampling event (or unit of effort), which is also referred to as "normalized" data, which were used as a means to control a varying level or effort across sampling units. In 2007, migratory birds peaked in September, with a high of 33 counted on September 7, 2007, on South Point (NPS 2009b). After the migrants passed through the area in September 2007, plover numbers appeared to stabilize over the winter months except in February 2008, when there was an unexplained drop in numbers. In 2008, the number of migratory plovers peaked in August and numbers declined in September to a level similar to the previous year. The number of birds at the Seashore continued to decline until February 2009, when the migrants started passing through the Seashore again (figure 7).

Seashore staff documented the habitat type in which migratory and wintering piping plovers were observed from August 2007 to March 2008 and from August 2008 to March 2009 (figure 8). Of the 717 observations, 458 were in mudflat / algal flat, 157 were in sand flat, 67 were in foreshore, and 26 were in wrack line habitat (NPS 2009b; Muiznieks pers. comm. 2009).

In addition to the monitoring conducted by Cohen and others (2010) and Seashore staff, the Southeast Coast Network (SECN) Inventory and Monitoring Program conducted a comprehensive study on wintering shorebirds at the Seashore. Pilot implementation of a long-term shorebird monitoring protocol began in mid-July 2006 and the first report was published in March 2009. The study found that the fall migration appeared to peak in August (figure 9) and the spring migration likely peaked in May, but nest initiation by piping plover and logistical issues precluded consistent sampling later than April in any given year. The three highest single-day counts during the pilot study (for sampled areas only) were 24 in July 2006, 50 in August 2006, and 14 in April 2007. Monthly normalized counts (number of birds observed per 30-minute sampling event) are shown on figure 10.

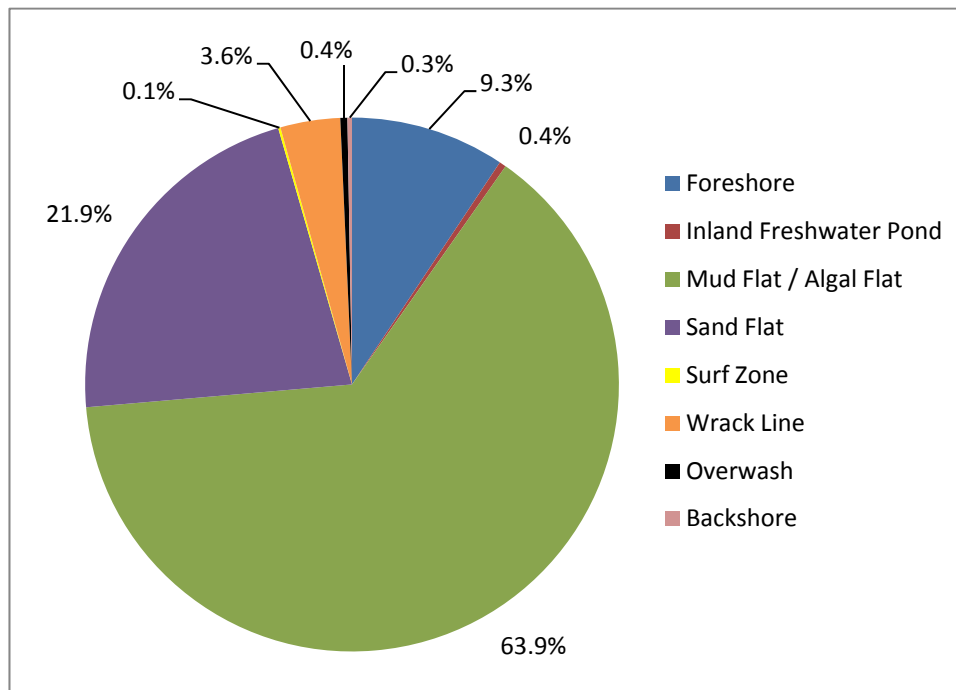


The SECN study found that the majority of piping plover observations occurred in mudflat / algal flat and foreshore habitat types (figure 11).



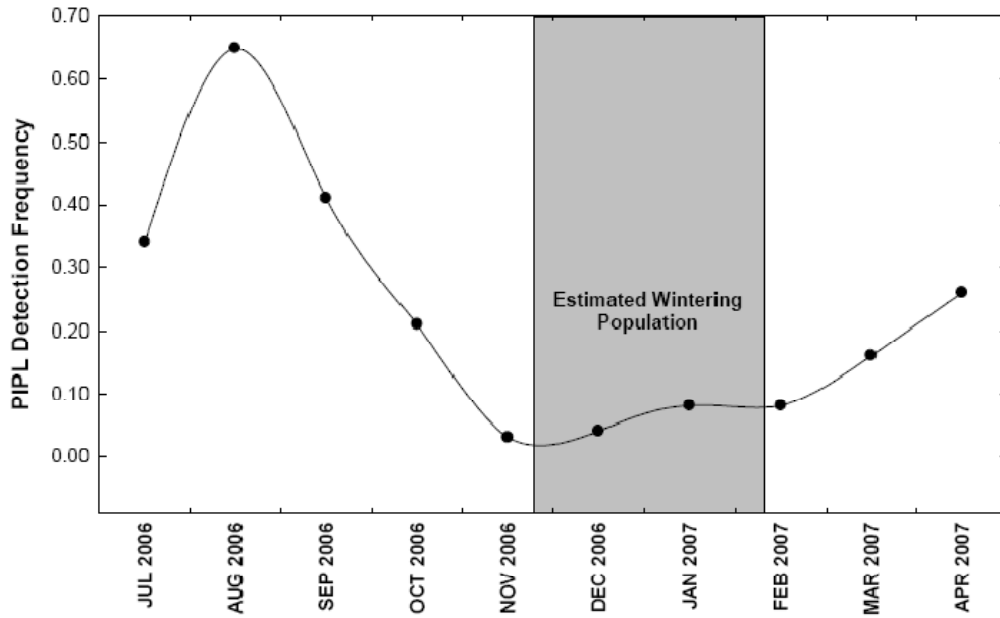
Source: Byrne et al. 2009

**FIGURE 7. MONTHLY OBSERVATIONS OF PIPING PLOVERS PER SAMPLING EVENT FROM AUGUST TO MARCH 2007–2009**



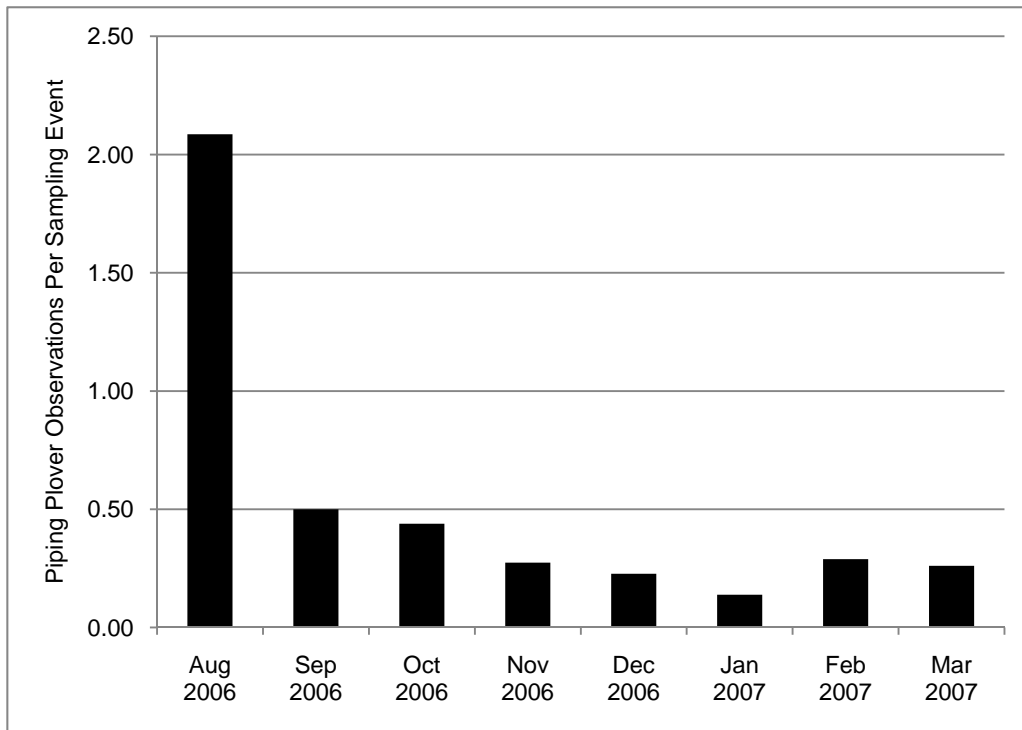
Source: NPS 2009b; Muiznieks pers. comm. 2009

**FIGURE 8. WINTERING OBSERVATIONS OF PIPING PLOVER BY HABITAT TYPE**



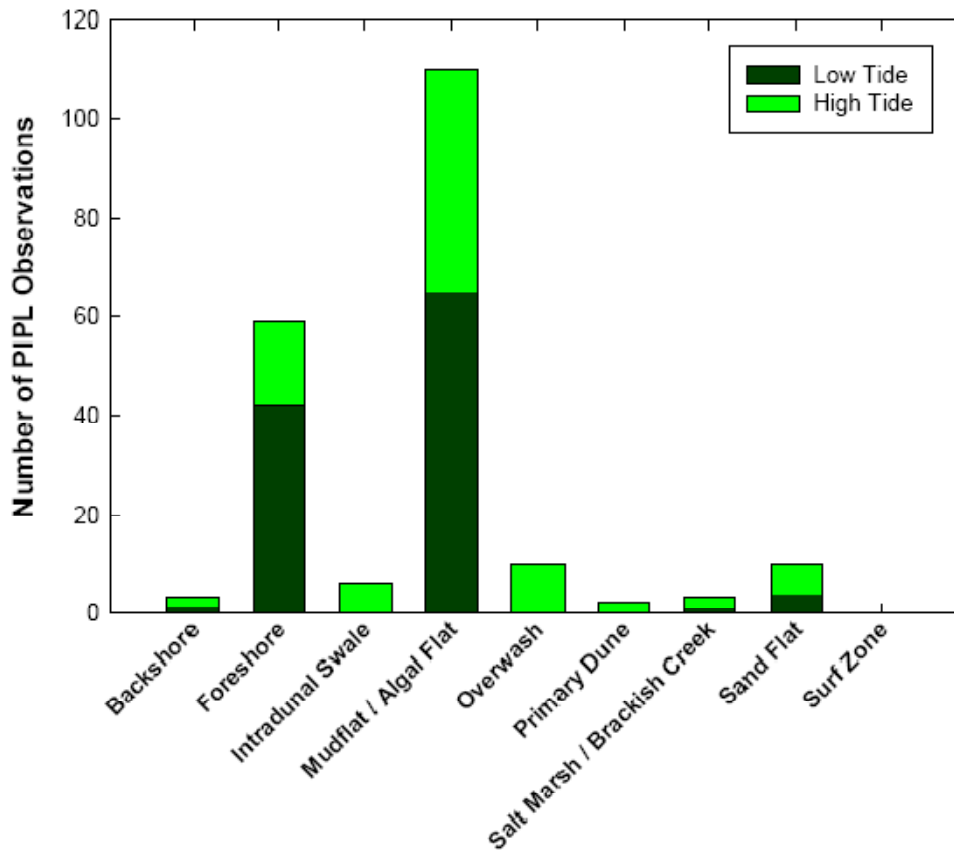
Source: Byrne et al. 2009

**FIGURE 9. DETECTION FREQUENCY FOR PIPING PLOVER (PIPL) AT BODIE ISLAND SPIT, CAPE POINT, HATTERAS INLET SPIT, NORTH OCRACOE SPIT, AND SOUTH POINT—CAPE HATTERAS NATIONAL SEASHORE, 2006–2007**



Source: Byrne et al. 2009

**FIGURE 10. MONTHLY OBSERVATIONS OF PIPING PLOVER PER SAMPLING EVENT AT CAPE HATTERAS NATIONAL SEASHORE, 2006–2007**



Source: Byrne et al. 2009

**FIGURE 11. NUMBERS OF NONBREEDING PIPING PLOVER (PIPL) OBSERVATIONS BY HABITAT TYPE AND TIDE STAGE AT CAPE HATTERAS NATIONAL SEASHORE, 2006–2007**

The results of the SECN study were consistent with previous studies that found that the moist substrate habitat type is thought to play a vital role in the survival of nonbreeding piping plovers. It was also noted that migratory and wintering piping plovers occurred more frequently in accreted areas (i.e., the points and spits), which are popular spots for recreational ORV use at the Seashore (Byrne et al. 2009). The importance of protecting nonbreeding piping plovers was demonstrated in a research program by the Canadian Wildlife Service between 1998 and 2003, which primarily tracked migration patterns and survival rates of the Eastern Canada population of piping plovers. Individuals from this population were identified migrating and wintering at points along the east coast of the United States, including North Carolina (Amirault et al. 2006). The analysis of this research identified adult survival as the single most important factor influencing the population trends of this piping plover population and showed that expanding protection of nonbreeding habitat was an important factor in the recovery of the species (Amirault et al. 2006). Seashore staff will continue to monitor the abundance of nonbreeding piping plovers at the Seashore and use the data to make management decisions as to where the winter closures need to be placed.

### Risk Factors

Small populations such as the Atlantic Coast piping plover populations face a heightened risk of extinction compared to large populations because they are more vulnerable to the following: (1) random

environmental variations, such as storms; (2) reduction in genetic variations that limit a species' ability to adapt to local conditions; (3) sudden, random drops in birth and death rates; and (4) an impaired ability to find suitable mates (Lande 1988).

Given the vulnerability of the small piping plover populations in North America to random events, the persistence of the populations will depend increasingly on controlling sources of mortality to adults, eggs, and chicks throughout their range. Predators, human disturbance, and limited or blocked access to foraging habitat have been identified in past research as contributing to impaired reproductive success for plovers using the Seashore (Kuklinski et al. 1996). Thus, providing a disturbance-free environment early in the season may help piping plovers to establish territories and attract mates (Cohen 2005).

Rates and sources of mortality and disturbance, and the responses of piping plovers to disturbance in the nonbreeding season, have not been specifically assessed at the Seashore. However, it is known that piping plover foraging and roosting habitats at Cape Hatteras are used by pedestrians and ORVs outside of the breeding season (Cohen et al. 2010). Where such activity is allowed, studies conducted at several beaches in Massachusetts and New York have shown that there is the potential for piping plovers to be killed by being run over by ORVs (Melvin et al. 1994) or taken by domestic pets. Studies along the Atlantic coast (including one at the Seashore) and gulf coast have shown that the density of wintering plovers is higher in areas with limited human presence or disturbance (Cohen et al. 2008; Nicholls and Baldassarre 1990). Furthermore, disturbance to roosting and foraging birds by ORVs, unleashed pets, and pedestrians may reduce foraging efficiency or alter habitat use, thereby increasing the risk of nutritional or thermal stress (Zonick 2000; Burger et al. 2004). This type of disturbance also affects the energetic of migrating shorebirds, including piping plover and other migrating shorebirds at the Seashore. Shorebirds are some of the longest distance migratory birds and as such the energy demands of migration are extreme (Goss-Custard 1984; Harrington et al. 1991). During migration shorebirds use a variety of habitats to find food, to rest, and to avoid predators, and their survival is in part a function of the calories that individual shorebirds add by way of efficient foraging and the calories that shorebirds preserve during resting (Kersten and Piersma 1987). High quality shorebird "stop-over" habitats are those in which individual shorebirds are free to find high-quality food quickly as well as those where shorebirds can effectively rest and avoid predators between foraging bouts. Low quality habitats are those where prey items are low in density and/or where human or natural disturbance keeps birds from feeding and resting and especially where these key activities are replaced by energy-demanding avoidance behaviors such as flying and running. Disturbance to migrating shorebirds that results in the interruption of feeding and resting, combined with the energetically high-cost short flight fleeing behaviors, may impede shorebirds' ability to develop the necessary physiological condition to survive long migratory flights. Supporting this finding, comparing two beach plots open and closed to human traffic along North Carolina's Outer Banks, Collazo and others (1995) found that resting time of shorebirds was reduced by nearly 50 % in areas open to human activity.

**Weather and Tides.** Nine named hurricanes affected the Outer Banks between 1993 and 2009 (NOAA 2009). Hurricane Isabel, which hit the coast in September 2003, renewed piping plover habitat on portions of the Seashore and may have resulted in a reduction in predator populations (NCWRC 2008a). In the years immediately following the storm, piping plover numbers and productivity increased. However, there have been no significant storms since that time, and much of the created habitat is now deteriorating due to revegetation (NCWRC 2008a). No significant weather events, such as hurricanes or tropical storms, occurred during the 2006 breeding season. However, smaller, localized events may have affected nesting. Nest 4 on South Point was partially buried by high wind and blowing sand. One egg was buried by sand, and the nest was a deep cup rather than a scrape (June 29). One adult remained hunkered down on the nest during the strong winds, and the buried egg was visible again during the nest check. A strong thunderstorm was noted on the night before Nest 2 on South Beach was discovered lost; however, the loss is characterized as "unknown" because it cannot be shown conclusively that weather was the cause. Five

nests were lost to weather, predation, or abandonment during the 2007 breeding season. Nest 1, a two-egg nest on Cape Point, was lost during a Nor'easter storm. It is unknown if the eggs were blown out of the nest scrape in the 50- to 60-mile-per-hour winds, buried under the sand, or taken by a predator. In 2008, a series of sandstorms with wind gusts over 35 mph may have caused the pair from Nest 1 (Cape Point) to abandon the nest. A nest on Ocracoke was buried during a Nor'easter prior to the nest being located by resource management staff. One egg was found when compacted sand was removed from a scrape that had been maintained prior to the arrival of the storm (NPS 2009b). In 2009 there were high winds and rain prior to a single egg (first egg of a clutch) disappearing at Cape Point (NPS 2010d).

Hurricanes and other ocean storms can lead to unusually high tides, and subsequent flooding can overwash piping plover nests (Cohen et al. 2010). In May 2000, a 3-day storm produced high winds, heavy rain, and ocean overwash. One clutch at Cape Point was buried under windblown sand and abandoned, while a second was lost to flooding at Hatteras Inlet Spit (NPS 2001b). Wave action and erosion caused the abandonment of a nest in 2002 when waves undermined a protective dune, resulting in the nest being flooded by ocean overwash. The eggs were scattered from the nest and the adults did not return to them (NPS 2003d). In 2009 a four-egg nest discovered on June 8 on South Point, Ocracoke, was overwashed by spring tides on June 23 (NPS 2010d). In 2010 there was an offshore weather event that flooded South Point resulting in the loss of a three egg nest on May 26 (Muiznieks pers. comm. 2010e).

Indeed, some piping plovers that nest too close to mean high tide may lose their nests on normal high tides (Cohen et al. 2010). Storms can also result in widespread mortality of chicks (Houghton 2005). Besides these direct effects of storms on piping plover nests, flooding from extreme high tides or storm surges may alter habitat enough to render it unsuitable for nesting. This may lead to the abandonment of habitat within or between breeding seasons (Haig and Oring 1988).

**Predation.** Predation, especially by mammalian predators, continues to be a major factor affecting the reproductive success of the piping plover (Elliot-Smith and Haig 2004). Predators of eggs, chicks, and/or adults include mink (*Mustela vison*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), domestic dogs (*Canis lupus familiaris*), feral and domestic cats (*Felis catus*), crows (*Corvus brachyrhynchos*), gulls (*Larus* spp.) (NPS 2008c), and birds of prey (Murphy et al. 2003). The impact of predation has been postulated to be greater on beaches with high human use because the presence of pets and trash (which may attract wild predators) is correlated with the presence of humans (USFWS 1996a, 2009a).



**Foxes outside a Piping Plover Nest Enclosure**

Credit: Richard Kuzminski / USFWS

Fox activity was recorded at all active plover nesting areas in 2001 and one late nest initiation and two nest abandonments were linked to this activity (NPS 2002b). No direct evidence of predation of chicks or eggs was recorded from 2001 through 2006, although the presence or tracks of crows, grackles (*Quiscalus* spp.), gulls, ghost crabs (*Ocyropsis quadrata*), opossum, mink, raccoon, red fox, gray fox, and domestic cats and dogs were documented within many plover breeding territories. A fox den was discovered within the Bodie Island Spit bird closure in June 2006 (NPS 2007c). During the 2007 season, eggs were missing from a plover nest at Cape Point. Staff observed both raccoon and opossum tracks in the area of the nest scrape (NPS 2008c). Predators or high winds generated by a Nor'easter storm are thought to be responsible for missing eggs and eggs observed eight feet from scrapes (NPS 2008c). In 2008, Seashore staff documented the loss of two plover chicks at Cape Point due to avian predation. One chick was taken by a gull and another by a crow. Staff also documented the presence or tracks of crows, ghost crabs, grackles, gulls, opossum, mink, raccoon, red fox, gray fox, and feral cats

within many of the piping plover breeding territories (NPS 2009b). In 2009, two chicks at Cape Point were lost to suspected opossum predation on day three (Muiznieks pers. comm. 2009). In addition to causing direct mortality, predators in piping plover habitat can also lead to piping plovers' abandoning territories within and between breeding seasons (Cohen 2005).

Ghost crabs have occasionally been implicated in the loss of nests (Watts and Bradshaw 1995) and chicks (Loefering et al. 1995). Research on ghost crabs conducted in the lab and at a breeding site at Assateague Island in Virginia suggests that crab predation is generally uncommon. However, this study indicated that the presence of ghost crabs could have a more indirect effect on plover survival. For example, adult plovers may shepherd their broods away from the foreshore, where the best forage normally exists, due to the abundance of ghost crabs at that location (Wolcott and Wolcott 1999). Poor forage was found to be a more likely contributor to chick mortality than predation by ghost crabs (Wolcott and Wolcott 1999). However, anecdotal records indicate that ghost crabs may be more of a problem in North Carolina than at sites farther north (Cohen et al. 2010). In 2007, one egg in an enclosed nest was lost to a ghost crab (NPS 2008c) and in 2008, ghost crab predation was suspected in the loss of three piping plover nests because ghost crab holes were found inside and around the nests and predator exclosures (NPS 2009b). In 2009, a two-egg nest discovered on May 22 on South Point, Ocracoke, was incubated well past its expected hatch date and was eventually predated by ghost crabs (NPS 2010d). In 2010 the loss of three nests and one chick on South Point, Ocracoke, was attributed to ghost crabs (Muiznieks pers. comm. 2010e).

**Human Activity.** Human disturbance, both direct and indirect, can adversely affect piping plovers at the Seashore. Studies on piping plovers have demonstrated that reproductive success is lower in areas with high human disturbance (Burger 1991, 1994). Research has shown that piping plover and snowy plover (*Charadrius alexandrinus*) behavior is altered by the presence of humans, which ultimately results in chicks exhibiting less time feeding, brooding, and conserving energy (Lafferty 2001a, 2001b; Page et al. 2009). Piping plovers that are subject to human disturbance spend less than 50% of their foraging time searching for prey and feeding, where undisturbed plovers can spend up to 90% of that time feeding (Burger 1994). These human-caused behavioral changes result in depleted energy reserves (Nudds and Bryant 2000), which could leave chicks more susceptible to predation or other stresses (Flemming et al. 1988; Loefering and Fraser 1995; Lafferty 2001a, 2001b; Page et al. 2009; Thomas et al. 2002). At other sites, it was documented that fledging success did not differ between areas with and without recreational ORV use (Patterson et al. 1991), although pedestrians caused a decrease in brood-foraging behavior in New Jersey (Burger 1994).

Pedestrian and nonmotorized recreational activities can be a source of both direct mortality and harassment of piping plovers. Potential pedestrians on the beach include those individuals driving and subsequently parking on the beach, those originating from off-beach parking areas (hotels, motels, commercial facilities, beachside parks, etc.), and those from beachfront and nearby residences. Vehicle impacts can extend to remote stretches of beach where human disturbance would be very slight if access were limited to pedestrians only (USFWS 1996a, 2009a).

Even with resource closures in place, protected species are still at risk. Approximately 50 to 60 occurrences of ORVs entering protected areas at the Seashore were recorded each year from 2000 to 2002. In 2003, 13 bird closure posts/signs were driven over by an ORV, and several instances of ORVs within the protected area were observed (NPS 2003d, 2004e, 2005a). A total of 105 occurrences of ORVs entering posted bird closures were recorded in 2003. This number represents a substantial increase as compared to 52 recorded in 2001 and 63 in 2002 (NPS 2004e). In 2004, 227 pedestrians and 65 vehicle tracks were reported within posted bird resource closures, including those for piping plovers. However, no plover nests were known to be disturbed, and no plover chicks were known to be lost, although four other bird

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*Symbolic Fencing—  
Posts with string  
tied between them  
intended to signify  
that an area has  
been closed to  
protect resources.*

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species were killed by ORVs in 2004 (NPS 2005a). In 2005, 135 pedestrian, 57 ORV, and 13 illegal dog entries into posted bird closures were recorded (NPS 2006d). In 2006 resource staff recorded 255 pedestrian, 47 ORV, 22 dog, and 5 horse violations of bird closures (NPS 2007c). In 2007, resource staff recorded 249 pedestrian, 25 ORV, 17 dog, and 1 horse violation of bird closures (NPS 2008c). During the 2008 breeding season, resource staff recorded 80 pedestrian, 11 ORV, 5 dog, and 1 boat violation of nesting plover closures (NPS 2009b). During the 2009 breeding season, resource staff documented 192 pedestrian, 8 ORV, 19 dog, 3 horse and 3 boat violations in the prenesting closures (NPS 2010d). Most illegal entries were not witnessed but documented based on vehicle, pedestrian, or dog tracks left behind.

Disturbance from vehicles, pedestrians, and pets can cause incubating shorebirds to be flushed from their nests and in some cases pets elicited a stronger response than people (Lafferty 2001a, 2001b; Thomas 2002; Peters and Otis 2006). Flushing can affect plover behavior and viability in a number of ways (Hoopes 1993; Peters and Otis 2006). Flushing of incubating plovers from nests can expose eggs to avian predators or excessive temperatures (Elliot-Smith and Haig 2004). Repeated exposure of eggs to direct sunlight on hot days can cause overheating, which can kill avian embryos (Bergstrom 1989). In Texas, piping plovers avoided foraging on sand flats close to areas of high human use (Drake et al. 2001). Zonick (2000) found that the number of piping plovers was lower on disturbed bayside flats than on undisturbed flats, and piping plovers experienced lower foraging efficiency when disturbed. Burger (1994) and Hoopes (1993) documented a relationship between human recreation and piping plover foraging and chick survival. Other published (Smith 2007; Lott et al. 2009) and unpublished data (Houghton 2005) support the assertion that nonbreeding habitat selection is negatively correlated with human activities and development. In New York, the response of incubating adults to the presence of humans near the nest was found to be highly variable, and average nest success was unrelated to the number of disturbance sources observed within 100 meters (328 feet) of nests (Houghton 2005). Other studies on the effect of human disturbance on incubating piping plovers documented highly variable flushing distances ranging anywhere between 20 and 200 meters (66 to 656 feet) (USFWS 1996a). However, piping plovers may be more sensitive to disturbance in the Atlantic Coast southern recovery unit, as evidenced by longer flush distances in response to disturbance sources at Assateague Island National Seashore (Loegering 1992). The study on Assateague Island found that on average, incubating plovers flushed from their nests at a distance of 78 meters (256 feet), although some birds flushed when researchers were as far as 174 meters (571 feet) away, indicating a much larger flushing distance than was documented by other studies.

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<p><i>Canid—The biological family of carnivorous and omnivorous mammals that includes the wolves, foxes, jackals, coyotes, and the domestic dog.</i></p>	<p>Unleashed pets have the potential to flush piping plovers, and these flushing events may be more prolonged than those associated with pedestrians or pedestrians with dogs on leash. For example, a study conducted on Cape Cod, Massachusetts, found that the average distance at which piping plovers were disturbed by pets was 46 meters (151 feet), compared with 23 meters (75 feet) for pedestrians. Birds flushed by pets moved farther (an average of 57 meters [187 feet]) than plovers reacting to pedestrians (an average of 25 meters [82 feet]). Duration of observed disturbance behaviors stimulated by pets was significantly greater than that caused by pedestrians (USFWS 1996a, 2009a; Hoopes 1993). In 2002, there was evidence that a dog may have been responsible for the loss of a piping plover chick at Bodie Island. When a plover brood could not be found, large canid tracks were documented in the area where the brood was often seen foraging and resting. A professional trapper with the U.S. Department of Agriculture examined the prints and verified them as domestic dog tracks. The tracks were found running in a sharp turning pattern, seeming to indicate that the dog had been engaged in a chase. Scrape marks where the dog had clawed in the sand were also evident. The chick was not observed at the site thereafter (NPS 2004e).</p>
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Vehicles have been documented running over nests (Patterson et al. 1991) and birds on Assateague Island in Maryland and Virginia. In Massachusetts and New York, biologists found that 18 chicks and 2 adults were killed by vehicles between 1989 and 1993, even on beaches with only five to ten vehicles passes per day (Melvin et al. 1994). Piping plover chicks often move from the foredune area to forage along the wrack line and intertidal zone, which places them in the paths of vehicles. Chicks can end up in or near tire ruts, and sometimes have difficulty crossing or climbing out of them. The normal response of plover chicks to disturbance could increase their vulnerability to vehicles. Chicks sometimes stand motionless or crouch as vehicles approach, and their lack of rapid movement could lead to mortality (USFWS 1996a).

ORV use may also affect the beach through sand displacement and compaction (Anders and Leatherman 1987), which may lead to steeper dune profiles. This, in turn, may prove less suitable for piping plover nesting. Degradation of the wrack line is possible from as little as one vehicle pass (Leatherman and Godfrey 1979), and may negatively impact reproductive success due to the loss of important habitat used by foraging plovers (Burger 1994; Hoopes 1993). Also, the wrack line provides habitat for many beach invertebrates, which are a staple of the plover diet.

Beach and dune renourishment projects can alter the profile of beaches, causing increased erosion and habitat loss (Leatherman 1985). Important dune-creation projects have been carried out along most of the Seashore, beginning in the 1930s. These may be affecting the ability of the Seashore to support piping plovers (Harrison and Trick pers. comm. 2005). A recent study theorized that beach nourishment projects may negatively impact plover habitat because the resulting dredge spoil is often fine-grained, reducing the availability of pebbles and cobbles, which are a preferred substrate for nesting plovers (Cohen, Wunker, and Fraser 2008). Furthermore, beach stabilization prevents normal storm processes, such as overwash fan formation, thereby leading to long-term loss of moist substrate habitat and to accelerated vegetative succession in potential nesting habitat (Dolan et al. 1973). Construction of artificial structures on beaches eliminates breeding territories and may result in an increased level of predation on and human disturbance of remaining pairs (Houghton 2005).

Research, surveying, and even protective management activities can sometimes expose piping plovers to a risk of disturbance at breeding sites. For example, adult birds may be more vulnerable to predation within exclosures (Murphy et al. 2003), depending on the local predator pool and the type of exclosure used. Adults may also abandon exclosed nests more frequently (Elliot-Smith and Haig 2004).

## **SEA TURTLES**

Sea turtles are large marine reptiles found in subtropical, tropical, and temperate oceans, as well as subarctic areas. They spend the majority of their time in ocean waters, with females coming ashore only to nest on sandy beaches. Five of the seven sea turtle species existing in the world today occur in the coastal waters of North Carolina and the Seashore, and all are listed as either federally threatened or endangered. These five species are the loggerhead sea turtle, the green sea turtle, the Kemp's ridley sea turtle, the leatherback sea turtle, and the hawksbill sea turtle. Of the five species, only three are known to nest at the Seashore: the loggerhead, green, and leatherback sea turtles. The other two species, Kemp's ridley and hawksbill, are known to occur on the beaches of the Seashore only through occasional stranding, usually either due to death or incapacitation due to hypothermia, and are therefore not discussed further.

In 1978, the loggerhead turtle was federally listed as threatened (NMFS and USFWS 2008). The NMFS and the USFWS are currently considering petitions to reclassify the loggerheads in the Northwest Atlantic as endangered. Also in 1978, the green turtle was federally listed as threatened, except for the breeding populations in Florida and on the Pacific Coast of Mexico, which were listed as endangered (NMFS and



USFWS 1991). The leatherback turtle was listed as federally endangered in 1970 (NMFS and USFWS 1992a). All three species carry the same state listings as their federal listings (NCWRC 2008b).

The Seashore staff has been consistently monitoring for sea turtle nests since 1987. However, over the years both monitoring and managing techniques have changed, making data comparison difficult; therefore, only nesting data from 2000 to 2010 are presented, for these data are known to be accurate. The number of nests recorded at the Seashore from 2000 to 2010 has fluctuated greatly, with only 43 nests recorded in 2004 and 153<sup>6</sup> nests recorded in 2010, which was the highest number on record (NPS 2010a; Muiznieks pers. comm. 2010b). Of the three species that nest at the Seashore, the loggerhead turtle is by far the most numerous, comprising approximately 95% of the known nests between 2000 and 2010 (NPS 2005c, 2007e, 2008a; 2009c; 2010a; Baker pers. comm. 2009a; Muiznieks pers. comm. 2010c). Green turtles and leatherbacks breed primarily in the tropics, with only small numbers nesting at higher latitudes. Green turtles have nested regularly at Cape Hatteras, but in fewer numbers, comprising only about 5% of the nests between 2000 and 2010, while leatherback turtles have nested infrequently at the Seashore, comprising only about 1% of the nests (NPS 2005c, 2007e, 2008a; 2009c; 2010a; Baker pers. comm. 2009a; Muiznieks pers. comm. 2010b). The vast majority of sea turtle nests occur on Hatteras and Ocracoke islands, with turtles occasionally nesting on Bodie Island (NPS 2000b, 2001c, 2002c, 2003e, 2005c, 2006e, 2007e, 2008a, 2009c, 2010a).

### Loggerhead Turtle

The loggerhead sea turtle occurs throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian oceans. However, the two largest nesting rookeries occur along the western rims of the Atlantic and Indian oceans. Within the United States, the loggerhead turtle nests from Texas to Virginia, with the primary nesting concentrations found on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida (NMFS and USFWS 2008). Over the last decade, the total estimated nesting in the United States has fluctuated between 47,000 and 90,000 nests per year, with about 80% of the loggerhead nesting activity occurring in six counties in the state of Florida (NMFS and USFWS



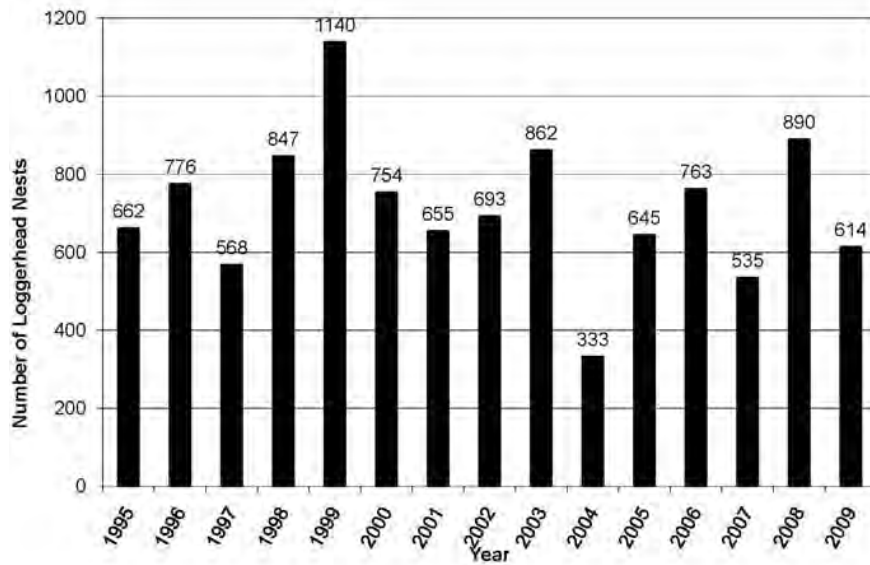
**Loggerhead Turtle**

Credit: NPS

2008). Within the northern recovery unit as defined in the Loggerhead Recovery Plan (Florida/Georgia border to southern Virginia), studies of annual nest totals in South Carolina and Georgia have documented a decline in the number of nests (Ehrhart et al. 2003). However, since standardized surveying began in North Carolina in the mid-1990s, the number of loggerhead nests per season has remained fairly stable, averaging 729 nests from 1995 through 2009 (figure 12) (Godfrey pers. comm. 2005b, 2008, 2010a, 2010b).

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<sup>6</sup> Turtle numbers for 2010 are current through October 5, 2010, with no additional nesting expected.



Source: Godfrey pers. comm. 2005b, 2008, 2010a, 2010b; seaturtle.org

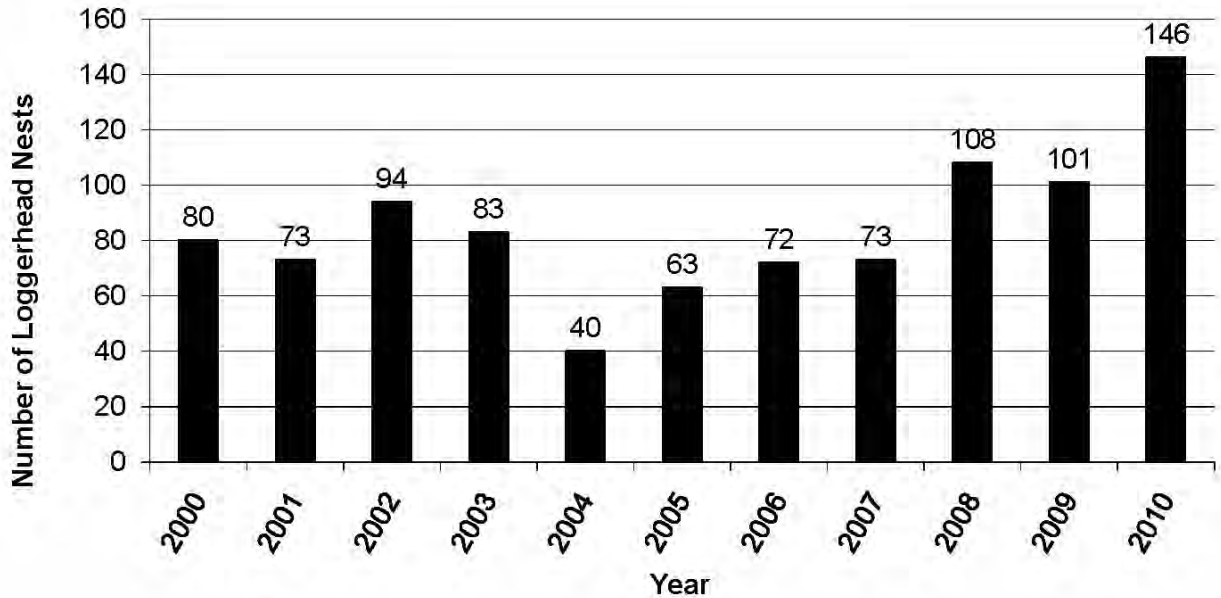
**FIGURE 12. NUMBERS OF LOGGERHEAD TURTLE NESTS IN NORTH CAROLINA, 1995–2009<sup>7</sup>**

Between 2000 and 2009 the average number of loggerhead nests at the Seashore was 79, with the lowest number of nests occurring in 2004 and the highest number of nests occurring in 2008 (figure 13) (NPS 2007e, 2008a, 2009c, 2010a; Baker pers. comm. 2009a). However, in 2010 a record-breaking 146 loggerhead nests were laid at the Seashore (Muiznieks pers. comm. 2010b). While only 40 loggerhead nests were laid at Cape Hatteras in 2004, it was a poor nesting year for the entire southeast Atlantic Coast (NPS 2005c).

Loggerhead turtles spend the majority of their life at sea, with only mature females coming ashore to nest every two to three years, on average (Schroeder et al. 2003). The first turtle nests (all turtle species included) typically begin to appear at Cape Hatteras in mid-May, and the last nests are usually deposited in late August (NPS 2000b, 2001c, 2002c, 2003e, 2005c, 2006e, 2007e, 2008a, 2009c, 2010a). Although three nests were found prior to May 15 (two of which were leatherback nests), and five nests have been found after September 1, it is important to note that prior to 2008, nest patrols were conducted only from June 1 through August 31 (2001–2005), or May 15 through September 15 (2006 and 2007). Any nests laid outside of that timeframe had a greater likelihood of not being found and protected by resource management staff.

Typical nesting areas for loggerheads tend to be sandy, wide, open beaches, backed by low dunes (Miller et al. 2003). Some factors that have been found to determine nest selection include beach slope, temperature, distance to the ocean, sand type, and moisture, though results were occasionally contradictory (Miller et al. 2003).

<sup>7</sup> The NCRWC is reviewing their sea turtle database and updating the numbers with the coordinators for all North Carolina nest site locations. Many, but not all, site reviews have been completed and the numbers in this table and in the final EIS text have been updated consistent with the database revisions received from the NC Sea Turtle Coordinator at the time this final EIS was finalized. These totals reflect the best available data as of September 23, 2010. However, the North Carolina database may change slightly when the reviews of the remainder of the site locations are completed.



Sources: NPS 2007e; 2008a; 2009c, 2010a; Baker pers. comm. 2009a; Muiznieks pers. comm. 2010b

**FIGURE 13. NUMBERS OF LOGGERHEAD TURTLE NESTS AT CAPE HATTERAS NATIONAL SEASHORE, 2000–2010**

Although the process of nest site selection is not well understood, a successful nest must be laid in a low salinity, high humidity, well-ventilated substrate that is not prone to flooding or burying because of tides and storms and where temperatures are optimal for development (Miller et al. 2003).

At the Seashore, between 2000 and 2009 (excluding 2005 relocation data that cannot be verified), on average, 25% of the nests found (all turtle species included) were relocated from their original location by Seashore staff. Of those nests, 81% were relocated for natural causes (e.g., in areas prone to flooding [below the high tide line], in an area prone to erosion, etc.), 13% were relocated because of potential human disturbance, primarily because they were within one mile of a lighted fishing pier, 3% were relocated due to both environment and human disturbance issues, and 3% were moved during storm events later into incubation (Muiznieks pers. comm. 2010c).

The practice of relocating nests for recreation or lighting issues is not encouraged by the USFWS; therefore, beginning in 2006 nests were no longer relocated for recreational access issues and starting in 2007 nests were no longer relocated based on distance to a lighted fishing pier. As a result, the average number of nests relocated each year from 2006 to 2009 decreased to 21% of the nests found (NPS 2007e, 2008a, 2009c, 2010a).

Loggerheads are nocturnal nesters. Females emerge from the ocean and crawl toward the dune line until they encounter a suitable nest site. The female clears away surface debris with her front flippers, creating a “body pit,” and then excavates a flask-shaped nest cavity with her hind flippers. Loggerheads throughout the southeastern United States lay an average of 100 to 126 eggs per nest (NMFS and USFWS 2008). After laying her eggs, the female covers the nest with sand, and she crawls back to the sea.

Individual females may nest one to six times per nesting season, at an average interval of 12 to 15 days (NMFS and USFWS 2008). Loggerheads do not produce clutches in successive years very often with nesting years typically separated by two to three years of foraging in between (NMFS and USFWS 2008). The nest incubation period (from laying to hatching) depends on temperature and ranges from 49 to 68 days in North Carolina with an average of about 55 days (USFWS n.d.). The sex ratio of hatchlings also

depends on temperature during incubation. Below 84.6°F, more males are produced than females, and above that temperature, more females are produced (Mrosovsky 1988). For this reason, the northern part of the U.S. Atlantic population, which includes North Carolina, apparently provides a disproportionate number of males to the larger population, which is important for the stability of the population as a whole (Mrosovsky et al. 1984; Hanson et al. 1998).

Hatchling emergence occurs almost exclusively at night (Mrosovsky 1968; Witherington et al. 1990) and may occur over several nights. Upon emerging from the nest, hatchlings primarily use light cues to find and move toward the sea (Witherington and Martin 1996). Once in the water, they swim incessantly out to sea to offshore habitats where they will spend the next phase of their life history.

### Green Turtle

The green turtle is a circumglobal species in tropical and subtropical waters. The major green turtle nesting colonies in the Atlantic Ocean occur on Ascension Island, Aves Island, Costa Rica, and Surinam (NMFS and USFWS 1991). Nesting in the United States occurs in small numbers in the U.S. Virgin Islands and on Puerto Rico and in larger numbers along the east coast of Florida, particularly in Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward counties. North Carolina is near the northern limits of its nesting area.



**Green Turtle**

Credit: Michael Lusk / USFWS

Nesting habits for the green turtle are very similar to those of the loggerhead turtle, with only slight differences.

Average clutch sizes range from 110 to 115 eggs, although this varies by population, and females produce clutches in successive years only occasionally. Usually two to four years or more occur between breeding seasons (NMFS and USFWS 1991).

From 2000 to 2010, there was an annual average of 4.3 green turtle nests at the Seashore, with a peak of nine nests in 2005 (Baker pers. comm. 2009a). In 2010, seven green turtle nests were laid at the Seashore (Muiznieks pers. comm. 2010b).

### Leatherback Turtle

Leatherback nesting grounds are distributed circumglobally, with the largest known nesting area occurring on the Pacific Coast of southern Mexico. Nesting in the United States occurs primarily in Puerto Rico, the U.S. Virgin Islands, and southeastern Florida (NMFS and USFWS 1992a).

Leatherback nesting at the Seashore was first documented in 1998 and has subsequently been documented in 2000, 2002, 2004, 2007, and 2009, totaling seven nests since 2000 (NPS 2008a, 2010a; Baker pers. comm. 2009a). No leatherback nests were documented on the Seashore in 2010 (Muiznieks pers. comm. 2010b). Since the species has a minimum of two years between nesting cycles, it is not known if more than one female of the species uses the Seashore as a nesting ground. Until 2009 the Seashore was the northernmost nesting location on record for this species (Rabon et al. 2003). However, in 2009 a leatherback nested in



**Leatherback Turtle**

Credit: USFWS

Kill Devil Hills, North Carolina, which currently represents the northernmost nest ever found from this species (Baker pers. comm. 2009c).

Leatherback nesting habits are very similar to those of the loggerhead turtle, although they tend to begin and end nesting earlier in the year than the loggerhead (NMFS and USFWS 1992a). Since 1999, the only two nests laid in April at the Seashore have been leatherbacks (NPS 2000b, 2008a). Leatherbacks are thought to migrate to their nesting beach about every two to three years (NMFS and USFWS 1992a; Miller 1997). Clutch size averages 116 eggs, and the incubation period averages 55 to 75 days. It is also reported that leatherback turtles nest an average of five to seven times per year, with an average interval of nine to ten days between nesting (NMFS and USFWS 1992a).

### **Potential Threats**

Threats to the loggerhead turtle on nesting grounds, as outlined in their recovery plan (NMFS and USFWS 2008), are representative of those also faced by green and leatherback turtles. The following discussion of threats to sea turtles is taken from the 2008 revised Loggerhead Sea Turtle Recovery Plan, which has been updated with more recent research on potential threats to these species that, in some cases, was not available at the time of the 1991 recovery plan.

**Human Presence.** The greatest threat posed by humans on the beach at night is disturbance of female turtles before they have finished nesting. From the time a female exits the surf until she has begun covering her nest, she is highly vulnerable to disturbance, especially prior to and during the early stages of egg laying. Females that abort a nesting attempt may attempt to nest again at or near the same location or select a new site later that night or the following night. However, repeated interruption of nesting attempts may cause a turtle to construct her nest in a sub-optimum incubation environment, postpone nesting for several days, prompt movement many kilometers from the originally chosen nesting site, or result in the shedding of eggs at sea. Direct harassment may also cause adult turtles to reduce the time spent covering the nest. Visitors using flashlights or lanterns or lighting campfires on the beach at night during the nesting season may deter nesting females from coming ashore and may disorient hatchlings. In addition, heavy pedestrian traffic may compact sand over unmarked nests, although the effect of this compaction has not been determined and may be negligible. Depending on the nesting substrate, pedestrian traffic over nests near the time of emergence can cause nests to collapse and result in hatchling mortality. A study in Japan found loggerhead nests laid in beach areas with pedestrian access had higher rates of dead pipped hatchlings than nests laid in restricted beach zones (USFWS and NMFS 2008).

**Recreational Beach Equipment.** The use and storage of lounge chairs, cabanas, umbrellas, catamarans, and other types of recreational equipment on the beach can hamper or deter nesting by adult females and trap or impede hatchlings during their nest-to-sea migration. The documentation of non-nesting emergences (also referred to as false crawls) at these obstacles is becoming increasingly common as more recreational beach equipment is left on the beach at night. Nesting turtles have been documented being deterred by wooden lounge chairs that prevented access to the upper beach. Additionally, there are documented reports of nesting females being trapped under heavy wooden lounge chairs and cabanas, eggs being destroyed by equipment (e.g., beach umbrellas penetrating the egg chamber), and hatchlings being hampered during emergence by equipment inadvertently placed on top of the nest (USFWS and NMFS 2008).

**Beach Vehicular Driving.** Operating privately owned vehicles on nesting beaches for recreational purposes or beach access is allowed on certain beaches in northeast Florida (Nassau, Duval, St. Johns, and Volusia counties), northwest Florida (Walton and Gulf counties), Georgia (Cumberland, Little Cumberland, and Sapelo islands), North Carolina (Fort Fisher State Recreation Area, Carolina Beach, Freeman Park, Onslow Beach, Emerald Isle, Indian Beach / Salter Path, Pine Knoll Shores, Atlantic

Beach, Cape Lookout National Seashore, Cape Hatteras National Seashore, Nags Head, Kill Devil Hills, town of Duck, and Currituck Banks), Virginia (Chincoteague NWR and Wallops Island), and Texas (the majority of beaches except for a highly developed section of South Padre Island and Padre Island National Seashore, San Jose Island, Matagorda Island, and Matagorda Peninsula where driving is not allowed or is limited to agency personnel, land owners, and/or researchers). Operating vehicles to conduct scientific research and management is generally allowed throughout the loggerhead's nesting range. The presence of vehicles on the beach has the potential to negatively impact sea turtles by running over nesting females, hatchlings, stranded turtles that have washed ashore, and nests. In addition, the ruts left by vehicles in the sand may prevent or impede hatchlings from reaching the ocean following emergence from the nest. Hatchlings impeded by vehicle ruts are at greater risk of death from predation, fatigue, desiccation, and being crushed by additional vehicle traffic. Vehicle lights and vehicle movement on the beach after dark can deter females from nesting and disorient hatchlings. Sand compaction due to vehicles on the beach may hinder nest construction and hatchling emergence from nests. Driving directly above incubating egg clutches can cause sand compaction, which may decrease hatching success and directly kill pre-emergent hatchlings. Additionally, vehicle traffic on nesting beaches may contribute to erosion, especially during high tides or on narrow beaches where driving is concentrated on the high beach and foredune (USFWS and NMFS 2008).

**Research and Conservation Management Activities.** Research and conservation management activities (e.g., nesting surveys, tagging of nesting females, nest manipulation) are tools to advance the recovery of the loggerhead; however, they have the potential to adversely affect nesting females, hatchlings, and developing embryos if not properly conducted. Research and conservation management activities should be carefully evaluated to determine their potential risks and conservation benefits. The States, in cooperation with the USFWS, have established permitting programs to ensure that proposed research and conservation activities are necessary for recovery, carried out by appropriately trained persons, non-duplicative, the least manipulative possible, and carried out in such a way to minimize chances of mortality. A low level of lethal take is authorized annually for research and conservation purposes. Under conditions where the conservation benefits (e.g., embryo survivorship, hatchling survivorship, conservation knowledge gained) are forecast to substantially outweigh the potential conservation risks, certain activities can be considered beneficial to loggerhead recovery. Most research and conservation management activities are likely to have minimal effects on nesting turtles, hatchlings, and developing embryos when conducted in accordance with established protocols designed to minimize disturbance and risk. On many beaches, surveyors use small 4-wheeled ATVs with low-pressure (<5 psi) tires that minimally impact nesting habitat. In addition, almost all surveys to count nests are conducted after sunrise when encounters with nesting turtles and emergent hatchlings are unlikely. Research activities, such as flipper and pit tagging, blood sampling, skin sampling, satellite and radio transmitter attachment, and hatchling orientation surveys, have a minimal effect on individual turtles when conducted according to established guidelines (e.g., Florida Fish and Wildlife Conservation Commission Marine Turtle Conservation Guidelines). Potential benefits from this research include important insight into population structure, species health, habitat use, and other important aspects of loggerhead biology and ecology. Nest relocation is a management technique for protecting nests that are predicted to be destroyed by environmental factors, such as erosion or repeated tidal inundation, or permitted human activities, such as beach nourishment during the nesting season. However, the unnecessary relocation of nests may result in negative impacts to eggs and hatchlings. Historically, the relocation of sea turtle nests to higher beach elevations or into hatcheries was a regularly recommended conservation management activity throughout the southeast United States. However, advances in our knowledge of the incubation environment have provided important information to guide nest management practices. Nests located where there are threats from beachfront lighting, foot traffic, and mammalian predators can be effectively managed by addressing the threat directly or by protecting the nest in situ rather than by moving the nest. In situ protection, which addresses the root causes of egg and hatchling mortality, is in keeping with Frazer's (1992) call to move away from "halfway technology." Increased understanding of the potential adverse effects associated with

nest relocation, restraint of hatchlings, and concentrated hatchling releases has resulted in less manipulative management strategies to protect nests and hatchlings. The Florida Fish and Wildlife Conservation Commission's sea turtle conservation guidelines consider nest relocation to be a management technique of last resort. At training workshops, nest monitors are advised to relocate nests only if they are certain that the nest will otherwise be lost, and if this certainty is based on extensive experience at the specific beach. Recovery Action 6111 describes development of protocols by which managers could identify threatened nests with greater precision, thereby minimizing the number of nests that are relocated (USFWS and NMFS 2008).

**Beach Erosion and Accretion.** Natural beach erosion events may influence the quality of nesting habitat. Nesting females may deposit eggs at the base of an escarpment formed during an erosion event where they are more susceptible to repeated tidal inundation. Erosion, frequent or prolonged tidal inundation, and accretion can negatively affect incubating egg clutches. Short-term erosion events (e.g., atmospheric fronts, Nor'easter storms, tropical storms, and hurricanes) are common phenomena throughout the loggerhead nesting range and may vary considerably from year to year. Sea turtles have evolved a strategy to offset these natural events by laying large numbers of eggs and by distributing their nests both spatially and temporally. Thus, the total annual hatchling production is never fully affected by storm-generated beach erosion and inundation, although local effects may be high. For example, storm-induced mortality in the Dry Tortugas Recovery Unit has been high during years of high tropical storm activity and may limit recovery. However, human activities along coastlines can accelerate erosion rates, interrupt natural shoreline migration, and reduce both the quantity and quality of available nesting habitat. During erosion events, some nests may be uncovered or completely washed away. Nests that are not washed away may suffer reduced reproductive success as the result of frequent or prolonged tidal inundation. Eggs saturated with seawater are susceptible to embryonic mortality. However, in spite of the potential for reduced hatching success, loggerhead eggs can successfully survive periodic tidal inundation. Studies have shown that although frequent or prolonged tidal inundation resulted in fewer emergent hatchlings, occasional overwash of nests appeared to have minimal effect on reproductive success. Accretion of sand above incubating nests may also result in egg and hatchling mortality (USFWS and NMFS 2008).

**Light Pollution.** Both nesting and hatchling sea turtles are adversely affected by the presence of artificial lighting on or near the beach. Experimental studies have shown that artificial lighting deters adult female turtles from emerging from the ocean to nest. A 1986 study noted that loggerheads aborted nesting attempts at a greater frequency in lighted areas. Because adult females rely on visual brightness cues to find their way back to the ocean after nesting, those turtles that nest on lighted beaches may become disoriented (unable to maintain constant directional movement) or misoriented (able to maintain constant directional movement but in the wrong direction) by artificial lighting and have difficulty finding their way back to the ocean. In some cases, misdirected nesting females have crawled onto coastal highways and have been struck and killed by vehicles. Hatchlings exhibit a robust sea-finding behavior guided by visual cues, and direct and timely migration from the nest to sea is critical to their survivorship. Although the mechanism involved in sea-finding is complex, involving cues from both brightness and shape, it is clear that strong brightness stimuli can override other competing cues. Hatchlings have a tendency to orient toward the brightest direction as integrated over a broad horizontal area. On natural undeveloped beaches, the brightest direction is commonly away from elevated shapes (e.g., dune, vegetation, etc.) and their silhouettes and toward the broad open horizon of the sea. On developed beaches, the brightest direction is often away from the ocean and toward lighted structures. Hatchlings unable to find the ocean, or delayed in reaching it, are likely to incur high mortality from dehydration, exhaustion, or predation. Hatchlings lured into lighted parking lots or toward streetlights are often crushed by passing vehicles. Uncommonly intense artificial lighting can draw hatchlings back out of the surf. Although the attributes that can make a light source harmful to sea turtles are complex, a simple rule has proven useful in identifying lights that pose potential problems for sea turtles. Researchers propose that artificial light sources are "likely to cause problems for sea turtles if light from the source can be seen by an observer

standing anywhere on the beach.” This visible light can come directly from any glowing portion of a luminaire, including the lamp, globe, or reflector, or indirectly by reflection from buildings or trees that are visible from the beach. Bright or numerous light sources, especially those directed upward, will illuminate sea mist and low clouds, creating a distinct sky glow visible from the beach. Field research suggests hatchling orientation can be disrupted by the sky glow from heavily lighted coastal areas even when no direct lighting is visible. The ephemeral nature of evidence from hatchling disorientation and mortality makes it difficult to accurately assess how many hatchlings are misdirected and killed by artificial lighting. Reports of hatchling disorientation events in Florida describe several hundred nests each year and are likely to involve tens of thousands of hatchlings. However, this number calculated from disorientation reports is likely a vast underestimate. Independent of these reports, researchers surveyed hatchling orientation at nests located at 23 representative beaches in six counties around Florida in 1993 and 1994 and found that, by county, approximately 10 to 30% of nests showed evidence of hatchlings disoriented by lighting. From this survey and from measures of hatchling production, the number of hatchlings disoriented by lighting in Florida is calculated in the range of hundreds of thousands per year (USFWS and NMFS 2008).

**Beach Debris.** Hatchlings often must navigate through a variety of obstacles before reaching the ocean. These include natural and human-made debris. Debris on the beach may interfere with a hatchling’s progress toward the ocean. Research has shown that travel times of hatchlings from the nest to the water may be extended when traversing areas of heavy foot traffic or vehicular ruts; the same is true of debris on the beach. Hatchlings may be upended and spend both time and energy in righting themselves. Some beach debris may have the potential to trap hatchlings and prevent them from successfully reaching the ocean. In addition, debris over the tops of nests may impede or prevent hatchling emergence.

**Natural Catastrophes.** Periodic, short-term, weather-related erosion events (e.g., atmospheric fronts, Nor’easter storms, tropical storms, and hurricanes) are common phenomena throughout the loggerhead nesting range and may vary considerably from year to year. It was reported that 24.5% of all loggerhead nests laid on Deerfield Beach, Florida, in 1992 were lost or destroyed by Hurricane Andrew as a result of storm surge (NMFS and USFWS 2008). Similarly, Martin (1996) reported a 22.7% loss of total loggerhead nest production on the southern portion of Hutchinson Island, Florida, during the passage of Hurricane Erin in 1995. Ehrhart and Witherington (1987) reported a 19% loss of loggerhead nests at Melbourne Beach, Florida, after a 5-day Nor’easter storm in 1985. In Georgia, 16% of loggerhead nests were lost to tropical storm systems in 2001; nest loss was particularly high on Sapelo (54%) and Little Cumberland islands (28%). On Fisher Island in Florida, it was reported that hatchling emerging success decreased significantly following Hurricane Andrew in 1992 (NMFS and USFWS 2008). They found that hatchlings were unable to emerge from nests where sand had accreted in large quantities and that these hatchlings probably died from asphyxiation or exhaustion while struggling to emerge from the nests. Sea turtles have evolved a strategy to offset these natural events by laying large numbers of eggs and by distributing their nests both spatially and temporally.

**Threat Occurrences at Cape Hatteras National Seashore.** The following data and discussions are from the Seashore’s annual sea turtle reports, 1999 to 2009, and include all turtle species (NPS 2000b, 2001c, 2002c, 2003e, 2005c, 2006e, 2007e, 2008a, 2009c, 2010a; Sayles pers. comm. 2005).

The majority of turtle nest losses at the Seashore from 1999 to 2009 were weather related, particularly due to hurricanes and other non-tropical storms. Nest losses resulted from storms washing them away, burying them under feet of sand, or drowning them in the flooding tides. During this time period, seven hurricanes made landfall and impacted nests. In 2003, 34 of 87 nests hatched before Hurricane Isabel hit. Afterward, none of the remaining 52 nests (60%) could be found, and the water and sand movement along the beaches left no evidence of their previous existence. In 2006, 30% of the nests (23 of 76 nests) were either lost to heavy seas or drowned by flooding tides. In 2007, five nests (6%) were lost; in 2008, six



nests (5%) were lost and another 16 nests experienced decreased nest success due to two tropical storms. In 2009, six nests (6%) were lost to storms and another 25 experienced a severe decrease in nest success due to individual storms. Additionally, many other nests over the years have experienced reduced hatching success due to storm overwash that could not be correlated to any one particular storm event.

Foxes were first seen at the Seashore in 1999 and on Hatteras Island in the winter of 2001–2002. Foxes disturbed or destroyed turtle nests in 5 of the 11 years between 1999 and 2009, with the number of nests disturbed or destroyed ranging from one to nine nests per year. Ghost crab predation has been reported sporadically from 1999 to 2009, with 0 to 27 nests per year recorded as having either ghost crab holes burrowed deep into the nest cavity and/or eggshell fragments found on top of the sand in association with crab tracks.

Pedestrian tracks have been recorded inside closures, with counts ranging from 8 to 92 intrusions per year. Pedestrians disturbed or destroyed two to six nests per year from 1999 to 2009 by digging at the nest site; however, no pedestrian disturbances occurred in 2003, and no data were available for 2005.

Many, but not all, ORV users respect sea turtle nest protection areas. Since 1999, recorded violations of sea turtle nest protection areas by ORVs have ranged annually from 13 to 45 sets of tracks inside closures, though a total of 130 sets of tracks were documented in 2000 and 102 sets of tracks were documented in 2001. Most, but not all, of these ORV violations occurred when ORVs drove in front of nest areas during periods of low tide. Incidents of ORVs causing property damage to signs, posts, and twine marking the sea turtle nest protection areas have also been documented. From 1999 to 2009, the number of incidents where ORVs caused property damage generally ranged from 3 to 9 incidents annually, although a total of 28 incidents were recorded in 2000 and a total of 146 incidents were recorded in 2001. ORVs drove over four to five nests per year from 2000 to 2002; however, the nests survived. Two nests in 2007 and one nest in 2008 were known to have been run over by ORVs before they were found during the morning turtle patrol and fenced off. Of these three nests, the 2008 nest and one of the 2007 nests appeared undamaged; however, four eggs were crushed in the second 2007 nest. In 2004, a total of ten hatchlings were killed by vehicles in two separate incidents.

In 2009, despite operating under the consent decree, requiring expanded buffers be implemented after acts of deliberate closure violations/vandalism, two occurrences of deliberate violations were recorded (NPS 2010a). In 2010, an ORV driving on the beach at night, in violation of the consent decree, struck and killed a nesting female loggerhead turtle during the nighttime hours between June 23 and June 24. The turtle had crawled out of the ocean and attempted to lay a nest between ramps 70 and 72 on Ocracoke Island. The turtle was hit by an ORV and dragged approximately 12 feet, causing fatal injuries to the turtle. The turtle was found dead by NPS turtle patrol at 6:10 a.m. on June 24. This particular incident is believed to be the first time documented that a nesting sea turtle has been killed by an ORV at the Seashore (NPS 2010b).



**Nesting Female Loggerhead Killed by ORV in 2010**

NPS photo of scene showing turtle carcass (between ORV tracks) and drag marks. Oval objects extending from the turtle are eggs.

Source NPS 2010b

Dogs disturbed or destroyed two nests in 2000, and 5 to 60 sets of dog tracks per year have been recorded inside closures. In 2008, cats were documented preying on emerging hatchlings at several nests, all within the villages. This was the first year in which this was documented; however, 10 to 50 sets of cat tracks per year were counted inside turtle closures from 2000 to 2002 and in 2009 cat tracks were found within at least 20 turtle closures, most commonly in the village areas.

The total number of pedestrian, vehicle, and pet violations are conservative estimates, for often the actual numbers could not be determined. Footprints and tracks are often recorded as a single violation, when an undeterminable number of tracks through an area may actually represent multiple violations. Also, tracks below the expanded nest closures are often washed out by the tide before being discovered by the turtle patrol.

Documented beach fires totaled 174 in 2000 and 773 in 2001. Such fires may misdirect adults and emergent hatchlings. In 2006, an adult turtle crawl was discovered going into the coals of a beach fire, and in 2007, a turtle approached a beach fire, which visitors quickly extinguished prior to the turtle laying her nest about 2 feet from the fire site. In 2008, several hatchlings were found entering a fire and were recovered and released. It was unknown how many died prior to the hatchlings being noticed. Hatchlings being misdirected by lights from villages and other human structures is a common occurrence at the Seashore. In 2009, the NPS documented tracks which indicated that a nesting female sea turtle crawled up to a still-warm fire pit, turned around, and went back into the water, as noted in the annual report (NPS 2010a).

There have also been documented reports in 2000, 2001, 2007, 2008, and 2009 and an unconfirmed report in 2006, of adult turtles aborting nesting attempts when visitors approached the turtles with flashlights,

vehicle lights, or flash photography. Because the beaches are not patrolled 24 hours a day, it is likely that more disturbances of this nature occur but go undocumented.

Since 2001, Seashore staff members have been tying notices to personal property found on the beach after dawn, advising owners of the threats to nesting sea turtles, and then removing the items, when possible, if they remain on the beach 24 hours after tagging (NPS 2008a).

### SEABEACH AMARANTH

Seabeach amaranth is an annual plant native to barrier-island beaches along the U.S. Atlantic Coast, including those within the Seashore. Historically, seabeach amaranth was found in nine states, from Massachusetts to South Carolina. It was federally listed as threatened by the USFWS in 1993 because of its vulnerability to human and natural impacts and the fact that it had been eliminated from two-thirds of its historic range (USFWS 1996b). Since its listing, seabeach amaranth has reappeared in several states and is currently found in New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, and South Carolina. Despite its reappearance in several states, the plant remains highly vulnerable to the threats that caused its listing, and in some states, populations continue to decline (USFWS 2005b).



**Seabeach Amaranth**

Credit: Gene Nieminen / USFWS

This species is listed as threatened by the State of North Carolina (NCNHP 2006). Within North Carolina, from 2002 to 2003, the number of plants increased from 5,700 to 9,300 along 112 miles of beach (Cohen et al. 2010), only a fraction of the approximately 40,000 plants reported in the late 1980s and 1995 (Suiter pers. comm. 2005). Within the Seashore, seabeach amaranth numbers ranged from 550 to nearly 16,000 plants between 1985 and 1990 (table 25). However, in the last 10 years a maximum of only 93 plants was observed in 2002. More recently, only one plant was found in 2004 and two plants in 2005. Since 2005, no plants have been found within the Seashore.

**TABLE 25. NUMBERS OF NATURALLY OCCURRING PLANTS OF SEABEACH AMARANTH AT CAPE HATTERAS NATIONAL SEASHORE, 1985–2008**

	1985	1986	1987	1988	1990	1993	1994	1995
Number of seabeach amaranth	550	600	6,883	15,828	3,332	0	0	1
	1996	1997	1998	1999	2000	2001	2002	2003
Number of seabeach amaranth	98	81	265	8	2	51	93	30
	2004	2005	2006	2007	2008	2009	2010	
Number of seabeach amaranth	1	2	0	0	0	0	0	

Source: NPS 2009e; NPS 2010e; Broili pers. comm. 2010

Seabeach amaranth is a low-growing annual, with stems that trail along the ground but do not root. The stems are reddish in color, fleshy, grow to 4 to 24 inches in length, and have round, fleshy, dark green leaves (0.4 to 0.6 inches long) clustered near the tips. Plants must recruit annually from seed banks, either in place or from other source populations dispersed by wind, water, or sediments distributed by anthropogenic (human) factors, such as beach renourishment (Jolls et al. 2004). Seeds must be scarified (the seed coat broken by nicking or abrasion) or cold stratified (chilling for weeks) before germination can occur (Cohen et al. 2010). Germination takes place from April through July; initially, a small sprig forms, which soon begins to branch into a clump. At the Seashore, seedlings are usually visibly detectable beginning in June (Lyons pers. comm. 2005). Plants are typically 10 to 12 inches in diameter, consisting of 5 to 20 branches, though occasionally a clump may get as large 3 feet or more across, with more than 100 branches (USFWS 1993; NJDEP 2005).

Flowering begins when plants are of sufficient size, often in June but more typically in July, and continues until the plants die in late fall or early winter. The species is a prolific seed producer, with seed production beginning in July or August and usually reaching a peak in September. Seed production continues until the plant dies. The seeds are relatively large (0.1 inch), believed to be viable for long periods of time (decades), and contained in indehiscent utricles (a fruit pouch that does not split open spontaneously at maturity to release its seed). Though the utricles are normally indehiscent, it is not unusual to see them splitting open, either before or after their detachment from the plant. Splitting or fragmentation of the utricle occurs under conditions of agitation (by wind), abrasion (by sand), or simple loss of integrity over time (USFWS 1996b).

Seed dispersal may occur by wind or water, and naked seeds do not disperse nearly as far from the parent plants as seeds retained in utricles. Seeds may also be dispersed by human activities, such as beach replenishment programs. Many utricles remain attached to the plant and never disperse, allowing seeds and fruit to pile up around the bases of the parent plants. This primarily occurs at the end of the growing season when the plant dies (USFWS 1996b).

Seabeach amaranth occupies a fairly narrow habitat niche. It is found on sandy ocean beaches, where its primary habitat consists of overwash flats at accreting ends of islands, and at the sparsely vegetated zone between the high-tide line and the toe of the primary dune on non-eroding beaches. It is intolerant of competition and does not occur on well-vegetated sites. It is also intolerant of even occasional flooding or overwash. Populations are occasionally found in other habitats, including back dunes, soundside beaches, blowouts in foredunes, and beach-replenishment areas, but these populations tend to be small and temporary (USFWS 1996b; NJDEP 2005). In general, in order to survive, this species needs extensive areas of barrier island beaches and inlets, functioning in a relatively natural and dynamic manner, to allow it to move around in the landscape, occupying suitable habitat as it becomes available (USFWS 1993).

Since 2000, locations where seabeach amaranth has been found within the Seashore include the upper, dry-sand flats at Cape Hatteras Point (Cape Point and South Beach), in a line of small dunes adjacent to the flats at Hatteras Inlet Spit, at Bodie Island Spit, and at the base of dunes on the beach on the northern half of Ocracoke Island. Most areas where the plants have been found were either in established bird closures or other areas closed to vehicular traffic (NPS 2001d, 2001b, 2005a). Despite continuous protection (through the establishment of summer and winter resource closures) of the area on Bodie Island Spit where the plants were found in 2004 and 2005, as well as the area on Cape Point where the plant was historically found, no plants have been found in the Seashore since 2005. Additionally, large portions of the historic range of the plant at Hatteras Inlet Spit no longer exist due to continued erosion. While it is thought that the plant may possibly be extirpated from the Seashore (NPS 2009e), it should be noted that since plants are not evident every year, but may survive in the seed bank, populations of seabeach amaranth may still be present even though plants are not visible for several years (USFWS 2007d).

The predominant threat to seabeach amaranth is the destruction or alteration of suitable habitat, primarily because of beach stabilization efforts and storm-related erosion (USFWS 1993). Other important threats to the plant include beach grooming and some forms of “soft” beach stabilization, such as sand fencing and planting of beach-grasses; vehicular traffic, which can easily break or crush the fleshy plant and bury seeds below depths from which they can germinate; and predation by webworms (caterpillars of small moths) (USFWS 1993). Webworms feed on the leaves of the plant and can defoliate the plants to the point of either killing them or at least reducing their seed production. Beach vitex (*Vitex rotundifolia*) is another threat to seabeach amaranth, as it is an aggressive, invasive, woody plant that can occupy habitat similar to seabeach amaranth and outcompete it (ISSG 2009).

## STATE-LISTED AND SPECIAL STATUS SPECIES

This section addresses the habitat, diet, reproduction, population trends, and impacts on several species of shorebirds that are listed or recognized as special status species by the State of North Carolina but are not federally listed as endangered or threatened. Most of these species breed on Cape Hatteras, as well as in other areas of North Carolina. Species described include American oystercatcher; four species of colonial waterbirds, including gull-billed terns, least terns, common terns, and black skimmers; Wilson’s plover; and red knots. The latter species breeds in the Arctic and uses the Seashore as a stopover during its annual migration.

### AMERICAN OYSTERCATCHER

The American oystercatcher is a large (16–18 inches long, 14–24 ounces) and conspicuous shorebird with long pink legs and a long, bright reddish-orange bill. The upper body is covered with black feathers that contrast with white feathers on the breast and sides. The sexes are similar in appearance, although females are slightly larger than males.



**American Oystercatcher**

Credit: Steven J. Dinsmore

Oystercatchers are restricted to the coastal zone throughout the year, where they inhabit saltmarshes and coastal islands along the southeastern United States coast (Schulte et al. 2007; Nol et al. 2000). They feed primarily on bivalves, mollusks, worms, and other marine invertebrates that inhabit intertidal areas (Nol and Humphrey 1994; Cohen et al. 2010). This specialized diet is the reason that American oystercatchers are primarily found in coastal areas that support intertidal shellfish beds (Schulte et al. 2007).

Oystercatchers form pair bonds in February and early March. Courtship takes place in saltmarshes and on dunes, beaches, dredge spoils, and oyster bars. They breed from March to August along the Atlantic Coast, from Massachusetts to Florida, in relatively high, open, sandy areas with sparse to no vegetation (Nol and Humphrey 1994; Cohen et al. 2010). They also breed along the Gulf Coast from Florida to Mexico and winter from central New Jersey south to the Gulf of Mexico (Simons and Schulte 2008).

### American Oystercatcher in North Carolina

A 2007 breeding season survey estimated North Carolina’s summer American oystercatcher population at 717 individuals, with 339 breeding pairs (Simons and Schulte 2008), and a 2005 survey estimated a winter population of oystercatchers in North Carolina at 647 birds (Brown et al. 2005). Cape Lookout and Cape Hatteras national seashores are estimated to support 90 breeding pairs (Simons and Schulte 2008), or 27% of the state’s breeding oystercatchers. Barrier islands continue to be an important habitat, and supported 43% of the oystercatchers in North Carolina in 2007. Most of the barrier island nesters were

found on undeveloped islands, although inlet spits on many developed islands continued to support nesting birds (NCWRC 2008b). Oystercatcher reproductive success in North Carolina has been extremely low, as studies conducted between 1995 and 2008 demonstrated an average of 0.31 chicks per nesting pair surviving to fledge (Simons and Schulte 2008). Other studies conducted at Cape Lookout National Seashore between 1997 and 1999 documented fledge rates ranging from as low as 0.04 to 0.15 (Davis et al. 2001). The American oystercatcher is classified as a Species of High Concern in the U.S. Shorebird Conservation Plan because of its small population (11,000 individuals), widespread habitat loss, and the threats it faces both during the breeding and nonbreeding seasons (Schulte et al. 2007). The oystercatcher was designated as a Species of Special Concern in North Carolina on May 1, 2008 (Pipkin pers. comm. 2009), and is listed on the USFWS 2008 Birds of Conservation Concern (USFWS 2008b).

### Habitat Description

In North Carolina, oystercatchers generally nest on sandy sites characterized by open substrate and little vegetation, far from the water, and slightly elevated to afford at least a 180° view (Nol and Humphrey 1994; Shields and Parnell 1990; Cohen et al. 2010). However,



**Foraging and Nesting Habitat**

Credit: NPS – Cape Hatteras National Seashore



**Sand Flats**

Credit: NPS – Cape Hatteras National Seashore

there is evidence that oystercatchers have begun to use less traditional nesting habitats such as dredge spoil islands and vegetated marshes (McGowan et al. 2005; Traut et al. 2006). A breeding season study in Virginia documented that over half of the oystercatcher breeding pairs were located on storm-deposited shell rakes (Wilke et al. 2005). Elevation of nest habitat and distance to the water are both important to nest success because nests can be destroyed by tidal flooding (Lauro and Burger 1989). Oystercatchers are more common in habitat with few predators or no terrestrial predators (e.g., feral or domestic predators) (Nol and Humphrey 1994). Oystercatcher foraging habitats include oyster and mussel bars and intertidal sand flats and mudflats. Winter and summer foraging habitats are similar (Nol and Humphrey 1994; Nol et al. 2000).

### Diet

The elongated and laterally compressed bill of the oystercatcher is especially suited to allow the bird to prey upon and open marine bivalves (class Bivalvia), including oysters (family Ostreidae), soft-shell clams (*Mya arenaria*), razor clams (*Ensis directus*), stout razor clams (*Tagelus plebeius*), and ribbed mussels (*Geukensia demissa*). Other items the oystercatcher consumes include marine worms (phylum Platyhelminthes), mole crabs (*Emerita talpoida*), sandworms (*Nereis virens*), limpets (order Patellogastropoda), jellyfish (phylum Cnidaria), sea urchins (phylum Echinoderma), and crabs (order Decapoda) (Bent 1929; Johnsgard 1981; Nol 1989; Nol and Humphrey 1994).

## Breeding Biology

The major stages of the oystercatcher nesting cycle include the following: establishment and holding of nesting territories, courtship and copulation, nest scraping and nest building, egg laying and incubation, chick rearing, and fledging. Breeding pairs of oystercatchers begin nesting in late February and early March by establishing and holding a nesting territory and then scraping multiple shallow depressions in the sand. Eventually, they choose one scrape to build a nest (Nol and Humphrey 1994; McGowan et al. 2005). Nests are 1.5–2.5 inches deep and 7.0–8.0 inches across. They may contain shell fragments, dead plants, small stones, and beach debris (Baicich and Harrison 1997). Oystercatchers are typically monogamous and may mate for life (Nol and Humphrey 1994).

Oystercatchers can nest in proximity to colonial waterbirds, including but not limited to common tern, least tern, and black skimmer.



**American Oystercatcher Chicks Near Wrack**

Credit: Ted Simons

Both sexes incubate three eggs (rarely two or four) for 24–28 days, and incubation may begin after the second egg is laid (Nol and Humphrey 1994) or after the last egg (Baicich and Harrison 1997).

Oystercatchers will re-nest if eggs or nestlings are lost early in the season. Both adults brood nestlings, which crouch motionless when alarmed, making them difficult to see. Nestlings remain in the nest for 1–2 days and then move with adults within their nesting territory or into nearby foraging areas, which can be 150 to 600 feet away, depending on the habitat. Chicks fledge in about 35 days, but fledglings rely on adults almost entirely until they are 60 days old (Nol and Humphrey 1994).

## American Oystercatcher Breeding Performance at Cape Hatteras National Seashore

At the Seashore, the oystercatcher population has experienced declines in numbers of breeding pairs since the 1990s. As seen in table 26 and figure 14, from 1999 to 2006, the number of nesting pairs declined 44% from 41 to 23 pairs on Ocracoke, Hatteras, Bodie, and Green islands (table 26).

From 1999 to 2010 on Ocracoke Island, there were a total of 94 nesting pairs, 133 nests, 60 hatched nests, 47 fledged chicks, and a fledge rate of 0.46. From 1999 to 2010 on Hatteras Island, there were a total of 207 nesting pairs, 273 nests, 120 hatched nests, 95 fledged chicks, and a fledge rate of 0.51. From 1999 through 2010 on Bodie Island, there were a total of 30 nesting pairs, 44 nests, 10 hatched nests, 6 fledged chicks, and a fledge rate of 0.20. From 2004 through 2010 on Green Island, there were a total of 15 nesting pairs, 19 nests, 11 hatched nests, 15 fledged chicks, and a fledge rate of 0.98 (Muiznieks pers. comm. 2010a; table 27).



**American Oystercatcher Chick and Egg**

Credit: Ted Simons

**TABLE 26. OYSTERCATCHER NESTING PAIR COUNT COMPARISON, CAPE HATTERAS NATIONAL SEASHORE, 1999–2010**

<b>Year</b>	<b>Ocracoke Island</b>	<b>Hatteras Island</b>	<b>Bodie Island</b>	<b>Green Island</b>	<b>Total</b>
1999 <sup>a</sup>	15	24	2	—	41
2000	12	23	2	—	37
2001	13	24	2	—	39
2002	12	17	2	—	31
2003	8	16	5	—	29
2004	9	15	3	2	29
2005	5	16	2	2	25
2006	5	14	2	2	23
2007	4	15	2	2	23
2008	3	15	3	2	23
2009	4	13	4	2	23
<b>2010</b>	4	15	1	3	23
<b>Total</b>	94	207	30	15	346

Source: Muiznieks pers. comm. 2009 and 2010a, except <sup>a</sup>Simons and Schulte 2007, 2008

NOTE: Data available only for years listed.



TABLE 27. OYSTERCATCHER BREEDING DATA BY SITE, CAPE HATTERAS NATIONAL SEASHORE, 1999–2010

Year	Nesting Pairs	Nests	Nests Hatched	Nest Survival (%)	Chicks Fledged	Fledge Rate
Ocracoke Island						
1999 <sup>a</sup>	15	17	7	41.2	2	0.13
2000	12	17	6	35.3	7	0.58
2001	13	15	11	73.3	17	1.31
2002	12	18	6	33.3	3	0.25
2003	8	12	4	33.3	1	0.13
2004	9	11	7	63.6	8	0.89
2005	5	10	3	30.0	1	0.20
2006	5	8	5	62.5	2	0.40
2007	4	10	3	30.0	1	0.25
2008	3	3	1	33.3	2	0.67
2009	4	6	2	33.3	0	0.00
<b>2010</b>	<b>4</b>	<b>6</b>	<b>5</b>	<b>83.3</b>	<b>3</b>	<b>0.75</b>
<b>Total / average<sup>b</sup></b>	94	133	60	45.1	47	<b>0.46<sup>b</sup></b>
Hatteras Island						
1999 <sup>a</sup>	24	31	7	22.6	3	0.13
2000	23	29	10	34.5	2	0.09
2001	24	28	10	35.7	6	0.25
2002	17	25	3	12.0	4	0.24
2003	16	23	10	43.5	6	0.38
2004	15	18	14	77.8	9	0.60
2005	16	23	12	52.2	8	0.50
2006	14	19	11	57.9	5	0.36
2007	15	21	10	47.6	9	0.60
2008	15	20	9	45.0	11	0.73
2009	13	19	11	57.9	9	0.69
<b>2010</b>	<b>15</b>	<b>17</b>	<b>13</b>	<b>76.5</b>	<b>23</b>	<b>1.53</b>
<b>Total / average<sup>b</sup></b>	<b>207</b>	<b>273</b>	<b>120</b>	<b>44.0<sup>b</sup></b>	<b>95</b>	<b>0.51<sup>b</sup></b>
Bodie Island						
1999 <sup>a</sup>	2	3	0	0.0	0	0.00
2000	2	3	0	0.0	0	0.00
2001	2	3	1	33.3	1	0.50
2002	2	5	1	20.0	2	1.00

Year	Nesting Pairs	Nests	Nests Hatched	Nest Survival (%)	Chicks Fledged	Fledge Rate
Bodie Island (continued)						
2003	5	5	1	20.0	0	0.00
2004	3	7	0	0.0	0	0.00
2005	2	3	1	33.3	0	0.00
2006	2	2	1	50.0	0	0.00
2007	2	2	1	50.0	0	0.00
2008	3	5	2	40.0	2	0.67
2009	4	4	1	25.0	1	0.25
2010	1	2	1	50.0	0	0
<b>Total / average<sup>b</sup></b>	<b>30</b>	<b>44</b>	<b>10</b>	<b>22.7<sup>b</sup></b>	<b>6</b>	<b>0.20<sup>b</sup></b>
Green Island						
2004	2	3	2	66.7	2	1.00
2005	1	3	2	66.7	0	0.00
2006	2	2	2	100.0	2	1.00
2007	2	2	1	50.0	2	1.00
2008	2	4	1	25.0	2	1.00
2009	2	2	1	50.0	3	1.50
2010	3	3	2	66.7	4	1.33
<b>Total / average<sup>b</sup></b>	<b>15</b>	<b>19</b>	<b>11</b>	<b>57.9<sup>b</sup></b>	<b>15</b>	<b>0.98<sup>b</sup></b>

Source: NPS 2010f and Muiznieks pers. comm. 2010a, except aSimons and Schulte 2007 and 2008

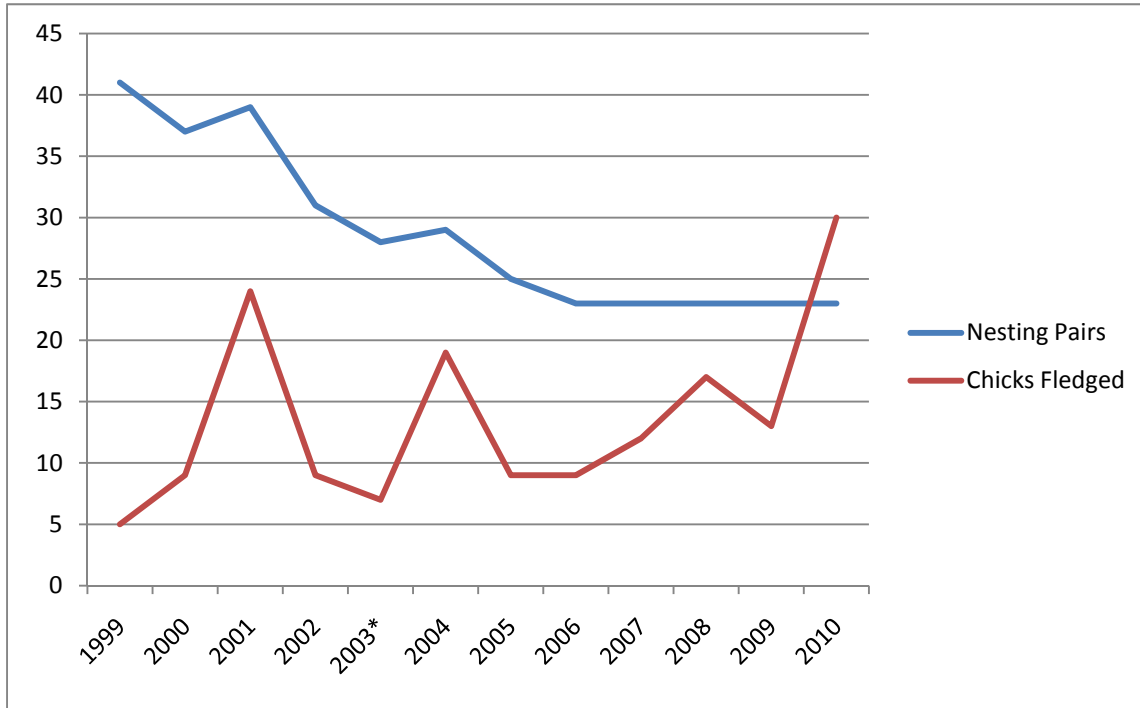
NOTE: Data available only for years listed.

b = Average.

Of all known breeding sites at the Seashore, chicks on Green Island have the greatest chances of surviving until fledging, with an average fledge rate of 0.98, which is approximately double the fledge rate on Ocracoke or Hatteras islands and more than four times the fledge rate on Bodie Island. The percentage of nests that survived and successfully hatched has also been substantially lower on Bodie Island when compared to nest survival on the other three islands (table 27). However, since 2007, the number of nesting pairs increased from two to four on Bodie Island and 2008 marked the first time an oystercatcher chick fledged since 2002. In 2010, these numbers declined with only one nesting pair and no fledged chicks on Bodie Island (table 27).

Since 1999, the number of nesting pairs at the Seashore has generally declined but has remained stable at 23 nesting pairs for the last five years (see figure 14). The annual number of fledged chicks has ranged from a low of 5 in 1999 to a high of 30 in 2010, which represents the first time the fledge rate exceeded 1.0 at the Seashore (where the lines cross on the figure). The rapid decrease in chick survival in 2002 is thought to correspond to the arrival of the fox as a predator on Hatteras Island. The advent of predator control efforts at the Seashore in 2003 is thought to be a contributing factor to the noticeable increase in chick survival between the 2003 and 2004 seasons (Simons and Schulte 2008). However, in the absence

of hurricane events (which sometimes provide improved habitat), a recent demographic model projected a rapid decline for oystercatchers in North Carolina in the next 50 years (Simons and Schulte 2008).



Source: NPS 2010f and Muiznieks pers. comm. 2010a

Note: Data for Green Island for 2003 were unreliable and were not included in this figure. Data for Green Island prior to 2003 were not available.

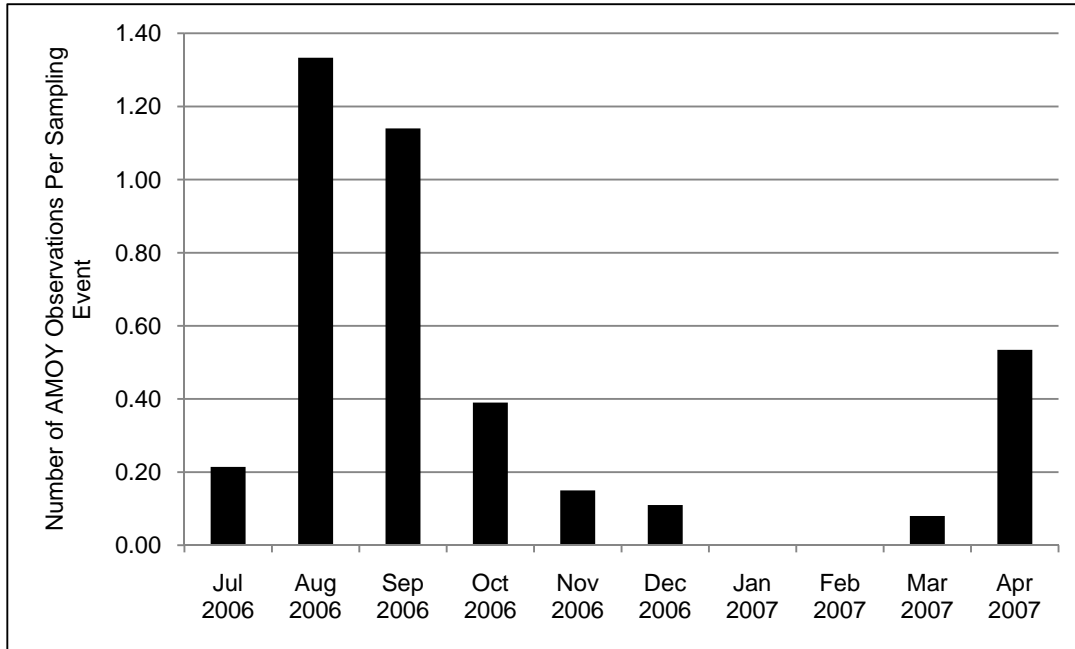
**FIGURE 14. AMERICAN OYSTERCATCHER NESTING PAIRS AND CHICKS FLEDGED, CAPE HATTERAS NATIONAL SEASHORE, 1999–2010**

### Nonbreeding Oystercatchers

American oystercatcher migration generally begins at the end of August and continues through November. American oystercatchers are short-distance, partial migrants and generally winter along the southeast coast of the United States (Schulte et al. 2007; Nol et al. 2000).

Winter and migratory habitat appear to be similar to breeding habitat, although additional research is needed to determine preferred habitat in the winter, especially for birds on migration. Limited observations indicate that winter birds roost on open ground without vegetation in areas near foraging habitat (Nol and Humphrey 1994). A study conducted during the winter of 2002–2003 found that oystercatchers commonly use shell rakes as winter roost sites (Brown et al. 2005). Other habitat types used by wintering oystercatchers include sand islands, inlet beaches, sand spits, edges and interior mudflats on marsh islands, and occasionally docks and jetties (Brown et al. 2005; Schulte et al. 2007).

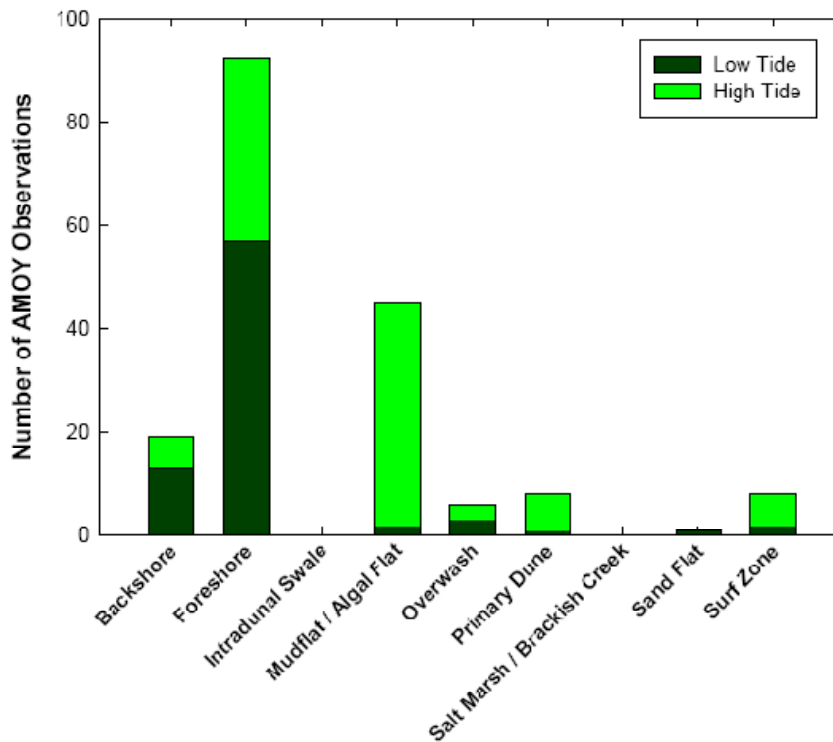
The NPS SECN Winter Monitoring Program conducted a more comprehensive study on wintering shorebirds. Pilot implementation of this SECN shorebird monitoring protocol at the Seashore began in mid-July 2006. Results for the oystercatcher, which are depicted on figure 15, are discussed below.



Source: Byrne et al. 2009

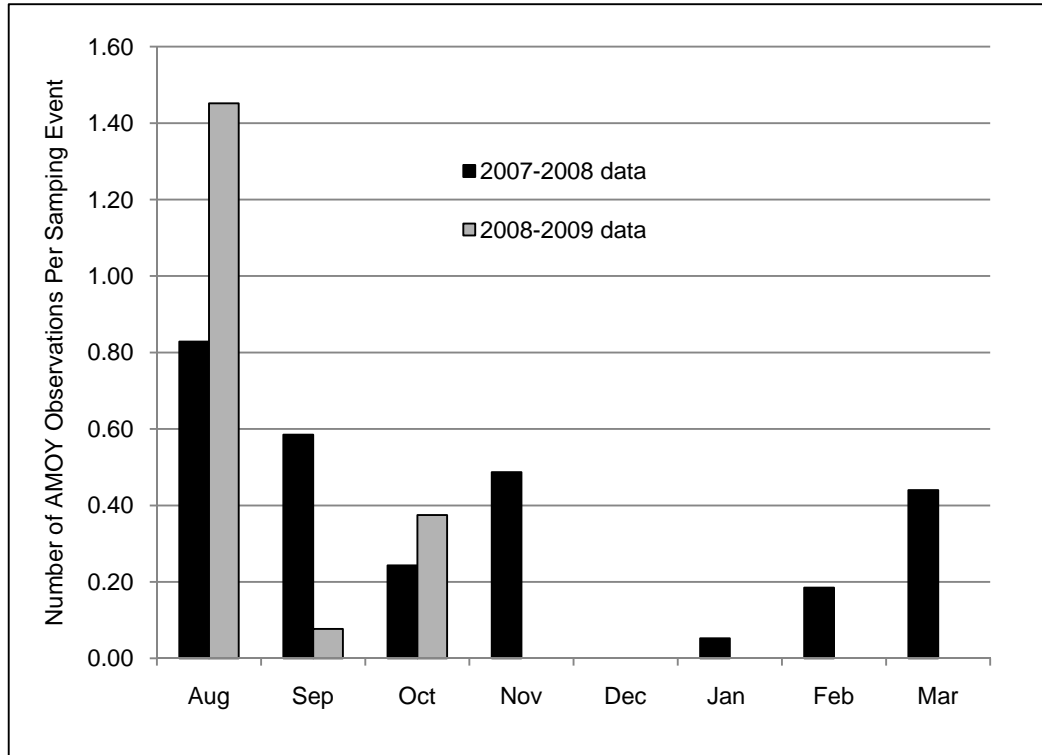
**FIGURE 15. MONTHLY OBSERVATIONS OF AMERICAN OYSTERCATCHERS (AMOY) PER 30-MINUTE SAMPLING EVENT AT CAPE HATTERAS NATIONAL SEASHORE, 2006–2007**

From July 2006 through April 2007, the majority of American oystercatchers were observed in foreshore and mudflat / algal flat habitat types (figure 16). American oystercatchers appeared to use the foreshore during both tidal extremes and used the mudflat / algal flat habitat primarily during high tide. The highest numbers of birds appeared to occur in August, and the data from the first year of pilot study show that the Seashore does not appear to have a wintering population of oystercatchers, which is shown in the American oystercatcher numbers between 2008 and 2010 (Muiznieks pers. comm. 2010e).



**FIGURE 16. NUMBERS OF AMERICAN OYSTERCATCHER (AMOY) OBSERVATIONS BY HABITAT TYPE AND TIDAL STAGE AT CAPE HATTERAS NATIONAL SEASHORE, 2006–2007**

Subsequent monitoring of oystercatchers between August and April 2007–2009 by Seashore staff indicated similar results, with very few birds observed from December through February (see figure 17). Figure 17 may be misleading in that the surveys conducted by Seashore staff were only conducted at the points and spits to comply with monitoring requirements for the piping plover. Oystercatchers will forage along the entire shoreline without preference for the points or spits and are therefore probably underestimates of the numbers occurring on the Seashore during the months represented.



Source: Byrne et al. 2009

Note: Data represented in this figure were only collected at the points and spits and most likely underestimate the number of oystercatchers present at the Seashore during these months.

**FIGURE 17. MONTHLY OBSERVATIONS OF AMERICAN OYSTERCATCHERS (AMOY) PER SAMPLING EVENT AT CAPE HATTERAS NATIONAL SEASHORE, 2007–2009**

### Risk Factors to American Oystercatchers

In addition to direct habitat loss, the American oystercatcher faces pressure from recreational disturbance, increases in predators, potential contamination of food resources, and alteration of habitat through beach stabilization (Schulte et al. 2007). Causes of American oystercatcher nest failure on the Outer Banks from 1998 through 2008 could not be determined for 49% of nest failures. However, the causes of failure that could be determined were mammalian predation (54%), ghost crab predation (3%), avian predation (4%), direct human disturbance (4%), abandonment (6%), and overwash (29%) (Simons and Schulte 2008).



**American Oystercatcher Chick in ORV Tracks**  
Credit: Ted Simons

**Human Activity.** Oystercatchers need large, undisturbed beach areas for successful nesting. Research has shown that disturbance by pedestrians, kayakers, vehicles, and unleashed pets can cause the abandonment of nest habitat as well as direct loss of eggs and chicks (Cohen et al. 2010; Sabine et al. 2006, 2008; Toland 1999; Hodgson et al. 2008). Studies of the effects of humans and vehicles on American oystercatchers have indicated lower nest survival and higher chick mortality in places with higher levels of disturbance (McGowan 2004; Sabine 2005; Simons and Schulte 2008).

Studies in Europe on the European oystercatchers (*Haematopus ostralegus*), in the same genus as American oystercatcher and closely related, have shown reduced foraging efficiency and lower rates of chick feeding in disturbed versus undisturbed habitats (Verhulst et al. 2001). In the winter, disturbance caused European oystercatchers to reduce foraging, although the behavioral response of avoidance lessened as the winter progressed (Stillman and Goss-Custard 2002). A study at Cape Lookout National Seashore documented lower nesting success for oystercatchers in areas where human disturbance was higher and also noted that oystercatchers avoided nesting in areas with high levels of human activity (Davis 1999). Another study in North Carolina found evidence that oystercatcher nests that were frequently disturbed by beach vehicles suffered higher rates of nest predation (McGowan and Simons 2006).

In addition to direct impacts or mortality, reasons for lower reproductive success in areas of high disturbance may include reduced time spent foraging (Sabine et al. 2008; Verhulst et al. 2001; Stillman and Goss-Custard 2002), thermal stress to eggs caused by a lack of incubation when reacting to disturbance (Sabine 2006; Verhulst et al. 2001), and expenditure of energy reserves during flushing or defensive displays (Toland 1999; Nudds and Bryant 2000; Stillman and Goss-Custard 2002). Studies at Cumberland Island National Seashore in Georgia found that foraging behavior was lower in the presence of vehicular activity, which could alter chick provisioning and ultimately affect chick survival. Researchers recommended prohibiting beach driving in oystercatcher territories when chicks are present (Sabine 2005). Research on flush responses of oystercatchers to human disturbance indicates that protection of this species requires a buffer distance of up to 656 feet from nesting areas (Cohen et al. 2010; see table 28).

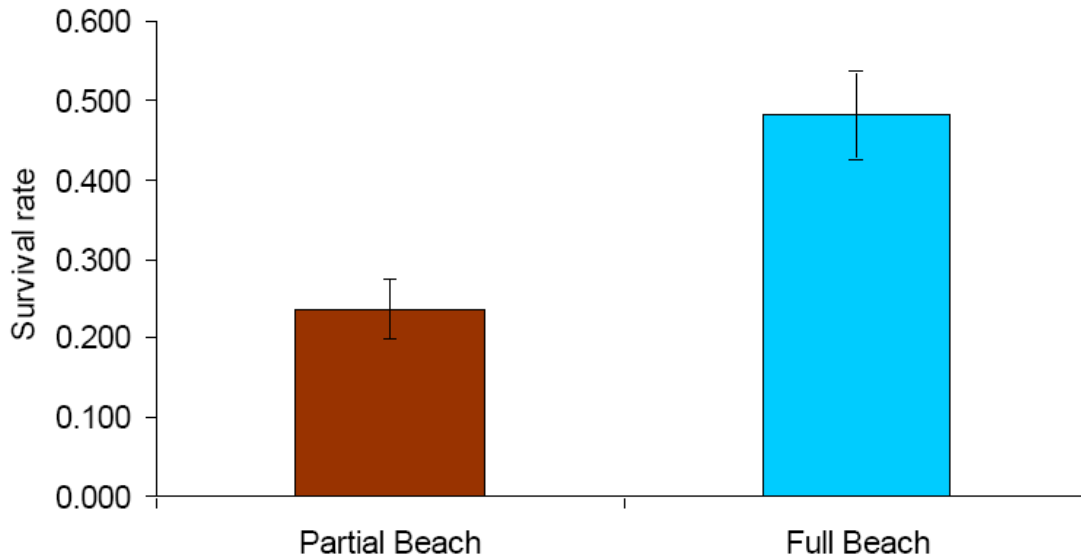
**TABLE 28. BUFFER DISTANCES RECOMMENDED FOR AMERICAN OYSTERCATCHERS**

Buffer Distance	Source	Disturbance Types	Behavior/Location	Region
450 feet (137 meters)	Sabine 2005	Pedestrians, ORVs / other vehicles, boats, pets	Nesting	Cumberland Island National Seashore, Georgia
492 feet (150 meters)	Sabine 2005	Pedestrians, ORVs / other vehicles, boats, pets	Brood rearing	Cumberland Island National Seashore, Georgia
100 feet (30 meters)	Maine Department of Environmental Protection 2009	Development, vegetation removal	Feeding Area <sup>a</sup>	Maine
250 feet (76 meters)	Maine Department of Environmental Protection 2009	Development, vegetation removal	Roosting Area <sup>b</sup>	Maine
338 feet (103 meters)	Rodgers and Schwikert 2002	Personal watercraft	Nonbreeding adult foraging and loafing	West and east coasts of Florida
656 feet (200 meters)	Cohen et al. 2010	All human disturbance	Nesting	Cape Hatteras National Seashore

<sup>a</sup> Shorebird feeding areas include the intertidal zone and a 100-foot adjacent buffer area.

<sup>b</sup> Shorebird roosting areas include the intertidal zone, the roosting area, and a 250-foot area adjacent buffer area.

The reproductive success of oystercatchers at Cape Hatteras has been impacted by vehicle and pedestrian disturbance. From 1999 to 2008, 48% of chicks in full beach closures on Cape Hatteras survived to fledging, while only 24% survived when the beach had an open lane for vehicles and pedestrians (Simons and Schulte 2008; see figure 18). Seashore staff also documented that the highest hatching rate (87%) was found at sites that did not have ORV use or concentrated pedestrian use (NPS 2005e).



Source: Simons and Schulte 2008

**FIGURE 18. AMERICAN OYSTERCATCHER CHICK SURVIVAL BY CLOSURE TYPE AT CAPE HATTERAS NATIONAL SEASHORE, 1999–2008**

Direct mortality of oystercatcher chicks from vehicles has been documented since 1995, when three chicks were found crushed in a set of vehicle tracks at the Seashore (Simons and Schulte 2008). Similar events have been documented at neighboring Cape Lookout National Seashore, where studies documented five chick deaths related to vehicles in 1995 (Davis et al. 1999), and one chick and two clutches lost in 1997 when they were run over by vehicles (Davis et al. 2001). Three oystercatcher chicks were killed during the 2003 and 2004 breeding seasons at Cape Hatteras by being run over by vehicles (NPS 2004f, 2005e), as documented by Seashore resource protection staff. A recent radio telemetry study conducted at Cape Hatteras and Cape Lookout national seashores identified human activity as the source of 16% of known chick mortality from 2005 through 2007 (Simons and Schulte 2008), with 8% of that related to vehicle collisions and 8% to other human disturbance.

**Weather and Tides.** Nine named hurricanes have affected the Outer Banks between 1993 and 2009 (NOAA 2009). Storms and associated high tides during breeding season can reduce nesting success. Overwash and other weather-related events accounted for 29% of documented nest failures at Cape Hatteras from 1999 through 2008. However, periodic hurricanes (outside the breeding season) can benefit oystercatcher nesting success in the long term through the creation of new habitat and the reduction of predators. For example, on Cape Lookout National Seashore, nests lost to predators dropped significantly after Hurricane Isabel flooded the island in September 2003. This drop was attributed to the reduction of the predator population due to hurricane-related flooding (Simons and Schulte 2008).

**Predation.** Numerous studies and reports have identified nest predation as a major source of oystercatcher nest failure (Davis et al. 2001; Sabine et al. 2006; McGowan et al. 2005; McGowan 2004;



Hodgson et al. 2008; Traut et al. 2006; Wilke et al. 2007). Mammalian predation was the major identifiable cause of nest failure for study sites in North Carolina from 1998 through 2008 (Simons and Shulte 2008). Predators include gray fox, red fox, raccoon, mink, dogs, cats, American crows, and gulls (Nol and Humphrey 1994). More recently, video nest recordings have documented raccoon, bobcat (*Lynx rufus*), and ghost crab predation of oystercatcher eggs and chicks at Cumberland Island National Seashore, Georgia (Sabine et al. 2006). Oystercatchers may lay another clutch if their eggs are lost or destroyed (Nol and Humphrey 1994).

As previously discussed, predation of oystercatchers is thought to be associated with human activities such as ORV use and pedestrian recreation (McGowan and Simons 2006; Simons and Schulte 2007; Sabine et al. 2008). McGowan and Simons (2006) hypothesized that human recreation might increase the activity of incubating oystercatchers, thereby leading to increased predation rates. Their research found a clear association between recreation and incubation behavior at Cape Hatteras and Cape Lookout during the 2002 and 2003 breeding seasons (McGowan and Simons 2006). The presence of ATV traffic was associated with increased numbers of trips parents made back and forth to nests and a decrease in duration of incubation. Recreational activities such as truck use and pedestrian traffic showed a weaker association with nesting behaviors, although the proximity of the disturbance to the nest was a factor. Evidence points to a reduction of nest success as the result of an alteration of incubation behavior due to recreational disturbance. McGowan and Simons (2006) hypothesized that mammals, which were found to be the main nest predators during this study (Davis et al. 2001), can better locate disturbed nests because adults leave a scent trail when going back and forth to nests. Human behavior and actions may also result in higher predator populations. For example, raccoon sightings and signs were greater in areas of increased human activity at Cape Lookout (Davis et al. 2001), and raccoon and bobcat signs appeared to be more abundant around areas of frequent human activity at Cumberland Island National Seashore, Georgia (Sabine et al. 2006).

In areas of frequent human activity, pedestrians were commonly observed in close proximity to nests, causing oystercatchers to leave their nests and exposing eggs and chicks to temperature extremes and greater risk of predators (Sabine et al. 2006).

## **COLONIAL WATERBIRDS**

Colonial waterbirds at the Seashore include gull-billed terns, common terns, least terns, and black skimmers. The listing status of each of these species at the state level is described below. None of these species is federally listed as threatened or endangered.

Ground-nesting colonial waterbirds breed along the Seashore beaches, which also host nesting sites for other birds, as well as a range of recreational activities for humans. Studies have documented that populations of some species of colonial waterbirds are declining. Beach nesters such as common terns, gull-billed terns, and black skimmers have shown the most significant declines. Coastal development, disturbances by humans, and increased nest predation all contribute to the decline in numbers of colonial waterbirds (NCWRC 2005).

## Colonial Waterbirds—Descriptions

### Gull-Billed Tern

The gull-billed tern is a medium-sized (13 to 15 inches long, weighing about 5.6 to 7.0 ounces), black-capped waterbird found widely in Eurasia, the Mediterranean, northern Europe, and the United States. In the United States, it occurs as two subspecies, with the Atlantic Coast and Gulf subspecies being designated *Sterna nilotica aranea* and the *S. n. vanrossemei* subspecies occurring from the Salton Sea in California south to western Mexico (Parnell et al. 1995). The gull-billed tern is listed on the USFWS 2008 Birds of Conservation Concern (USFWS 2008b) and is listed as threatened by the State of North Carolina.



**Gull-Billed Tern and Chick**

Credit: NPS

### Common Tern

The common tern can be found across the temperate region of the northern hemisphere. It also occurs in Bermuda and the southern Caribbean region (Nisbet 2002). It is one of the medium-sized, black-capped terns (12 to 14 inches long, weighing 3.8 to 5.1 ounces) (Nisbet 2002). In North America, it is distributed along the Atlantic Coast, the St. Lawrence River, and in most of the Great Lakes (Nisbet 2002). The common tern is listed on the USFWS 1995 list of Non-game Birds of Management Concern (USFWS 1995) and the 2008 Birds of Conservation Concern (USFWS 2008b), as well as being a North Carolina Species of Special Concern (NCWRC 2008b).



**Common Tern with Fish**

Credit: Phyllis Cooper / USFWS

### Least Tern

The least tern is the smallest of the black-capped terns in North America. Five races are recognized in North America, although there are few differences genetically or morphologically among them (Thompson et al. 1997). The least tern weighs only about 1.7 ounces, on average, and is only 8 to 9 inches in length (Thompson et al. 1997). The least tern is listed on the USFWS 1995 list of Non-game Birds of Management Concern (USFWS 2005) and the 2008 Birds of Conservation Concern (USFWS 2008b), as well as being a North Carolina Species of Special Concern (NCWRC 2008b).



**Least Tern and Chick**

Credit: NPS

### Black Skimmer

Black skimmers are the only waterbirds on the Atlantic Coast that feed by skimming along the surface of the water with their lower jaw. They are also unique in that males are on average 35% to 40% larger than females, and both exhibit a high degree of nocturnal behavior. Females average about 9.3 ounces and are 16 to 24 inches long, while males average about 13 ounces and are 19 to 24 inches long (Gochfeld and Burger 1994). The black skimmer is listed on



**Black Skimmer**

Credit: NPS

the USFWS 2008 Birds of Conservation Concern (USFWS 2008b), as well as being a North Carolina Species of Special Concern (NCWRC 2008b).

### Beach-Nesting Colonial Waterbirds in North Carolina

The Outer Banks region of North Carolina supports a large number of colonial waterbird species that depend upon its extensive sounds and the nearshore waters for feeding, and its relatively undisturbed islands for nesting. Most species of colonial waterbirds are in jeopardy in North Carolina (Parnell and Committee 1977) because of a decline in numbers over the past 20 to 30 years. During the period from 1977 to 2007, the number of gull-billed tern nests declined from approximately 268 to only 90, common tern nests from 2,761 to 498, and black skimmer nests from 976 to 555. The number of least tern nests, however, increased from 1,925 to 2,827 (NCWRC 2008b). Numbers of most breeding, colonial nesting shorebirds within North Carolina have declined over the past 20 to 30 years (Cohen et al. 2010; see table 29). For example, from 1977 to 2007, colonial waterbird nesting declined 30%, from 7,068 to 5,004 nests (table 29). Barrier island beaches provide important habitat for gull-billed terns, common terns, least terns, and black skimmers. Many of these beaches are severely degraded due to coastal development and associated increases in human disturbance and in predation by overabundant species. These factors have most likely contributed to the decline in colonial waterbird numbers in North Carolina (Cameron and Allen 2008).

**TABLE 29. NUMBERS OF COLONIAL WATERBIRD NESTS IN NORTH CAROLINA, 1977–2007**

Species	1977	1983	1988	1993	1995	1997	1999	2001	2004	2007	Average
Gull-billed tern	268	233	161	155	249	137	154	258	99	90	180.4
Common tern	2,761	2,247	2,618	2,122	1,699	952	888	1,131	570	498	1,548.6
Least tern	1,925	1,653	1,528	2,188	1,993	882	1,271	1,742	2,408	2,827	1,841.7
Black skimmer	976	797	743	1,084	819	570	681	594	623	555	744.2
Total	5,930	4,930	5,050	5,549	4,760	2,541	2,994	3,725	3,700	3,970	N/A

Source: NCWRC 2007

N/A = Not applicable.

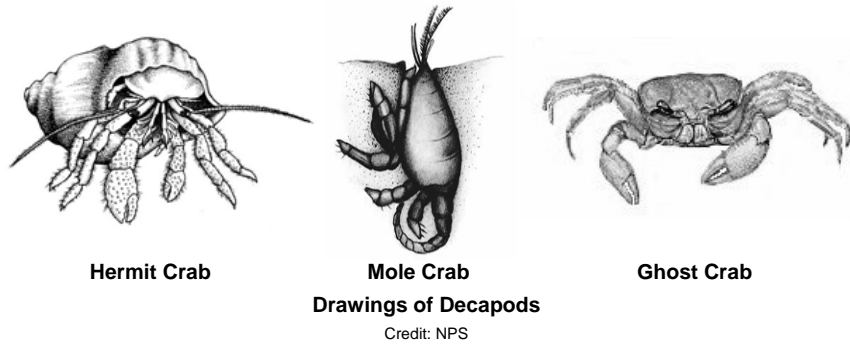
### Descriptions of Breeding, Foraging, and Nonbreeding Habitats

#### Gull-Billed Tern

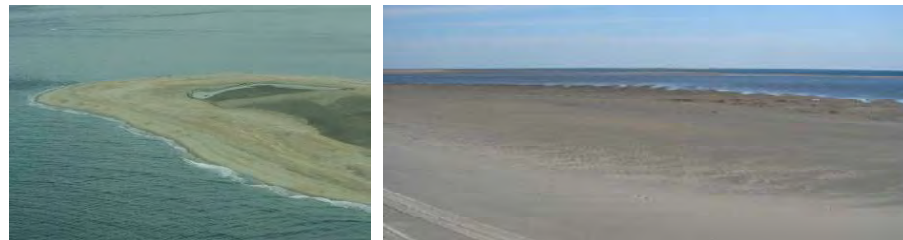
**Breeding Habitat.** Gull-billed terns typically nest among other tern and skimmer species on open, sandy shell beaches, on large barrier islands, on dredge-spoil islands, or on overwash fans (also used by piping plovers) that are mostly devoid of vegetation. They also nest on elevated-shell ridges (“rakes”) along the edges of marsh islands, which they share with American oystercatchers and common terns (Erwin et al. 1998; Cohen et al. 2010; Molina et al. 2009).

**Foraging Habitat.**

In contrast to other terns, gull-billed terns do not feed primarily on fish but are opportunistic, taking insects on the wing and feeding on a variety of invertebrates, including fiddler crabs (*Uca* spp.), decapods, marine worms, and clams, as well as small marsh fish (Cohen et al. 2010; Molina et al. 2009). Consequently, gull-billed terns can be seen feeding over marshes and creeks and along ocean and bay beaches, as well as over agricultural fields many miles from their nesting sites (Cohen et al. 2010; Molina et al. 2009).

**Nonbreeding Habitat.**

North American birds winter along the Gulf Coast, the Pacific Coast of Mexico, and into Central and South America. Little is known of gull-billed tern use of habitat while migrating, except that the habitat is generally considered



similar to nesting habitat (i.e., open beach, sand spits) (Cohen et al. 2010). Nonbreeding gull-billed terns can be found in coastal ponds, lagoons, mudflats, and flooded inland fields (Molina et al. 2009).

**Common Tern**

**Breeding Habitat.** Common terns typically nest on open, sandy shell beaches on ocean coastal islands, as well as at inland island sites in freshwater lakes, or, as in Europe, on rivers (Nisbet 2002). However, they also nest in saltmarshes, either on shell or on wrack, especially where human disturbance along the beaches is significant, and even on man-made structures, including large rooftops in urban areas (Erwin 1980).

**Foraging Habitat.** Common terns prey on small fish and shrimp in inlets and along the coast, often within a few miles of their breeding colonies. They are also known to feed on aquatic or terrestrial invertebrates such as crustaceans or insects (Nisbet 2002).

**Nonbreeding Habitat.** There is little information on habitats used by migrating common terns. However, most continue to feed close to shore. Migration staging areas are known at large sandy spits and bars at a number of North Atlantic sites, with concentrations numbering in the thousands at some places (Nisbet 2002). In winter, common terns migrate to the Caribbean and South America; both coasts of Africa; coasts and islands in the Indian Ocean; and the western Pacific from Japan to the Solomon Islands, New Guinea, and Australia (Nisbet 2002), where they often concentrate in large numbers in coastal lagoons (Nisbet 2002).

## Least Tern

**Breeding Habitat.** Least terns typically select the barest sand- and shell-covered substrates available on coastal, riverine, or dredge-spoil islands (Thompson et al. 1997). They also nest on rooftops in a number of coastal areas, where pea gravel is used as part of the roofing material (Thompson et al. 1997). On coastal barrier islands, they often select colony sites either adjacent to inlets or in overwash areas that are often interspersed among piping plover nests. Unlike common terns, least terns are typically found in small single-species colonies, where their nests are often widely spaced (Thompson et al. 1997). In New Jersey, inter-nest distance ranged from 2 to 66 meters (6 to 216 feet) at the time of egg laying and from 1 to 60 meters (3 to 197 feet) at the end of incubation (Burger and Gochfeld 1990).

**Foraging Habitat.** Least tern foraging habitat is similar to that of common terns, except that least terns seldom feed in large flocks.

**Nonbreeding Habitat.** Least terns migrate from the Outer Banks in August and September, with migration flocks staging at certain sandy island sites (Thompson et al. 1997). In late July or August, remote sandbars or sandy spits serve as roost sites. Least terns winter from Florida through the Caribbean and into Central and South America (Thompson et al. 1997).

## Black Skimmer

**Breeding Habitat.** Black skimmers prefer to nest on open, sandy substrates on barrier and dredge-spoil islands or at the tips of barrier islands (Gochfeld and Burger 1994). They invariably nest with other tern species along the Atlantic Coast (Erwin 1977; Cohen et al. 2010). Black skimmers occasionally nest on wrack or on shell ridges in saltmarshes and even on rooftops with least terns (Gochfeld and Burger 1994).

**Foraging Habitat.** Black skimmers feed on small fish, shrimp, and other invertebrates that they capture by skimming the surface with their lower jaws just below the surface of the water. They typically feed very close to their nesting colonies and prefer quiet waters in saltmarsh creeks, lagoons, or protected coves and inlets near barrier islands. The black skimmer is reportedly a nocturnal forager, but feeds regularly in daytime at the appropriate tide cycle, especially when feeding young (Erwin 1977; Cohen et al. 2010; Gochfeld and Burger 1994).

**Nonbreeding Habitat.** Black skimmers migrate from the Outer Banks region from September to November, forming very large concentrations on sandy spits and sandbars (Gochfeld and Burger 1994). They winter from Florida through the Caribbean and South America (Cohen et al. 2010; Gochfeld and Burger 1994).

## Breeding Biology

### Gull-Billed Tern

Birds arrive in North Carolina by mid-April. The mating system is monogamous, and like many other waterbirds, gull-bills probably have long-lasting pair bonds. Nest-site establishment and egg laying usually occur in mid- to late May. The nests consist of a shell-lined scrape in the sand or sometimes on wrack in saltmarshes. Nests contain from two to three brownish-blotched eggs (in the United States, the mean is around 2.2 eggs per nest [Molina et al. 2009]) that are incubated for 22 to 23 days. Members of a pair share incubation duties, but females take the dominant role. Gull-billed terns appear to be less tolerant of disturbance and less faithful to nest sites than other *Sterna* terns (Molina et al. 2009). Both parents share brooding duties, and both feed the young, often for an extended period after fledging occurs (birds generally fledge at 26 to 30 days of age). The chicks are highly camouflaged and more precocial

(mobile and independent) than either common tern or black skimmer chicks, with which they coexist. The young may leave the immediate area of the nest within a few days if disturbance is high. Pairs may re-nest if a nest is lost early in the breeding season (Cohen et al. 2010).

### **Common Tern**

Birds arrive in North Carolina in late April to early May and begin nesting most years from mid-May to early June (Nisbet 2002). The mating system is monogamous, and like many other waterbirds, common terns probably have long-lasting pair bonds. Clutch sizes vary, but three medium-dark-brown-mottled eggs are the norm. The eggs are incubated for 22 to 23 days. Both sexes incubate and feed the brood. As in other terns, feeding of the young occurs after fledging and can continue into the fall migration. Upon hatching, the young remain near the nest (unless disturbed) for the entire pre-fledging period. Re-nesting may occur if early nests fail. Fledging ranges from about 25 to 30 days. Common terns appear to serve as a social locus for mixed-species colony formation, possibly because of their aggressively protective nature (Erwin 1979; Cohen et al. 2010; Nisbet 2002). Hence, gull-billed terns and black skimmers often nest among common terns (Cohen et al. 2010).

### **Least Tern**

Birds arrive in North Carolina from late March to mid-April. Unlike most other Outer Banks terns, least terns usually nest in single-species colonies, with nests often spread far apart. Courtship lasts for two to three weeks in April and May, and egg laying occurs from late May until June. Clutch sizes range from one to three eggs, with two being the norm in North Carolina. Eggs are highly camouflaged, with the background color beige to light olive-brown. Members of a pair share incubation duties, but females take the dominant role. Incubation lasts for 21 to 22 days, and the highly mobile young move from the nest within a few days. They are able to fly at about 20 days of age. Post-fledging parental feeding can occur for several weeks away from the colony (Thompson et al. 1997; Cohen et al. 2010).

### **Black Skimmer**

Birds arrive in North Carolina from late April to mid-May, and nest building and egg laying usually occur from late May to mid-June (Erwin 1977; Cohen et al. 2010; Gochfeld and Burger 1994). Clutch sizes range from two to four eggs (Erwin 1977). Eggs are light buff with black blotches, and are laid and hatch at different times. Both sexes incubate the eggs, brood, and feed the young. Incubation ranges from 22 to 25 days. The young remain near the nest (unless disturbed) for most of the pre-fledging period of 28 to 30 days (Erwin 1977). As with other waterbirds, if nests fail early in the season, skimmers will re-nest (sometimes several times). Skimmers are sometimes seen incubating eggs as late as August in the mid-Atlantic region (Burger and Gochfeld 1990). Fledged young are fed by their parents, often right up until migration (Erwin 1977; Cohen et al. 2010). Human disturbance can seriously affect the breeding success of black skimmers (Gochfeld and Burger 1994). Pre-laying skimmers have been known to abandon a colony that is frequently disturbed (Erwin 1980; Safina and Burger 1983). Research has indicated that disturbed subcolonies of black skimmers had lower nest density, later nesting dates, and lower hatching and fledging success (Safina and Burger 1983).

### **Breeding Performance at Cape Hatteras National Seashore**

The beaches of the Seashore have been important in providing suitable habitat for these colonial nesters. In 2004, more than half of all nesting black skimmers and common terns in North Carolina were found at the Seashore, as well as one-third of the state's gull-billed terns (see tables 29 and 30).

Colonial waterbird breeding at Cape Hatteras generally occurs between the beginning of May and the middle of August. In many cases, colonial waterbirds use areas that were colonized in previous seasons, which include areas protected as prenesting closures for piping plovers. Colonies are commonly composed of small groups of least terns, but more diverse colonies sometimes occur.

Although different survey protocols have been used at the Seashore between 1977 and 2010, recent estimates of colonial waterbird nests at the Seashore are clearly much lower than they were 30 years ago (see table 30). Common terns, gull-billed terns, and black skimmers have shown the greatest declines over the last 30 years, both statewide and at the Seashore. These species are early nesters that require habitats of bare sand or shell with little or no vegetation for nesting. Historically, these species have nested primarily on barrier island beaches and have suffered declines most likely due to habitat loss and degradation (Cameron and Allen 2008). Other reasons for the decline in North Carolina's colonial waterbirds include mammal and bird predation, human development, beach stabilization, recreational disturbance, and perhaps, impacts on the wintering grounds (Parnell et al. 1995; Cohen et al. 2010). Recommended methods for colonial waterbird conservation include continued monitoring and management, habitat protection and restoration, predator management, and protection from human disturbance (Cameron and Allen 2008; Burger et al. 2004).

Within the Seashore, six gull-billed tern nests were recorded in 2007 on Green Island and none were found in 2008 or 2009, representing a decline from the Seashore's average of approximately 32 nests during surveys between 1977 and 2009. In 2010, one gull-billed tern nest was documented at Cape Point, but was lost before hatching. A total of 19 common tern nests were documented at the Seashore in 2008, although that number rose to 53 nests for the 2009 season and declined again in 2010 to 21 nests. The number of least tern nests rose dramatically at the Seashore in 2009, when 577 were documented by resource management staff. Black skimmer nest numbers have sharply declined at the Seashore, with only 11 nests in 2007 and 4 nests counted in 2008. However, 61 black skimmer nests were documented in 2009 (table 30). The number of nests recorded in 2007 for three of the four species was the lowest in the history of waterbird surveys in North Carolina (Cameron and Allen 2008). With the exception of the gull-billed tern, colonial waterbird numbers at the Seashore showed substantial increases during the 2009 breeding season (table 30).

**TABLE 30. NUMBERS OF COLONIAL WATERBIRD NESTS AT CAPE HATTERAS NATIONAL SEASHORE, 1977–2010**

Species	1977 <sup>a</sup>	1983 <sup>a</sup>	1988 <sup>a</sup>	1992 <sup>a</sup>	1993 <sup>a</sup>	1995	1997	1998	1999	2000	2001	2004 <sup>b</sup>	2007 <sup>b</sup>	2008	2009	2010	Avg.
Gull-billed tern	27	7	26	0	12	58	84	21	103	3	108	31	6	0	0	1	30.4
Common tern	802	763	678	278	422	503	718	715	440	129	573 <sup>c</sup>	376	109	19	53	21	412.4
Least tern	121	508	450	454	761	342	278	173	355	184	202	212	194	232	577	381 <sup>d</sup>	339
Black skimmer	286	296	144	30	226	139	454	366	306	149	193	342	11	4	61	5 <sup>e</sup>	188.3
Total	1,236	1,574	1,298	762	1,421	1,042	1,534	1,275	1,204	465	1,076 <sup>c</sup>	961	320	255	691	408	N/A

Source of 1977–2004 data is NPS 2007a

Source of 2007–2009 data is Muiznieks pers. comm. 2009 and NPS 2010g

Source of 2010 data is Muiznieks pers. comm. 2010d

<sup>a</sup> Surveys conducted by J. Parnell, University of North Carolina, Wilmington.

<sup>b</sup> Surveys conducted by NCWRC using non-NPS protocol.

<sup>c</sup> Updated from 2001 report to include nests found on Green Island at Oregon Inlet, which is now included in the Seashore boundary.

<sup>d</sup> The number of least terns recorded in 2010 is likely an underestimate, as there were 118 chicks on the ground in addition to the nests counted.

<sup>e</sup> The number of black skimmers recorded in 2010 is likely an underestimate, as there were 5 additional chicks on the ground that were counted during surveys for other species, after the survey window for black skimmers closed.

N/A = Not applicable.



## Nonbreeding

### Gull-Billed Tern

Fledged young and adults usually leave North Carolina's colonies by August, moving north for a short period before turning south for the fall and winter. Little is known of concentration areas during migration or winter, although wintering birds are known in Florida and the Gulf coastal region, from western Florida all the way south to Honduras and to Panama on the west coast. The gull-billed tern occasionally winters along the Atlantic Coast of North America as far north as North Carolina (Parnell et al. 1995; Cohen et al. 2010).

### Common Tern

Fledged young and adults usually leave North Carolina's colonies in late July to August. They often move north before staging at sandbars near inlets in September and then heading south. Little information is known about winter range, but they are known from Florida south through the Caribbean to Peru and southern Brazil, where tens of thousands have been recorded in late winter (Nisbet 2002).

### Least Tern

Fledged young and adults usually leave North Carolina's colonies in late July to August after breeding and also move northward into the New York to New England region before turning south to South America and the Caribbean. However, data are very limited on winter ranges (Thompson et al. 1997). Like other terns, least terns tend to congregate at staging areas along the Gulf Coast in August before departing for the winter (Thompson et al. 1997; Cohen et al. 2010).

### Black Skimmer

Fledged young and adults usually leave North Carolina's colonies by early August and disperse northward before heading south. Large flocks congregate at staging areas, often with terns. Adults may remain with their young during fall migration. Most birds from the mid-Atlantic region winter from southern North Carolina to Florida, the Caribbean, and into Central and South America (Gochfeld and Burger 1994; Cohen et al. 2010).

## Risk Factors

**Human Activity.** Ground-nesting colonial waterbirds are particularly vulnerable to impacts from human disturbance from ORVs, pedestrians, photographers, wildlife managers, and scientists because of the birds' usually high colony density and co-occurrence with human recreation (Erwin 1980; Cohen et al. 2010; Rodgers and Smith 1995; Rodgers and Schwikert 2002). Disturbances affect the birds' ability to feed, rest, and breed by evoking a flush response (Rodgers and Smith 1995; Rodgers and Schwikert 2002). Adverse effects from disturbance include egg and chick mortality, premature fledging, and reduced body mass (Rodgers and Smith 1995). Human activities that have indirect effects on bird behavior include sonic booms from military operations, aircraft disturbances, the presence of pets, and the leaving of garbage that subsequently attracts both avian and mammalian predators. Early in the spring, when the birds are first arriving and prospecting for breeding sites, even modest disturbances can be highly disruptive to colonial species (Buckley and Buckley 1976). Studies indicate that buffer distances between nesting areas and sources of human disturbances should be between 328 feet (100 meters) and 984 feet (300 meters), depending on the species and the particular behavior or reproductive stage (Rodgers and Smith 1995; Erwin 1989; Cohen et al. 2010). Recommended buffer distances from human disturbance are shown in table 31.

**TABLE 31. RECOMMENDED BUFFER DISTANCES FOR COLONIALY NESTING WATERBIRDS**

Species	Buffer Distance	Disturbance Type	Behavior/Stage	Source	Location
Mixed tern / skimmer colonies	591 feet (180 m)	Pedestrians and motor boats	Incubating and brooding adults	Rodgers and Smith 1995	Florida
Black skimmer	328 feet (100 m)	Pedestrian, ATV, ORV, boats	Adult foraging and loafing	Rodgers and Smith 1997	Florida
Least tern	328 feet (100 m)	All human disturbance	Established colonies post egg laying	Erwin 1989	Virginia, North Carolina
Common tern Black skimmer	656 feet (200 m)	All human disturbance	Established colonies, post egg laying	Erwin 1989	Virginia, North Carolina
Common tern Least tern	150 feet <sup>a</sup> (50 yds)	All human disturbance	Nesting	Blodget and Melvin 1996	Massachusetts
Common tern Least tern	300 feet (100 yds)	All human disturbance	Chicks	Blodget and Melvin 1996	Massachusetts
Least tern	656 feet (200 m)	All human disturbance	Courtship/nesting	Erwin 1989	Virginia, North Carolina
Common tern Black skimmer	984 feet (300 m)	All human disturbance	Courtship/nesting	Erwin 1989	Virginia, North Carolina
All colonial waterbirds	1000 feet (305 m)	All human disturbance	Established colonies	Buckley and Buckley 1976	New York New England
Least tern	328 feet (100 m)	All human disturbance	Buffer entire colony after nesting	Cohen et al. 2010	Cape Hatteras National Seashore
Black skimmer Common tern Gull-billed tern	200 m	All human disturbance	Buffer entire colony after nesting	Cohen et al. 2010	Cape Hatteras National Seashore
Least tern	282 feet (86 m)	Personal watercraft	Foraging and loafing	Rodgers and Schwikert 2002	Florida
Common terns	328 feet (100m)	Personal watercraft	Nesting	Burger 1998	New Jersey

<sup>a</sup> Buffer should be expanded as needed to prevent disturbance to incubating birds.

Human disturbance to waterbirds is frequently documented at the Seashore. At Cape Hatteras, four least tern chicks between ramps 23 and 30 and seven black skimmer chicks at Ocracoke Inlet were found dead or dying in ORV tracks during the 2003 breeding season. In all cases, the chicks were found adjacent to, but outside of, posted closures (NPS 2004g). Chicks become mobile after hatching, increasing their vulnerability. Colonial waterbird chick mortality from beach vehicles was documented every season from 2001 through 2004. Several chicks were killed by vehicles in 2001, 6 were killed in 2002, 11 were killed in 2003, and 6 were killed in 2004 (NPS 2002e, 2003b, 2004g, 2005d). Although no colonial waterbird deaths were directly attributed to impacts of human activity, instances of human disturbance to birds were reported in each colonial waterbird annual report from 2005 through 2009 (NPS 2006g, 2007g, 2008d, 2009k, 2010g). Although informational signs are posted around all resource closures (including those for colonial waterbirds), violations by pedestrians, ORVs, and dogs are common at the Seashore. In 2008 and 2009, there were several violations involving vehicles in colonial waterbird closures, including one that resulted in the crushing of a least tern egg by an ATV (NPS 2008h).



**Least Tern Egg Crushed by Unauthorized ATV Use**

Credit: NPS – Cape Hatteras National Seashore

**Weather and Tides.** Nine named hurricanes affected the Outer Banks between 1993 and 2009 (NOAA 2009). Flooding and high winds from storms can result in nest loss or failure, which was demonstrated in 1999 when Hurricane Dennis hit the North Carolina coast. Impacts from the hurricane flooded the entire Ocracoke Inlet colony, resulting in the loss of all chicks and eggs (NPS 2000c). Winter storms can also impact shorebirds. High mortality of many coastal bird species was noted after a snowstorm swept the entire North Carolina coast in 1989 (USFWS 1996a). Storms can also result in beneficial impacts to shorebirds, as seen in 2003 when Hurricane Isabel's passing resulted in the creation of a great deal of suitable beach nesting habitat (NPS 2004g).

**Predation.** Resource Management staff at the Seashore is of the opinion that the leading cause of colonial waterbird nest and brood failure is predation (NPS 2009k). Predators of colonial waterbirds include red fox, gray fox, mink, opossum, dogs, cats, American crows, gulls, and raccoon. Foxes, raccoons, opossum, and feral cats have increased in recent years as human populations have grown in coastal regions (Buckley and Buckley 1976; Erwin et al. 2001; Cohen et al. 2010). The result of this predation has been poor reproduction or major redistributions of species such as gull-billed terns, common terns, least terns, and black skimmers (Erwin et al. 2001, 2003; Cohen et al. 2010). In addition, gulls are often predators of terns (Nisbet 2002). These include great black-backed gulls (*Larus marinus*), herring gulls (*Larus argentatus*), and the smaller laughing gulls (*Leucophaeus atricilla*). In addition, in certain areas other bird species may prey on terns and skimmers (or their eggs), such as peregrine falcons (*Falco peregrinus*), great-horned owls (*Bubo virginianus*), fish crows (*Corvus ossifragus*), and others (Cohen et al. 2010). In 2008, the Seashore modified the existing predator trapping program to provide a more sustained trapping effort than occurred in previous seasons. The trapping program focused on depredation in the vicinity of shorebird nesting areas in an effort to reduce localized populations of raccoons, opossums, feral cats, red and gray foxes, and mink, which are all known predators of colonial waterbirds. However, raccoons at the Cape Point colony and mink at the South Ocracoke colonies severely hampered waterbird nesting success in those areas during the 2008 season (NPS 2009k).

## WILSON'S PLOVER

Wilson's plover is a medium-sized, ringed plover of coastal habitats. Its overall length is 6.5 to 7.5 inches, and its weight ranges between 2 and 2.5 ounces. At all times of the year and in all plumages, its bill is entirely black, large, and heavy; its upperparts are generally grayish to grayish brown, and its underparts are white, with a black-to-brownish breast-band. Its legs and feet are flesh-colored to pinkish. It is readily distinguished from other, similar, ringed plovers by its larger size; by its large, heavy, all-black bill; and by its flesh-colored legs. The piping plover is smaller than Wilson's plover, having obviously paler upperparts, orange legs, and a much smaller, stubbier, two-toned bill that has an orange-yellow base and a black tip (Corbat and Bergstrom 2000; Hayman et al. 1986; Howell and Webb 1995). Wilson's plover has no federal protection status in the United States; however, it was classified as a species of conservation concern by the USFWS in 2002. Birds that appear on this list are those that, without additional conservation actions, are likely to become candidates for listing under the ESA (USFWS 2002; 16 USC 1531–1544). Brown et al. (2001) list Wilson's plover as a species of high concern in their prioritization of shorebird species according to relative conservation status and risk. Wilson's plover is listed as endangered in Virginia and Maryland, threatened in South Carolina, rare in Georgia, state protected in Alabama (Corbat and Bergstrom 2000), and as a species of special concern in North Carolina (15A NCAC 101.0105).



**Wilson's Plover**

Credit: Terry Hartley / Due South Photography

### Distribution

**Breeding.** Wilson's plover is distributed locally along the Atlantic Coast, from Virginia south to southern Florida, including the Florida Keys, and from southern Florida west along the Gulf Coast to Veracruz, Mexico, the Yucatán, and Belize (Stevenson and Anderson 1994). Breeding locations are uncertain farther south along the Caribbean Coast of Central America.

In South America, Wilson's plover breeds locally along the Atlantic Coast, from Colombia south to Brazil, and includes the islands of Trinidad, Aruba, Bonaire, Margarita, and Curaçao, located off the coast of Venezuela (Meyer de Schauensee and Phelps 1978). In the West Indies, it breeds throughout the Bahamas, the Greater Antilles, the Virgin Islands, the Lesser Antilles, and in the Grenadines (Raffaele et al. 1998).

Along the Pacific Coast, Wilson's plover breeds locally along the west coast of Baja California, and from the Gulf of California south to Nayarit, Mexico (Howell and Webb 1995). Farther south along the Pacific Coast, it breeds from Mexico to Ecuador and Peru (Hilty and Brown 1986).



**Wilson's Plover Chick**

Credit: NPS

**Nonbreeding.** Wintering occurs mainly in northeast and central Florida (Corbat and Bergstrom 2000), as well as in west Louisiana and south Texas throughout the remainder of the breeding range (see above), to northern South America (Hayman et al. 1986).

### **Wilson's Plover in North Carolina and at Cape Hatteras National Seashore**

A 2004 survey of the entire coast of North Carolina yielded 232 pairs of Wilson's plover. Of those, the Seashore supported two pairs of Wilson's plover on Ocracoke Island. In contrast, in 2004, Cape Lookout National Seashore supported 61 pairs and two individuals, which represented 26% of North Carolina's population of Wilson's plover (Cameron pers. comm. 2005). Wilson's plovers are often seen by Seashore staff during their piping plover observations, but no indications of nesting had been documented until 2009 when a three-egg nest was found in June. The nest hatched in July and produced one chick. The chick was not observed during subsequent observations and is not believed to have fledged (Muiznieks pers. comm. 2009). During the 2010 breeding season, two nests were documented on Ocracoke Island. One of these nests successfully fledged two chicks (Muiznieks pers. comm. 2010d).

More comprehensive surveying of wintering shorebirds is being conducted per the NPS SECN Winter Monitoring Program. Implementation of the SECN Migratory, Wintering, and Beached Shorebird Monitoring Protocol at Cape Hatteras began in mid-July 2006. Only a few Wilson's plovers were observed at the Seashore from July to early December, and all birds were seen in foreshore habitat at low tide. SECN staff attributed the low numbers to insufficient training of field staff on the proper identification of Wilson's plover (Byrne et al. 2009). Seashore staff has not completed a comprehensive survey of nonbreeding Wilson's plovers, so it is not known if the Seashore supports wintering populations.

Wilson's plover is listed on the USFWS 1995 list of Non-game Birds of Management Concern (USFWS 1995) and the 2008 Birds of Conservation Concern (USFWS 2008b), and is a North Carolina Species of Special Concern (NCWRC 2008b).

### **Habitat Description**

Wilson's plovers are typically associated with coastal areas of high salinity and sparse vegetation, including salt flats, coastal lagoons, sand dunes, foredunes, and overwash areas above the high-tide line (Tomkins 1944; Hayman et al. 1986; Corbat and Bergstrom 2000). At the Seashore, Wilson's plover breeding sites have only been known to occur within piping plover closures. Hence, all closures, and much of the management of piping plovers, also apply indirectly to Wilson's plover.

### **Diet**

Wilson's plover is a visual feeder on crustaceans, particularly fiddler crabs, and some insects (Strauch and Abele 1979; Morrier and McNeil 1991; Thibault and McNeil 1994), which they prey upon at intertidal mudflats, sand flats, ephemeral pools, and shores of brackish ponds. They usually forage at low tide on intertidal mudflats (Strauch and Abele 1979; Thibault and McNeil 1994; Corbat and Bergstrom 2000).

### **Breeding Biology**

Before territories are established in mid-March to early April (Tomkins 1944; Corbat and Bergstrom 2000), Wilson's plovers form pairs, and most breeding territories are established by mid-April. As with the piping plover, the nest is a scrape in sand that requires little construction (Bergstrom 1988). Egg laying peaks from late April through late May (Bergstrom 1988). Re-nesting after failure of a first nest

can continue through the end of June. The estimated time required to complete a clutch of three eggs is four to six days (Bergstrom 1988; Corbat and Bergstrom 2000).

### **Reproductive Success at Cape Hatteras National Seashore**

The first documented Wilson's plover nest was found in 2009. A three-egg nest was found in June, hatched in July, and produced one chick. The chick was not observed during subsequent observations and is not believed to have fledged (Muiznieks pers. comm. 2009). During the 2010 breeding season, two nests were documented on Ocracoke Island. One of these nests successfully fledged two chicks (Muiznieks pers. comm. 2010d).

### **Risk Factors**

Because Wilson's plovers commonly nest on beaches with wide berms, which are also favored by birds like piping plovers, Wilson's plovers are subject to disturbances at their nests and roosts by the same factors as those that affect the piping plover, including beachgoers, pets, and ORV traffic on beaches. Wilson's plovers leave their nests when disturbed and are extremely reluctant to return when intruders are anywhere near, a practice that exposes eggs to predation and overheating (Corbat and Bergstrom 2000).

### **RED KNOT**

The red knot is a shorebird that breeds in the Canadian Arctic and is known to visit North Carolina, the Outer Banks, and the Seashore, as well as the entire eastern seaboard of the United States, only as a migrant and an occasional winter resident (Harrington 2001). There are five subspecies currently recognized (*Calidris canutus canutus*, *C.c. rufa*, *C.c. islandica*, *C.c. rogersi*, *C.c. roselaari*) (Harrington 2001). Two of these (*C.c. rufa* and *C.c. roselaari*) are found in the United States but only during migration and in the winter. Southward migration of *C.c. rufa* and *C.c. roselaari* begins in mid-July, with staging occurring along the United States Atlantic Coast (Harrington 2001). Only those aspects of the red knot's life pertinent to its management and conservation in North Carolina, the Outer Banks, and the Seashore are covered in this section. The red knot is not listed as threatened or endangered by the USFWS, but it is a federal candidate species. The red knot does not carry state status in North Carolina.

### **Emergency Endangered Listing and Taxonomy**

On August 1, 2005, in response to the 80% decline in red knot population over the past 10 years, leading conservation groups filed an emergency petition asking the USFWS to list the red knot as an endangered species under the ESA. The listing request came from an alliance of wildlife groups, including Defenders of Wildlife, New Jersey Audubon Society, American Bird Conservancy, the National Audubon Society, Delaware Audubon Society, Citizens Campaign for the Environment, Audubon New York, Audubon Maryland–DC, and the Virginia Audubon Council. On September 12, 2006, the USFWS announced that it had designated the red knot as a candidate for ESA protection. On February 27, 2008, conservation groups again petitioned the Department of the Interior to list as endangered the *rufa* subspecies of the red knot, and a broader taxon comprising both the *rufa* subspecies and the *roselaari* subspecies.



**Red Knot**  
Credit: USFWS

Another indication of conservation concern for the red knot is the fact that in August 2004, the U.S. Fish and Wildlife Service published its list of U.S. and Canadian shorebird populations that are considered highly imperiled or of high conservation concern (USFWS 2004c). The Canadian Arctic–Atlantic Coast population of the red knot was one of eight taxa classified as Highly Imperiled. In 2008, the USFWS, which proposes candidates for listing under the ESA, determined that the ranking for the red knot should be raised from 6 to 3. The species' listing priority dictates the relative order in which proposed listing rules are prepared, with the species at greatest risk (listing priority 1 through 3) being proposed first (American Bird Conservancy 2008).

## Description

The red knot is characteristically found along the east coast of the United States, with its greatest population staging on Delaware Bay (Tsipoura and Burger 1999) on its migration from its breeding ground in the Canadian Arctic to the Tierra del Fuego region of Chile and Argentina in South America. It is this subspecies that is the subject of the emergency petition.

Males in breeding plumage have a dark red or salmon breast, throat, and flanks, with a white belly. Their crowns and backs are flecked with gray and salmon (Harrington 1996, 2001; Paulson 1993). Female coloration is similar to that of males but is typically less intense. Nonbreeding plumage is a plain gray on the head and back, with light fringes of gray and white along the wings, giving an appearance of a white line running the length of the wing when in flight. The breast is white, mottled with gray, and the belly is dull white. For both male and female, the bill is black (year-round), and the legs are dark gray to black (Harrington 1996, 2001). The average weight of the red knot is 5 ounces (which varies considerably through the year), with a body length between 9 and 10 inches.

## Range and Migration

Red knots are found in the Arctic regions of Canada during the breeding season, which is mid-June through mid-August. They winter from November to mid-February primarily in two separate areas in South America—Tierra del Fuego in Chile and Argentina, and in Maranhão, northern Brazil (American Bird Conservancy 2005). Additional, smaller numbers of red knots also winter farther northwest in French Guiana and in the coastal, southeastern United States, including North Carolina, the Outer Banks, and the Seashore.

Red knots have one of the longest migrations of any shorebirds. Those individuals that winter in southern South America embark on their northern migration in February, with peak numbers leaving Argentina and southern Chile in mid-March to mid-April (Harrington 1996, 2001). The first stopover is along the coast of southern Brazil (Vooren and Chiaradia 1990), and the final stopover is the Delaware Bay. Their southward migration from the Canadian Arctic begins in mid-July. They arrive in South America along the coast of the Guianas in mid- to late August (Spaans 1978). From the Guianas, red knots continue to move southward along the Atlantic coastline of South America, and the greater part of the population will continue on to Tierra del Fuego to winter (Morrison et al. 2004).

These long-distance migrations can only occur when the birds have access to productive refueling stops, particularly on their northern migrations, which involve fewer stops than the southern ones. For red knots on the eastern seaboard of the United States, Delaware Bay is the most crucial spring stopover because it is the primary final stop at which the birds can refuel in preparation for their nonstop leg to the Arctic.

When they arrive at their final destination, weather conditions can be harsh, and food is scarce. Their fat reserves from the Delaware Bay must sustain them not only during their 2,400-kilometer (1,488-mile) final flight, but also upon arrival in the Arctic until food resources become more plentiful (Baker et al. 2004).

Red knots do not breed at the Seashore, but use it in the winter and during spring and fall migration.

### **Nonbreeding Habitat**

Harrington (1996, 2001) describes how, during the winter, the red knot frequents intertidal habitats, notably along ocean coasts and large bays. Both areas usually display high waves or strong currents while supplying a sandy habitat. These areas are selectively chosen in South America, with the most abundant population on the island of Tierra del Fuego in Argentina and Chile (Morrison and Ross 1989).

On migration, the red knot principally uses marine habitats in both North and South America. Coastal habitats along the mouths of bays and estuaries are preferred, providing sandy beaches on which to forage (Harrington 1996, 2001). Niles et al. (2007) suggested that red knots consistently use coastal areas of North Carolina during spring and fall migration and indicated that approximately 1,000 red knots were observed on Ocracoke Island in early May 2005. Red knots are also known to use tidal flats in more sheltered bays or lagoons in search of benthic invertebrates or horseshoe crab eggs (Harrington 1996, 2001; Tsipoura and Burger 1999). In some cases, beach habitats are preferred because of high densities of benthic bivalves (Harrington 1996). Red knots also use tidal flats in more sheltered bays or lagoons, where they hunt for benthic invertebrates (Harrington 2001) or for special foods, such as horseshoe crab eggs (Harrington 1996; Tsipoura and Burger 1999). Delaware Bay hosts the largest number of spawning horseshoe crabs (a primary food source for the red knot) in the United States. At Delaware Bay, the red knots feed and put on weight needed for winter migration. The increasing human harvest of the horseshoe crab has reduced this food source for red knots, and this dearth is believed to be contributing to the red knot's failure to reach its needed threshold departure weight of 6.3 to 7.0 ounces. Hence, there has been a systematic reduction in the body weight of red knots leaving Delaware Bay for the Arctic, which negatively impacts their ability to survive and breed (Baker et al. 2004). Since 1999, reductions in commercial harvesting of horseshoe crabs in New Jersey and Delaware have been substantial, although the effect on horseshoe crab populations is not yet known. Preliminary 2009 information indicated that red knots were able to attain threshold departure weights and left the Delaware Bay stopover in good condition. However, it remains to be seen if this will become a long-term trend (FR 2009).

### **Nonbreeding Observations at Cape Hatteras National Seashore**

During their wintering shorebird study, SECN staff observed red knots at the Seashore from August 2006 through February 2007. Monthly counts were highly variable with the two highest single-day counts in November 2006 and February 2007. Almost all red knots documented during this time were located in the foreshore habitat type (Byrne et al. 2009). When the Seashore took over monitoring from SECN staff, only the points and spits were surveyed to meet the migratory and wintering piping plover survey requirements of the USFWS biological opinion. At that time limited staffing in the winter months prohibited more extensive surveys. As the result of additional full-time staffing in the early part of 2010, resource management staff began surveying the entire shoreline for red knots along with other shorebirds on March 18, 2010. The protocol was revised to accommodate the increased staffing level and will provide a more comprehensive, standardized approach for determining use of the shoreline by selected shorebirds.



## Risks

Red knots are highly vulnerable to degradation of the resources on which they depend to accomplish their migrations. Morrison et al. (2004) have identified four factors that cause this vulnerability: (1) a tendency to concentrate in a limited number of locations during migration and on the wintering grounds so that deleterious changes can affect a large proportion of the population at once; (2) a limited reproductive output, subject to vagaries of weather and predator cycles in the Arctic, which, in conjunction with a long lifespan, suggests slow recovery from population declines; (3) a migration schedule closely timed to seasonally abundant food resources, such as horseshoe crab eggs during spring migration in Delaware Bay (Tsipoura and Burger 1999), suggesting that there may be limited flexibility in migration routes or schedules; and (4) occupation and use of coastal wetland habitats that are affected by a wide variety of human activities and developments (Bildstein et al. 1991).

## WILDLIFE AND WILDLIFE HABITATS

In addition to the federally listed threatened or endangered species and other protected species detailed in previous sections of this chapter, other wildlife species depend on the habitats within the Seashore. This section describes those invertebrate species and other bird species that could be found



**Coquina Clam Shells**

Credit: NPS



**Limpet Shells**

Credit: NPS

in the study area and could be affected by ORV management alternatives.

## OTHER BIRD SPECIES

The Outer Banks of North Carolina provide a critical link in the migratory path of several shorebird species. The barrier island ecosystems at the Seashore provide habitat for large numbers of migratory and nesting bird species, and coastal marshes are critical to wintering populations of many waterbirds. Nearly 400 species of birds have been sighted within the Seashore and its surrounding waters (Fussell et al. 1990). Migration routes for many raptor species include southeastern barrier islands.

Thousands of migrating shorebirds use the barrier islands as a stopover point to rest, forage, or spend the winter (Manning 2004). In 1999, the American Bird Conservancy designated Cape

Hatteras National Seashore as a Globally Important Bird Area in recognition of the Seashore's value in bird migration, breeding, and wintering (American Bird Conservancy 2005).



**Marbled Godwit**

Credit: Lee Karney / USFWS

Studies have recorded 21 species of shorebirds (table 32) on the beaches of the Outer Banks of North Carolina, such as whimbrels (*Numenius phaeopus*), willets (*Catoptrophorus semipalmatus*), and sanderlings (*Calidris alba*). These shorebirds are most abundant in May and August. Least terns, common terns, gull-billed terns, black skimmers, piping plovers, Wilson's plovers, willets, and American oystercatchers can all be found nesting on North Carolina beaches (North Carolina Audubon 2008). Several of these species are designated as state-listed and/or federally listed threatened or endangered

species and are discussed in a previous section of this chapter. However, nonlisted shorebirds such as willets have similar nesting and foraging habitats to those of state- and federally listed species. The eastern willet, for instance, breeds in coastal saltmarshes and nests on the ground, often in colonies, usually in well-hidden locations in short grass. These birds forage on mudflats or in shallow water, probing or picking up food by sight. Their diet consists of insects, crustaceans, and marine worms, as well as some plant material. Although not state-listed or federally listed, several of the shorebirds found at the Seashore appear on the USFWS Birds of Conservation Concern list, which identifies migratory birds that, without additional conservation actions, are likely to become candidates for listing under the ESA (USFWS 2008b). Other waterbirds found at the Seashore include gulls, pelicans (*Pelecanus* spp.), terns, and egrets (family Ardeidae) (NCWRC 2005).

**TABLE 32. SHOREBIRDS ON THE OUTER BANKS OF NORTH CAROLINA, 1992–1993**

Scientific Name	Common Name
<i>Pluvialis squatarola</i>	Black-bellied plover
<i>Charadrius wilsonia</i>	Wilson's plover
<i>Charadrius semipalmatus</i>	Semipalmated plover
<i>Charadrius melodus</i>	Piping plover
<i>Haematopus palliatus</i>	American oystercatcher
<i>Catoptrophorus semipalmatus</i>	Willet
<i>Numenius phaeopus</i>	Whimbrel
<i>Limosa fedoa</i>	Marbled godwit
<i>Arenaria interpres</i>	Ruddy turnstone
<i>Calidris canutus</i>	Red knot
<i>Calidris alba</i>	Sanderling
<i>Calidris pusilla</i>	Semipalmated sandpiper
<i>Calidris mauri</i>	Western sandpiper
<i>Calidris minutilla</i>	Least sandpiper
<i>Calidris alpina</i>	Dunlin
<i>Limnodromus griseus</i>	Short-billed dowitcher
<i>Charadrius vociferous</i>	Killdeer
<i>Tringa melanoleuca</i>	Greater yellowlegs
<i>Tringa flavipes</i>	Lesser yellowlegs
<i>Actitis macularia</i>	Spotted sandpiper
<i>Calidris fuscicollis</i>	White-rumped sandpiper

Source: Dinsmore et al. 1998

Migratory birds are often found at the Seashore throughout the year. During the winter months, the common loon (*Gavia immer*), pied-billed grebe (*Podilymbus podiceps*), northern gannet (*Morus bassanus*), tundra swan (*Cygnus columbianus*), and Canada goose (*Branta canadensis*) are common sights at the Seashore. During the summer migratory season, several varieties of herons (*Ardea* spp.), Audubon's shearwater (*Puffinus lherminieri*), and the barn swallow (*Hirundo rustica*) populate the Cape Hatteras shores. While less frequently sighted, grebes (*Podiceps auritus*), mallard ducks (*Anas*

*platyrhynchos*), hawks (genus *Accipiter*), bald eagles (*Haliaeetus leucocephalus*), peregrine falcons, and various species of sandpipers also inhabit the Seashore at one point or another throughout the year. Studies have demonstrated the importance of the Outer Banks as a staging area for piping plovers, whimbrels, and sanderlings when compared to other areas along the Atlantic Coast and confirmed that the area provides a critical link in the migratory path of several shorebird species (Dinsmore et al. 1998).

## INVERTEBRATES

The Seashore beach ecosystem is home to a vast quantity of invertebrates, which form a valuable link in the coastal food chain. Many of the protected bird species found within the Seashore, including the piping plover, Wilson's plover, red knot, American oystercatcher, and gull-billed tern, feed on invertebrates in areas that are open to ORV use, such as the intertidal zone and the wrack line. High-energy, intertidal beaches in the southeastern United States generally support approximately 20 to 30 types of invertebrate species (Ruppert and Fox 1988), with the most identifiable being mole crabs, ghost crabs, and coquina clams (*Donax variabilis*). Both mole crabs and coquina clams are a primary prey base for fish, crabs, and shorebirds, and the population density of some predators may actually be dependent on the availability these invertebrate species (Greene 2002). Other invertebrates within the Seashore beach ecosystem include clamworms (*Nereis succinea*), limpets (*Patella vulgata*), which can be found in the intertidal zone, and varieties of jellyfish sea urchins and sea stars (class Asteroidea), all of which spend their entire lives in the water.



**Ghost Crab**

Credit: George Harrison / USFWS

Ghost crabs are sand-colored, terrestrial animals with square-shaped bodies, which are generally no more than 2 to 3 inches wide (Lippson and Lippson 1997). Ghost crabs are a top predator of the beach ecosystem and can be used as an indicator species to analyze the health of the beach ecosystem due to their prominence and high susceptibility to anthropogenic disturbances (Hobbs et al. 2008). They are primarily nocturnal and create burrows for shelter from heat and desiccation (drying) stress during the warmer afternoon periods. Burrows are usually 0.6 to 1.2 meters in length and are generally located in an area from the high-tide line landward up to 400 meters.

Ghost crabs emerge from their burrows at night to feed in the intertidal zone, and travel up to 300 meters while foraging (Hobbs et al. 2008). Ghost crabs retreat deep into their burrows during the winter months (Lippson and Lippson 1997).

Like ghost crabs, mole crabs are a common inhabitant of the high-energy, exposed beach environment. In contrast to other species of crabs, they do not have claws or pincers. Mole crabs are generally less than 2 inches in length and have egg-shaped bodies that allow for rapid digging in wet sand (Ruppert and Fox 1988). Mole crabs are filter feeders that burrow and anchor themselves into the sands within the swash zone, collecting organic matter that they trap within their feeding antennae when water recedes over the buried crabs. Unlike ghost crabs, mole crabs move off the beach to deeper offshore waters during the winter (Lippson and Lippson 1997).

Marine bivalves such as oysters (*Crassostrea virginica*), razor clams, coquina clams, and ribbed mussels (*Geukensia demissa*) also inhabit the Seashore, forming the diet for many birds. Clams characteristically lie buried just beneath the surface of the sand, although they can burrow to greater depths as necessary. Much like the mole crab, coquina clams are filter feeders and migrate up and down the ocean beach in the intertidal area during the spring and summer (Ruppert and Fox 1988). Due to its importance in food webs, the coquina clam is considered an indicator species for the sandy beach oceanfront habitat. It feeds on

small particles such as unicellular algae and detritus and in turn, is consumed by fish and birds (SCDNR 2009).

In addition to the intertidal zone, another important habitat for invertebrates is the wrack line. A wrack line is a line of stranded debris along a beach face marking the point of maximum run-up during a previous high tide. The wrack line is often composed of drying seaweed, tidal marsh plant debris, decaying marine animals, shells, and miscellaneous debris washed up and deposited on the beach. The wrack line provides a habitat suitable for many invertebrates such as amphipods, beetles, mites, flies, and spiders. Studies have demonstrated that ORV use in and around the wrack line reduces the density of invertebrates in beach environments.



**Intertidal Zone**

Credit: NPS

A 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that the shrimp-like crustaceans called amphipods are particularly vulnerable to drying out in immature stages, and use the wrack line as cover. Several species of flies also use the site to lay their eggs, and wolf spiders (family Lycosidae) migrate back and forth from the beach grass to the wrack line to feed on these amphipods. The study observed that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the populations of invertebrates in these areas.

## SOUNDSCAPES

According to the NPS, the acoustical environment is comprised of a combination of acoustic resources, including natural, cultural, and historical sounds. A soundscape is defined as the way in which humans perceive this acoustic environment (NPS 2009g). Specifically, the natural soundscape encompass all of the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes (NPS *Management Policies 2006* [NPS 2006c, sec 4.9]). Natural sounds may range from bird and bat calls and insect chirps, to sounds produced by physical processes like wind rushing through leaves on trees, thunder, and rushing and falling water through rivers, creeks and streams within a park. According to the NPS, 72% of visitors indicate that a crucial reason for the need to preserve national parks is that parks provide opportunities to experience natural peace and the sound of nature (NPS 2009g). Therefore, the NPS works to preserve, to the greatest extent possible, the natural soundscapes of parks.

## NOISE FUNDAMENTALS

According to the NPS, “although noise has been used as a synonym for sound, it is essentially the negative evaluation of sound by people, is extraneous, or undesired. Humans perceive sound as an auditory sensation created by pressure variations that move through a medium such as water or air and is measured in terms of amplitude and frequency” (NPS 2009g). Sources of noise within national parks are dependent upon the particular park and may include vehicular sources (cars, buses, or other vehicles) used for tours and access to trails and campgrounds, aircraft overflights from planes, helicopters and military jets along with airport development, snowmobiles and watercraft, park operations and energy development (NPS 2009i).

The magnitude of noise is usually described by its sound pressure. Since the range of sound pressure varies greatly, a logarithmic scale is used to relate sound pressures to some common reference level, usually the decibel (dB). Sound pressures described in decibels are called sound pressure levels and are often defined in terms of frequency-weighted scales (A, B, C, or D).

The A-weighted decibel scale is commonly used to describe noise levels because it reflects the frequency range to which the human ear is most sensitive (1,000–5,000 Hertz) (Caltrans 1998). Sound levels measured using an A-weighted decibel scale are generally expressed as dBA. Throughout this section, all noise levels are expressed in dBA. Several examples of sound pressure levels in the A-weighted (dBA) scale are listed in table 33, while table 34 presents examples of sound pressure levels measured in national parks.

**TABLE 33. EXAMPLES OF COMMON SOUNDS**

A-weighted Sound Level (dBA)	Overall Level	Noise Environment
120	Uncomfortably loud (32 times as loud as 70 dBA)	Military jet airplane takeoff at 50 feet
100	Very loud (8 times as loud as 70 dBA)	Jet flyover at 1,000 feet Locomotive pass-by at 100 feet
80	Loud (2 times as loud as 70 dBA)	Propeller plane flyover at 1,000 feet. Diesel truck 40 mph at 50 feet
70	Moderately loud	Freeway at 50 feet from pavement edge at 10:00 a.m. Vacuum cleaner (indoor)
60	Relatively quiet (one-half as loud as 70 dBA)	Air condition unit at 100 feet. Dishwasher at 10 feet (indoor)
50	Quiet (1/4 as loud as 70 dBA)	Large transformers Small private office (indoor)
40	Very quiet (1/8 as loud as 70 dBA)	Birds calls. Lowest limit of urban ambient sound
10	Extremely quiet	Just audible (1/64 as loud as 70 dBA)
0	Threshold of hearing	Quietest sound detectible by a healthy human ear

Source: FICN 1992

Modified by: The Louis Berger Group, Inc., October 1998.

**TABLE 34. SOUND PRESSURE LEVELS MEASURED IN NATIONAL PARKS**

Sound	dBA
Threshold of human hearing	0
Haleakala National Park: Volcano crater	10
Canyonlands National Park: Leaves rustling	20
Zion National Park: Crickets (5 meters)	40
Whitman Mission: Conversational speech (5 meters)	60
Yellowstone National Park: Snowcoach (30 meters)	80
Arches National Park: Thunder	100
Yukon-Charley Rivers National Park: Military jet (100 meters above ground level)	120

Source: NPS 2009h

## HUMAN AND WILDLIFE RESPONSE TO CHANGES IN NOISE LEVELS

Noise may have adverse effects on the human population in a variety of ways. Noise may interfere with human activities, such as sleep, speech communication, and tasks requiring concentration or coordination. At a physiological level, noise may also cause annoyance, hearing damage, and other health-related problems. The degree of disturbance from unwanted sound depends essentially on (1) the amount and nature of the intruding noise; and (2) the type of activity occurring where the noise is heard. In considering the first of these factors, it is important to note that individuals have different sensitivity to noise. Loud noises bother some people more than others, and some patterns of noise also affect a person's perception of whether or not a noise is offensive. With regard to the second factor, individuals tend to judge the annoyance of noise relative to the natural sounds (i.e., without the intruding noise source) and activities occurring where the noise is heard. For example, if regions of a park are dedicated to enjoying the tranquility and serenity of the natural environment, sounds from motor boating and hunting would be distracting to the visitor experience. However, if these activities are consistent with the purpose of a particular region of the park, these sounds would be considered appropriate. Therefore, noise is a subjective term, and it is important to characterize the activities essential to the park's purpose (NPS 2000a).

It is widely accepted that the average healthy ear can barely perceive noise level changes of 3 dBA or less. A change of 5 dBA is readily perceptible and an increase or decrease of 10 dBA is perceived as being twice or half as loud, respectively (see table 35).

**TABLE 35. DECIBEL CHANGES, LOUDNESS AND ENERGY LOSS**

Sound Level Change	Relative Loudness	Acoustic Energy Loss
0 dBA	Reference	0.0%
- 3 dBA	Barely perceptible change	50.0%
- 5 dBA	Readily perceptible change	67.0%
- 10 dBA	Half as loud	90.0%
- 20 dBA	1/4 as loud	99.0%
- 30 dBA	1/8 as loud	99.9%

Source: FHWA 1995

NOTE: This table underestimates changes in perceived loudness for low frequency noise, including transportation noise, which falls within the frequency range of 100 Hz to 1 kHz.

Wildlife is very sensitive to sound, as animals often depend on auditory cues for hunting, predator awareness, sexual communication, defense of territory, and habitat quality assessment (Barber et al. 2010). Negative population-level, behavioral, and habitat use consequences of higher ambient sound levels from human voices, along with sound events associated with human activities (motorists, snowmobiles, hikers), have been observed in many species (Frid and Dill 2002; Landon et al 2003; Habib et al. 2007).

Birds are especially susceptible to human-associated environmental sounds as they rely heavily on auditory cues for identifying and attracting suitable mates, pair bonding, communication among and detection of predator alerts or warning signals (Francis et al. 2009). Similar to physical degradation of the habitat caused by development or other human activities, the low frequency, high-amplitude, nearly

omnipresent sound produced by roads, vehicles, airports, and mechanical equipment has been found to result in a decline in species diversity, abundance, and breeding success (Rheindt 2003).

Researchers found that the presence of low-frequency mechanical noise limits communication between members of the same species, often reducing nesting success (Habib et al. 2007). For example, female zebra finches, exposed to high-amplitude, low-frequency sounds such as those produced by traffic or other motor vehicles, showed less preference for their pair-bonded male. As the amplitude of ambient, low-frequency sounds increased, the strength of pair bonds decreased. This type of behavior may reduce pairing success, disrupt the strength of sexual selection, and affect the overall genetic structure of a population of birds nesting and seeking mates in the vicinity of roadways or in other areas exposed to high-amplitude mechanical noise (Swaddle and Page 2007). Similarly, nesting shorebirds on Cape Hatteras using areas exposed to low-frequency sounds from ORVs or wheeled vehicles may exhibit all or some of these behaviors, which may change the genetic structure of a population, or limit parental care of young, resulting in decreased nesting success. Louder sounds (higher amplitude) have the greatest potential to adversely affect pair bonds of shorebirds, thus shorebirds using areas of heavier use or with more exposure to high amplitude sounds would be most likely to be affected.

The diversity of bird species and the population of many bird species decrease in locations closer to a road or other sources of mechanized sound, which is described as the 'road effect' (Francis et al. 2009). This effect is often attributed to mechanical noise levels rather than to decreased habitat quality or direct mortality caused by vehicle collisions (Reijnen et al. 1995; Rheindt 2003). On Cape Hatteras, road effects are likely to occur both near roads used by motorized vehicles, and along shorelines open to ORVs. Certain species suffer more negative effects than others. Researchers have found this is due, in part, to a greater difference between a bird's song frequency and the low-frequency sound produced by motorized vehicles. That is, birds with higher-frequency songs may have greater density and reproductive success than those with songs in lower frequencies. This is because these high-frequency songs are not as strongly masked and are perceived more clearly by birds, thus increasing communication between bonded pairs. Some birds adapt to the presence of motorized sounds by increasing the amplitude of their song, singing earlier in the morning when motorized sounds are generally lower, or using mainly higher-pitched calls (Rheindt 2003). Shorebirds generally use less complex sounds to communicate than songbirds accompanied by a decreased range of song selection and frequency. Therefore, it may be more difficult for these birds to adjust their sound frequency by using mainly lower pitched calls, as their song repertoire may not include such calls. Therefore, shorebirds or other birds on Cape Hatteras with lower frequency, and/or lower amplitude calls may suffer more negative 'road' effects than those with higher frequency and/or louder calls. Effects may be limited by adjustments to song amplitude, timing and frequency by individual birds, depending on the flexibility, and innate song type of the species.

Predation risk for adult and nestling birds increases in areas with high-amplitude, low-frequency mechanical sounds (Lima 2009). Direct predator risk may increase because nesting birds are unable to detect auditory cues made by the predators (such as a redtail hawk scream or the cawing of a crow), and/or because they are unable to detect the warning calls of members of their own species or other birds in the area (e.g., the warning calls of a tern due to a circling hawk). These impacts are due to masking or distortion of the natural sounds in the environments by mechanical or human-associated sounds. Additionally, ORV and human sounds may themselves be considered a predation risk, and birds have been found to respond in areas of high-amplitude human-associated sounds in similar ways that they might respond in areas with high numbers of predators such as rodents or raptors (Lima 2009). Birds on Cape Hatteras may avoid such habitat, thus reducing the availability of prime nesting habitat containing the best cover and food sources. Birds may also respond by foregoing breeding altogether or reducing personal risk of predation by providing poorer quality care to fledglings (Lima 2009). These behavioral responses reduce the recruitment of young, limiting growth and sustainability of the population. Other behavioral changes include active flight, decreased foraging and increased vigilance, and a reduction in overall fitness levels. Exposure to frequent sound events, including ORV use and radios, would also

likely increase the intensity of their responses to all perceived predation threats (Rabin et al. 2006). These responses by shorebirds, including both direct and perceived or indirect predator risk, may decrease overall reproductive success for shorebirds using areas exposed to human associated and motorized sounds.

Researchers also found that, when all other factors (habitat quality) were equal, mechanical noise alone reduced the species diversity of nesting birds, resulting in changes to the natural bird communities in these areas. A controlled experiment provided strong evidence that noise alone, regardless of the presence of humans or moving motorized vehicles, negatively influences bird population levels and species diversity in much the same way as the physical destruction of or altering of a natural habitat (Francis et al. 2009). This effect is likely due to the masking of natural sounds by mechanical noise, which prevents many species of birds from successfully nesting in such areas. Increased mechanical sound levels altered species interactions, along with predator-prey interactions. This observation may explain why certain bird species (pigeons, sparrows, starlings), thrive in heavily human-influenced environments, and why species diversity in heavily mechanized sound-disturbed environments is low (Francis et al. 2009). Such effects may limit shorebird species diversity on Cape Hatteras, possibly increasing populations of human-tolerant species, while decreasing populations of species more sensitive to human-associated sounds. These effects may occur even in areas exposed to human-associated sounds, but removed from any visuals associated with such sounds, such as areas behind dunes, or where ORV travel is restricted. Effects depend on the audibility of motorized sounds in these areas, and will vary with the level of natural predation.

Nesting shorebirds at Cape Hatteras are exposed to a variety of natural and human caused sounds. Human caused sounds included motorized noise from ORVs and on-road vehicles, and human voices. Such effects may be species specific, as certain factors, including a higher song frequency (Rheindt 2003) and ability to nest near mechanized sound sources without increased stress or predation risk (Francis et al. 2009), may actually increase reproductive success of certain species. Birds have also shown ability to adapt certain behaviors, or ecological traits, when exposed to predation risk, decreasing the negative impacts of mechanized noise perceived as predator risk (Lima 2009).

### **EXISTING SOUND LEVELS**

The presence of millions of visitors to the Seashore engaging in various activities, coupled with the vehicular traffic through this Seashore along NC-12 and associated ramps, including ORV usage on the beaches, serve as sources of unnatural sounds within this Seashore. However, these sources are also considered to be consistent with the Seashore's purpose.

In order to determine the natural ambient sound levels within the Seashore and characterize the natural soundscape, the NPS Natural Sounds Program assisted the Seashore conduct acoustical monitoring within the Seashore. The sound level data collected by the Natural Sounds Program will facilitate the estimation of noise impacts from the use of ORV, serving as a comparative baseline condition to ORV noise.

A summary report of the sound level measurements, known as an "Acoustical Monitoring Snapshot," was developed by the NPS Natural Sounds Program and includes the locations of two representative sites where measurements were conducted, as well as a brief vegetative description for the sites and measured sound levels. The measured sound levels represent exceedance levels ( $L_x$ ) that describe the measurement data in terms of the decibel level that is exceeded  $x$  percent of the time during a given measurement period (i.e., an  $L_{10}$  value of 55 dBA indicates that the sound level is 55 dBA for 90% of the measurement and exceeds this level 10% of the measurement period). As the NPS is required to protect the natural soundscape, impact assessment is based on comparisons against the natural ambient sound levels. Natural ambient sound levels represent the natural environment, absent human-caused sounds, and may be well



estimated based on the  $L_{90}$  metric. The  $L_{90}$  metric represents the sound level exceeded 90 percent of the time.

Sound level measurements were conducted at two sites over a period of 31 days between May 2008 and June 2008. Sound level data were collected during a daytime (7:00 a.m. to 7:00 p.m.) and a nighttime (7:00 p.m. to 7:00 a.m.) period. Monitors were placed in secure locations, away from traffic and the beaches. Site one, labeled CH1 (figure 19), was located on Bodie Island Bone Yard just north of the fishing center and west of NC-12 on the side of the island near the sound. The site is composed of woody wetlands and mixed forest. Daytime existing  $L_{90}$  sound levels are 33.6 dBA while nighttime  $L_{90}$  sound levels are 33.8 dBA. Site CH2 (figure 20) is located at Cape Point on the ocean side within woody wetlands and shrublands. Existing  $L_{90}$  sound levels are 33.4 dBA during the daytime and 41.0 dBA during the nighttime period.

NPS protocols for acoustic monitoring at national parks (NPS 2006c) were followed in the collection of acoustic data at Cape Hatteras National Seashore to determine ambient conditions. The protocols attempt to capture spatial and temporal variability within the Seashore. Therefore, monitors are typically not placed near sound sources that would dominate and mask other acoustic resources (i.e., birds, insects). As noise from the surf is a predominant natural sound source along the beaches within this Seashore, the NPS Natural Sounds Program also provided published information on surf sounds to further characterize the natural soundscape within the Seashore.

Sounds from the surf vary, depending on how active the surf is (i.e., during high tide or stormy conditions the surf has more acoustic energy), and therefore sound levels may range between 20 dBA during less active periods and 55 dBA during more active periods (California State Lands Commission 2005). Additionally, surf noise is predominant on the beaches, but diminishes with increasing distance from the beaches, where vehicular noise sources may prevail from NC-12 and associated ramps and smaller feeder roadways. Acoustic conditions at the surf were extrapolated using the collected data. The results of the extrapolation were verified and corroborated by published sources (*Disposition of Offshore Cooling Water Conduits SONGS Unit 1 EIR*) and the experiences of Seashore managers.



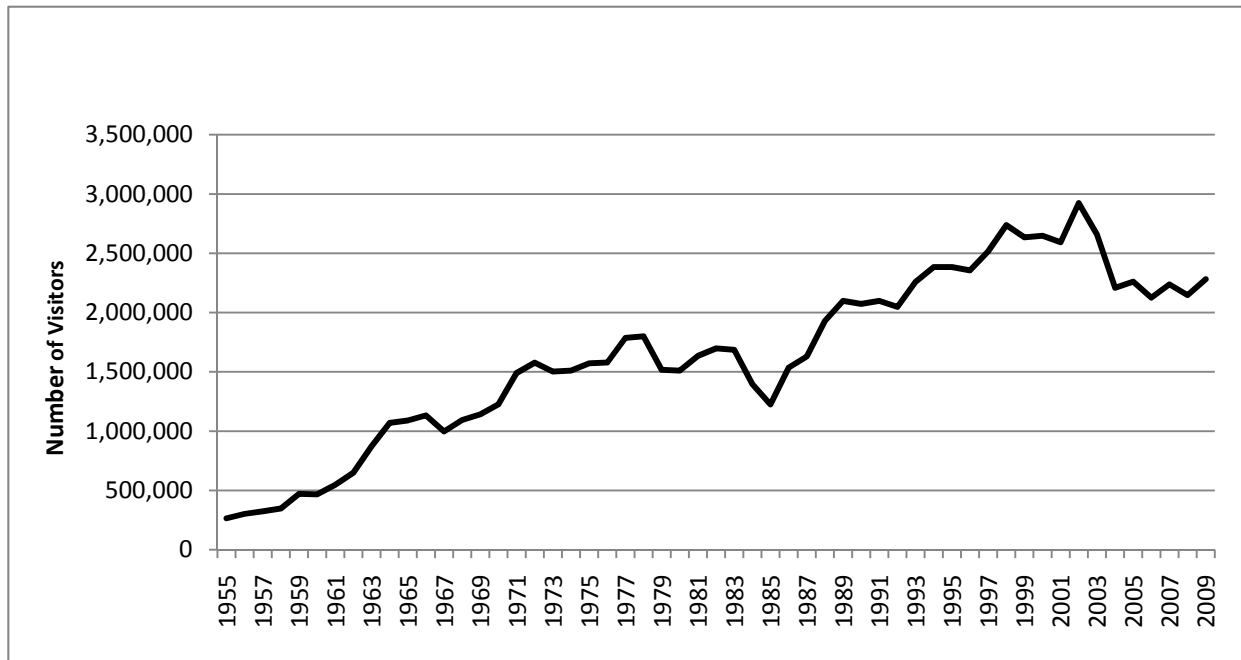
FIGURE 19. ACOUSTICAL MONITORING SITE LOCATION FOR CH1



FIGURE 20. ACOUSTICAL MONITORING SITE LOCATION FOR CH2

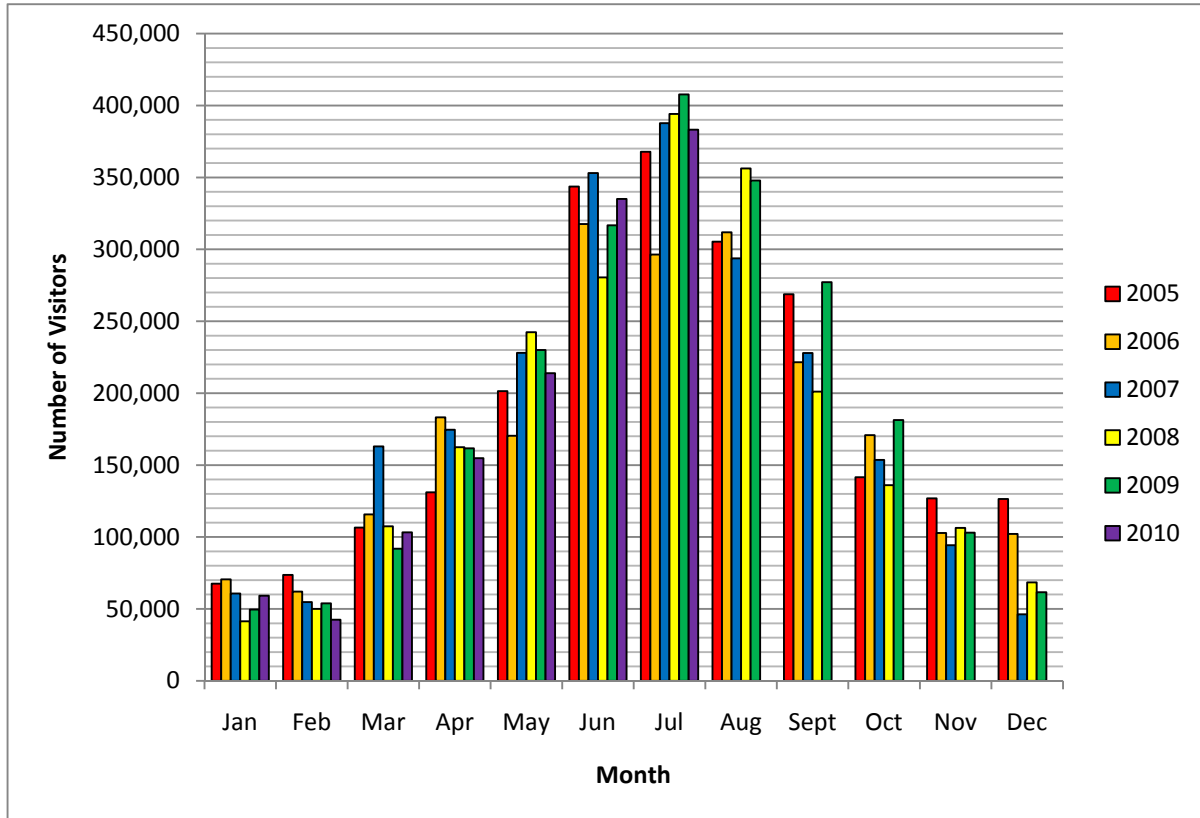
## VISITOR USE AND EXPERIENCE

Visitation to the Seashore has shown a relatively steady increase, with occasional dips, particularly in the mid-1980s and recently from 2003 to the present. More than 2 million visitors have recreated at the Seashore every year since 1990 (see figure 21). Figure 22 illustrates visitor use data for 2005 through July 2010, which indicate that highest use occurs during June, July, and August; this accounts for approximately 47% of the annual recreation visits (based on 2009 data). Another 20% of annual visitation occurs during the fall (September, October, and November), 24% in the spring (March, April, and May), and 9% in the winter (December through February) (NPS 2008e). Overall, visitation at the Seashore in 2009 has been higher than 2008, with July 2009 visitation of 407,754 being the highest since 2003 (Murray pers. comm. 2009b).



Source: NPS 2008e, NPS 2010c

**FIGURE 21. ANNUAL RECREATIONAL VISITATION AT CAPE HATTERAS NATIONAL SEASHORE, 1955–2009**



Source: NPS 2008e; Broili pers. comm. 2009; NPS 2010c

**FIGURE 22. MONTHLY RECREATIONAL VISITATION AT CAPE HATTERAS NATIONAL SEASHORE, JANUARY 2005–JULY 2010**

## VISITOR CHARACTERISTICS

A study conducted by the University of Idaho during 1 week in July 2002 showed that many visitors (44%) were from North Carolina and Virginia, approximately 10% were from Ohio, and smaller proportions of visitors came from 29 other states and Washington DC. Over 50% of visitors were between 30 and 50 years of age (University of Idaho 2003).

## RECREATIONAL OPPORTUNITIES AND USE AT CAPE HATTERAS NATIONAL SEASHORE

The Seashore provides a diverse range of recreational opportunities including auto touring, biking, bird watching, boating, camping, fishing, hiking, hunting, kayaking, taking nature walks, horseback riding, stargazing, swimming, wildlife viewing, surfing, kite boarding, and wind surfing. Materials submitted to the negotiated rulemaking committee by Cape Hatteras Business Allies mentioned the following recreational activities sought by visitors: bird watching and wildlife viewing, fishing, horseback riding, shelling, sea glass collecting, swimming, water sports (kayaking, kite



**Historic Photo of Recreating at the Seashore**

Credit: NPS

boarding, paddle boarding, skim boarding, surfing, and windsurfing) (Cape Hatteras Business Allies 2009; NPS 2009m).

Major developed facilities, such as visitor centers and campgrounds, as well as more informal visitor use areas at the Seashore that provide for these recreational activities, are shown on the Seashore map in chapter 1 of this document. Visitor centers are located on each island in association with Ocracoke, Cape Hatteras, and Bodie Island lighthouses, and campgrounds include Ocracoke, Frisco, Cape Point, and Oregon Inlet. Fishing piers are located near Frisco<sup>8</sup> and at Avon and Rodanthe on Hatteras Island, and a major marina is located at Oregon Inlet on Bodie Island. Bathhouses and/or designated swimming beaches are available near Frisco on Hatteras Island, Coquina Beach on Bodie Island, and on Ocracoke Island north of the village. Information stations, day use areas, and informal recreation opportunities, such as nature trails, are also found throughout the Seashore. Visitor surveys were conducted in 2002 and 2010 regarding what facilities and activities visitors use while they are at the Seashore.

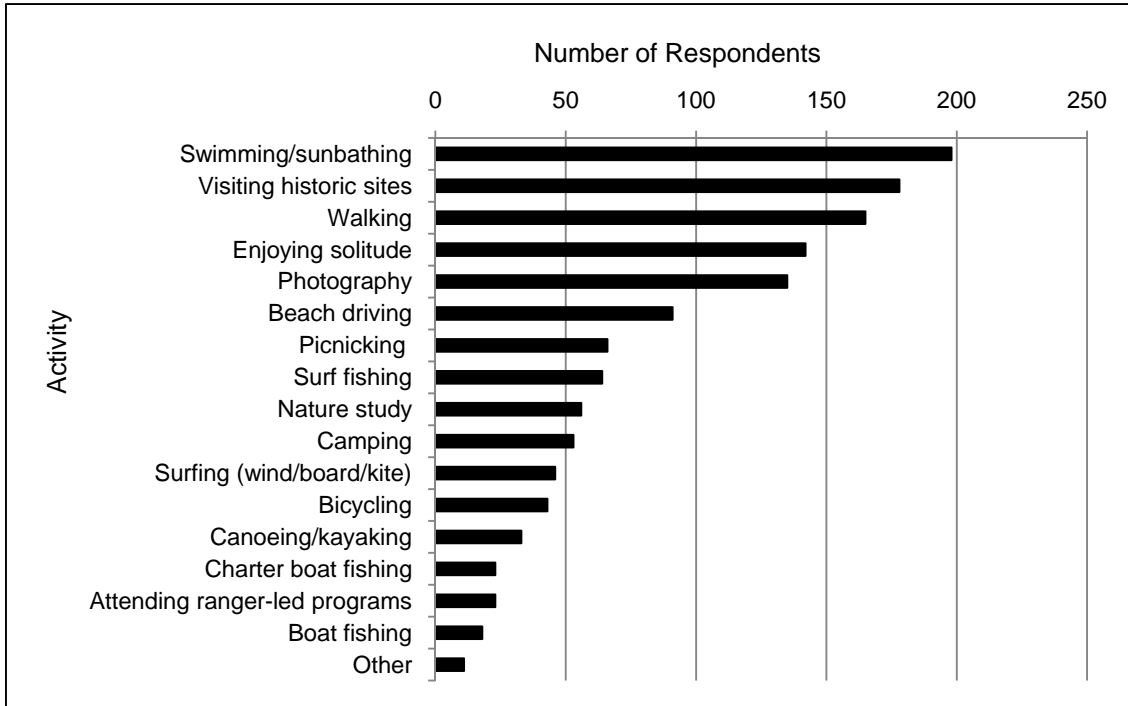
According to the study conducted by the University of Idaho in 2002, the three most important reasons mentioned by visitors for visiting the Seashore were the lighthouses, the beach/beachcombing, and fishing. Historical significance and swimming followed closely (University of Idaho 2003). This study also asked visitor groups to list the activities in which they participated during their visit to the Seashore. In total, 254 visitor groups were surveyed. Respondents could choose more than one activity in which they engaged, therefore the percentages did not equal 100%. The results are displayed in figure 23, with swimming/sunbathing being the most popular activity (approximately 200 or 78% of respondents), followed by visiting historic sites (approximately 180 or 70% of respondents), walking (approximately 165 or 65% of respondents), and enjoying solitude (approximately 143 or 56% of respondents). The study indicated 93 respondents (approximately 36%) had driven on the beach during their visit to the Seashore (University of Idaho 2003). Other activities that respondents participated in included family time/reunions, clamming/crabbing, shelling, shopping, and history study.

In addition to the 2003 study from the University of Idaho, the NPS contracted with RTI International to conduct an intercept survey of visitors using the oceanside beaches (RTI 2010a). The primary goal of the visitor intercept survey was to understand the current visitor use of the Seashore and how visitors' self-reported behavior would change under different management conditions.

The visitor intercept survey consisted of two separate sampling populations. The first sampling population was all visitors on open beaches in the Seashore from 6 a.m. to 10 p.m., between August 4, 2009 and March 29, 2010. The Seashore beaches were divided into 168 segments of varying lengths based on the expected number of visitors at the beach segment. To ensure that there was at least one three-day interview trip during the low winter season, two seasonal categories were created out of the 34 weeks in the first sampling population. Five trips were taken during the first category consisting of the 17 weeks between August 4 and November 30, 2009. One trip was taken during the lowest visitation category, which consisted of the 17 weeks from the beginning of December 2009 through the end of March 2010.

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<sup>8</sup> The Frisco pier was closed for public safety reasons, due to deteriorating conditions, and then further damaged by Hurricane Earl in September 2010. The future of this pier is not known at this time.



Source: University of Idaho 2003

**FIGURE 23. VISITOR ACTIVITIES SURVEY RESULTS**

The second sampling population consisted of visitors at 12 selected beach areas in the Seashore from 10 a.m. to 6 p.m., Friday through Monday between June 15 and July 26 2010. The 12 selected beach areas were Oregon Inlet Campground Beach; Bodie Island Spit; Rodanthe Pier Beach; Avon Pier Beach; Cape Hatteras Lighthouse Beach; Cape Point; South Beach; Frisco Pier Beach; ramp 55 to Hatteras Inlet; North Ocracoke; Ocracoke Day Use Beach; and South Point Ocracoke.

Field staff conducting the survey took eight 3-day trips to the Seashore to interview beach visitors (six for the first sampling population and two for the second). Each selected day, field staff traveled to two randomly selected clusters of beaches and conducted interviews in two randomly selected beach segments per cluster. Two hours were allotted for interviewing in each beach segment. Groups of beach visitors were selected using systematic sampling based on the number of groups within the segment. In total, 96 beach segments were visited for interviews and 245 interviews were completed. The data from the counting trips were weighted based on sampling design and the probability that a segment was selected for counting at a certain time or a certain day.

Based on these surveys the most popular activities at the Seashore were swimming, sunbathing, or enjoying the beach and bird watching/wildlife viewing (see table 35-1). The activities driving on the beach during the day and beach fishing were done by an estimated 40.7% and 37.5% of visitors in the sampling population, respectively.

**TABLE 35-1. ACTIVITIES DONE SO FAR THIS TRIP - MEAN ESTIMATE AND 95% CONFIDENCE INTERVAL**

Activity	Mean	95% Confidence Interval	
		Lower Bound	Upper Bound
Pier fishing	5.5%	0.4%	10.6%
Beach fishing	37.5%	25.6%	49.4%
Charter (offshore) fishing	1.8%	0.0%	4.4%
Swimming, sunbathing, or enjoying the beach	99.4%	98.0%	100.0%
Surfing or kite-surfing	17.2%	4.2%	30.3%
Bird watching/wildlife viewing	70.7%	63.2%	78.2%
Taking a ferry	38.5%	10.7%	66.2%
Visiting the Cape Hatteras Lighthouse or Bodie Island Lighthouse	22.6%	9.0%	36.2%
Visiting historic sites in Cape Hatteras National Seashore	18.4%	9.3%	27.4%
Canoeing, kayaking, or sailing	6.2%	1.8%	10.7%
Driving on the beach during the day	40.7%	27.2%	54.2%
Driving on the beach at night after 10 p.m.	4.5%	0.7%	8.3%
Other	12.4%	2.0%	22.8%

Source: RTI 2010a

In the 2010 visitor intercept survey, some activities visitors engaged in the most were similar to those in the 2002 survey, with both showing a high number of respondents that participated in swimming/sunbathing (78% in 2002 and 99% in 2010). The 99% of respondents who indicated they engaged in swimming, sunbathing, or enjoying the beach may have also included those who were walking and/or enjoying solitude (which was not a category in the 2010 survey). Both surveys also showed similar numbers of respondents engaging in beach driving, with 36% indicating that they engaged in this activity in 2002 and 40% in 2010. However, results of the surveys differed for some activities, such as visiting historic sites, which had a high response in the earlier survey (70%) but a much lower response in 2010 (40%, comprising 22% who visited the Cape Hatteras Lighthouse or Bodie Island Lighthouse and 18% who visited other historic sites in Cape Hatteras National Seashore). Some of the differences between the two surveys may be explained by the slightly different survey locations. The 2010 survey was conducted only at beach areas. The earlier survey was conducted at Coquina Beach, Cape Point, ramp 43, Cape Hatteras Lighthouse and Visitor Center, Ocracoke Lighthouse and Visitor Center, Cape Hatteras ramp 4 (Oregon Inlet), Whalebone Information Center, Haulover Day Use Area, and Cape Point/Frisco Campgrounds.



For the 2010 survey, table 35-2 lists the weighted percent of the sampling population that selected each activity as their primary activity for the trip. Swimming, sunbathing, or enjoying the beach was the primary activity for 63.2% of visitors in the sampling population and surfing or kite-surfing was the primary activity for 6.9% of the sampling population. Beach fishing was the primary purpose of the trip for 22.8% of visitors, and driving on the beach was the primary purpose of the trip for 0.7% of visitors (RTI 2010a).

**TABLE 35- 2. PRIMARY ACTIVITY FOR THE TRIP - MEAN ESTIMATE AND 95% CONFIDENCE INTERVAL**

Activity	Mean	95% Confidence Interval	
		Lower Bound	Upper Bound
Beach fishing	22.8%	7.3%	38.2%
Swimming, sunbathing, or enjoying the beach	63.2%	48.8%	77.6%
Surfing or kite-surfing	6.9%	0.0%	16.5%
Visit the Cape Hatteras Lighthouse or Bodie Island Lighthouse	0.5%	0.0%	1.3%
Driving on the beach during the day	0.7%	0.0%	1.9%
Other	6.0%	0.0%	13.0%

Source: RTI 2010a

The 2010 survey also included questions regarding the current management of the Seashore. Table 35-3, shows that the awareness of beach driving among visitors to the Seashore was high, with 91.6% aware that some Seashore beaches are open to vehicles. Additionally, 58.7% of visitors were aware that some beaches previously open to vehicles are now closed at some point during the year. The uncertainty surrounding beach closures did not affect the planning of trips for 93.4% of visitors, however 4.2% of visitors reported making plans closer to time of the trip due to this uncertainty.

**TABLE 35-3. KNOWLEDGE AND IMPACT OF CURRENT MANAGEMENT - MEAN ESTIMATE AND 95% CONFIDENCE INTERVAL**

Question	Answer	Mean	95% Confidence Interval	
			Lower Bound	Upper Bound
Before you arrived at Cape Hatteras National Seashore for this trip, did you know that some beaches at Cape Hatteras National Seashore were open to vehicles?	Yes	91.6%	84.0%	99.3%
	No	8.1%	0.5%	15.8%
	Don't Know	0.2%	0.0%	0.6%
Before you arrived at Cape Hatteras National Seashore for this trip, did you know that certain parts of the Seashore that have been open to vehicles in the past are now closed to vehicles during parts of the spring, summer and fall?	Yes	58.7%	47.3%	70.0%
	No	40.1%	28.4%	51.9%
	Don't Know	1.2%	0.0%	2.7%
How would you say the uncertainty about whether specific parts of the Seashore would be open to vehicles affected when you started planning for this trip?	Didn't Affect	93.4%	88.1%	98.7%
	Farther in Advance	1.8%	0.0%	3.9%
	Made Plans Closer to the Time of the Trip	4.2%	0.2%	8.2%
	Don't Know	0.6%	0.0%	1.5%

Source: RTI 2010a

## Recreational Fishing



**Historic Photo of Recreational Fishing**

Credit: NPS

The cold Labrador Current and the warm waters of the Gulf Stream meet adjacent to the Outer Banks of North Carolina. The waters off the Seashore are known throughout the world as highly productive fishing areas. The fish that congregate in the waters off the Outer Banks attract anglers from throughout the region, but largely from North Carolina and Virginia. In the spring and fall, when bluefish (*Pomatomus saltatrix*), spotted sea trout (*Cynoscion nebulosus*), red drum (*Sciaenops ocellatus*), and other species are present in offshore waters, surf fishermen line the beaches to cast their baits and lures over the incoming breakers and into the schooling fish. Most of the beach and sound are open to fishing as are the fishing piers in the villages of Rodanthe, Frisco, and Avon. NPS boat

ramps are located at the Oregon Inlet Marina and near the ferry office in Ocracoke Village. Charters and head-boat services (boats that carry a large number of anglers who pay by the person) are available at local marinas.

Particularly productive and high-demand fishing areas include Ocracoke, Hatteras, and Oregon inlets and Cape Point, which are often accessed via ORVs. ORV counts at ramps accessing these inlets exceeded those of other beach access ramps. This use is discussed in the “Visitor Access and Off-road Vehicle Use” section that follows below.

Typically, fishing tournaments occur in the spring and fall in locations throughout the Seashore, as shown in table 36. Tournament data from 2001 to 2008 indicate that, normally, about eight or nine fishing tournaments occur annually (Thompson pers. comm. 2008). While data are not available for actual attendance, the events are well attended. For 2005, estimates indicate that more than 720 people participated in one event that lasted



**Recreational Fishing in Modern Times**

Credit: NPS

for 2 days. Some tournaments may only have 25 participants, depending on the availability of fish and weather. Restrictions are placed upon the events as to location and times to ensure the availability of recreational areas for other Seashore visitors. These restrictions change from time to time depending on the time of the year, seasonal visitation figures, past experience with the sponsors, and how the proposed event is structured. Typically, Seashore beaches 0.5 mile on either side of Cape Point and 0.5 mile on either side of an inlet are closed to tournament fishing.

Like other Seashore visitors, tournament participants are not allowed in any resource closure areas. Tournaments take place in the designated ORV corridor, which has presented conflict with recreational anglers during the tournaments on a few occasions (NPS 2007e).

TABLE 36. FISHING TOURNAMENTS, 2004–2008

Applicant/Event	Tournament Date	# People Authorized	Tournament Location within the Seashore
4 Plus Four Wheel Drive Club	Late April from 2004 to 2008	600	Ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet and Ocracoke Inlet, and 0.5 mile on the north side of Oregon Inlet
Ocracoke Invitational Surf Fishing Tournament	Late April / early May from 2004 to 2008	240	Ocean beach between ramps 68 and 72
Outer Banks Association of Realtors	5/20/2005	150	Ocean beach from Coquina Beach to ramp 4
Hatteras Village Invitational	Early September from 2006 to 2008	540	Hatteras Island
Hatteras Village Civic Association	9/10/2004 9/9/2005	240	Ocean beaches on Hatteras Island open to 4x4 vehicles from ramp 43 south and west to 0.5 mile from Hatteras Inlet, but excluding 0.5 mile either side of Cape Point
Salt Water Grill	9/28/2008	120	Bodie Island
Nags Head Surf Tournament	Early October from 2004 to 2008	240	Ocean beach from Coquina Beach to ramp 4
FFFF Tournament	Early October from 2006 to 2008	120	Bodie Island
Capitol City Four Wheelers	Mid-October from 2004 to 2008	600	Ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet, and all areas closed to vehicular access including ramps temporarily closed due to flooding
Outer Banks Association of Realtors	Mid-October from 2006 to 2008	240	Bodie Island
Red Drum Tournament	10/24/2007 10/22/2008	600	Parkwide
Cape Hatteras Anglers Club	11/4/2004	600	Public ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet and Ocracoke Inlet, and 0.5 mile on the north side of Oregon Inlet;
Cape Hatteras Anglers Club	11/3/2005 11/2/2006 11/8/2007 11/6/2008	720	Public ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet and Ocracoke Inlet, and 0.5 mile on the north side of Oregon Inlet; also excluding 0.2 mile on either side of ramps 1, 4, 23, 27, 30, 34, 43, 49, and 55
Outer Banks Angler	11/30/2007 12/5/2008	600	Parkwide
Surf Fishing Info.	12/2/2005	240	Ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet and Ocracoke Inlet, 0.5 mile on the north side of Oregon Inlet, and other closures ordered by the Seashore

Source: Thompson pers. comm. 2008

### Visitor Access and Off-road Vehicle Use

As noted in chapter 1 of this document, before 1954, local residents and visitors used the beaches and sound trails for vehicular transportation purposes because there were few formal roads in this remote area. With the paving of NC-12, the completion of the Bonner Bridge connecting Bodie and Hatteras islands, and the introduction of the NCDOT Ferry System to Ocracoke Island, improved visitor access to the islands resulted in increased recreational use of the Seashore in general, as well as increased vehicle use on the beaches for recreational purposes. ORVs were used by residents to facilitate commercial netting of fish, and sport fishermen used ORVs to pursue migrating schools of game fish and to reach more productive areas such as Cape Point or the inlets, which are often a mile or more from the nearest paved surface. ORVs are currently used at the Seashore for commercial and recreational fishing, sightseeing, travel to and from swimming and watersport areas, and pleasure driving (NPS 2004b). On the other hand, Seashore visitors choose to access the Seashore by foot for swimming, sunbathing, birdwatching, fishing, enjoying scenic ocean views, and other recreational activities.



**Beach Driving at the Seashore**

Credit: NPS



**ORVs Accessing the Beach using a Ramp**

Credit: NPS

ORVs access the beach via a system of ramps located off NC-12. This vehicular beach access ramp system provides controlled entry and exit to beach areas. Originally, planks were placed on the dune crossing site, hence the name “ramp,” to prevent the sand from moving and to prevent the dune from being further breached. The ramps began as an informal system of unimproved access points connecting the roadway to the beaches. Over time, this system was formalized and ramps are now numbered, maintained, and identified on the Seashore’s ORV route maps as official vehicle routes for beach access. In 1978, there were 28

identified ramps, 22 of which were located on NPS lands. Although the NPS opened a new ramp to the public in 1998, the number of ramps has decreased since 1978 as some were lost to erosion and others were closed to the public and are now used for administrative vehicle access only (NPS 2004a). The NPS currently has 17 oceanside access ramps available for public ORV use. These ramps are listed on table 37. Each ramp number on the map (figure 24) refers to the approximate mile on NC-12 south of Nags Head on Bodie Island.

**TABLE 37. OCEAN BEACH ACCESS**

<b>Ramp</b>	<b>Open to Public Use</b>
Ramp 2 (Coquina)	Seasonal
Ramp 4	Year-round
Ramp 23	Year-round
Ramp 27	Year-round
Ramp 30	Year-round
Ramp 34	Year-round
Ramp 38	Year-round
Ramp 43	Year-round
Ramp 44	Year-round
Ramp 45	Year-round
Ramp 49	Year-round
Ramp 55	Year-round
Ramp 59	Year-round
Ramp 67	Year-round
Ramp 68	Seasonal
Ramp 70	Year-round
Ramp 72 (South Point Road)	Year-round

Source: NPS 2008g



FIGURE 24. OFF-ROAD VEHICLE RAMPS AT CAPE HATTERAS NATIONAL SEASHORE

**Number and Distribution of ORVs at the Seashore**

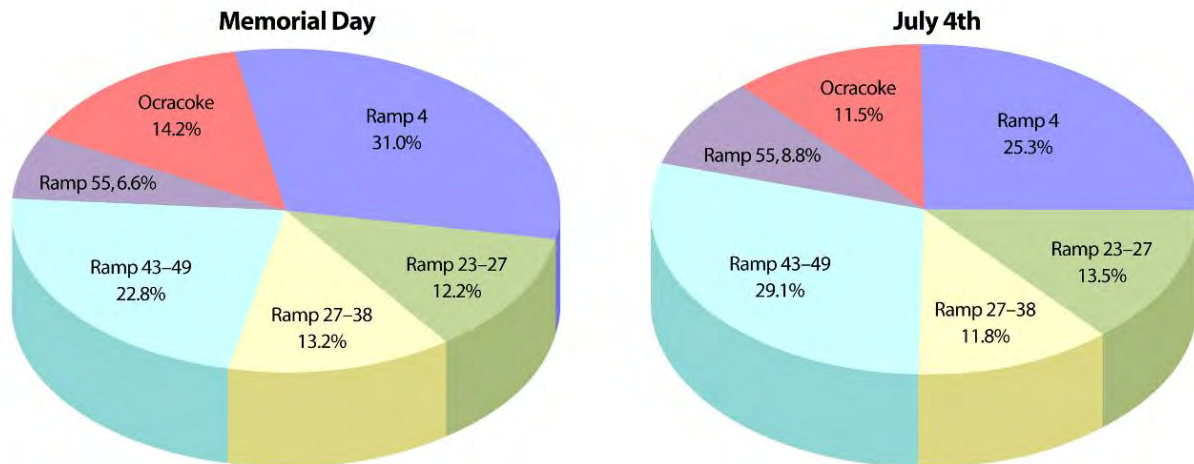
From 2007–2008, the Seashore installed infrared counters at ORV ramps to determine the number of ORVs using the Seashore, as well as their distribution in the Seashore. However, in addition to counting ORVs, the counters were found to count anything that breaks the infrared beam, including pedestrians, rain, and untrimmed plants. The counters also failed to register some counts and must be properly aligned to count. Testing showed that the ramp counters overestimated the number of ORVs substantially and that pedestrian crossings often added to the inaccurate counts. For these reasons, the data from the ramp

counters were deemed not reliable for constructing estimates of ORV use at the seashore (RTI pers. comm. 2009a).

On Memorial Day and the Fourth of July, the Seashore counts the number of ORVs on the beach by an aerial survey. RTI (RTI pers. comm. 2009a) used this information, along with assumptions based on rental occupancy and patterns of use, to create a range of estimates for the total number of ORVs using the Seashore in a year. Although there are some data from various sources about the number of vehicles on the beach, none of the sources have the scope or reliability to provide a robust annual estimate of vehicles on the beach. The data from the aerial counts were used to provide counts for ORVs at the following locations, which include some of the most popular ramps leading to the points and spits:

- Ramp 4: Includes Bodie Island Spit.
- Ramp 23 to ramp 27: Approximately 4-mile area directly south of Salvo.
- Ramp 27 to ramp 38: Approximately 11 mile area including Avon.
- Ramp 43 to ramp 49: Includes Cape Point.
- Ramp 55: Includes Hatteras Inlet Spit.
- Ocracoke: All of Ocracoke Island.

Figure 25 and the ramp counts in table 37-1 show the distribution of ORVs across these areas on Memorial Day and the Fourth of July in 2008.



**FIGURE 25. ORV DISTRIBUTION BASED ON AERIAL COUNTS, FOURTH OF JULY AND MEMORIAL DAY 2008**

**TABLE 37-1. RAMP COUNTS FOR MEMORIAL DAY AND FOURTH OF JULY, 2008**

Memorial Day, 2008		Fourth of July, 2008	
Ramp	Count	Ramp	Count
Ramp 4	641	Ramp 4	661
Ramp 23-27	336	Ramp 23-27	353
Ramp 27-38	191	Ramp 27-38	277
Ramp 43-49	471	Ramp 43-49	758
Ramp 55	137	Ramp 55	230
Ocracoke	293	Ocracoke	300
<b>2008 Total Count</b>	<b>2069</b>	<b>2008 Total Count</b>	<b>2579</b>

Trevino pers. comm. 2010

To supplement these counts, a survey was conducted according to a random sampling plan to provide an estimate of the number of vehicles on the beach between April 1, 2009, and March 30, 2010, with a 95% confidence interval. NPS contracted with RTI to conduct a count of vehicles using the oceanside ORV beach access ramps over a 12-month period from April 2009 through March 2010. The primary goal of the vehicle counting survey was to estimate the total number of vehicle roundtrips on the 17 oceanside ORV ramps during a 12-month period between 6 a.m. and 10 p.m. The details of the study are described in the final report (RTI 2010b). These vehicle counts provide an estimate of the total number of vehicle roundtrips to the beach. They are not directly comparable to the official number of recreational visitors to Cape Hatteras, because these numbers are determined by a traffic counter at Whalebone Junction. A single recreational visit, as counted by the Whalebone Junction counter, can include multiple vehicle roundtrips over an ORV ramp to the beach. Seventeen oceanside ORV access ramps currently operate in the Seashore. Two of the ramps are located on Bodie Island, ten are on Hatteras Island, and the remaining five are on Ocracoke Island. RTI field staff took 19 three-day trips to the Seashore to count at beaches and ramps, for a total of 57 days of counting. Each selected day, field staff traveled to two randomly selected clusters of ramps and beaches and spent two hours counting the number of vehicle roundtrips on each of two ORV ramps (the numbers of entrances and exits were added together and averaged to provide the estimated number of roundtrips since each vehicles that entered the beach through a vehicle access ramp also exited the beach, though not necessarily at the same ramp). The 57 days of counting resulted in a total sample of 114 clusters covering 228 two-hour vehicle counting opportunities and 456 beach counting opportunities (RTI 2010b).

To ensure that at least two counting trips were taken during the low winter season, RTI created two seasonal categories out of the 52 weeks. The two categories roughly correspond to low and medium/high visitation seasons at the Seashore. The lowest visitation category, which consisted of the 17 weeks from the beginning of December 2009 through the end of March 2010, was assigned two 3-day trips. The remaining 17 trips took place during the other 35 weeks from April 2009 through November 2009, which make up the medium and high visitation categories. The data from the counting trips was weighted based on the sampling design and the probability that a ramp was selected for counting at a certain time or a certain day. Based on the data from the ramp counts, the mean estimate is 499,802 vehicle roundtrips over an oceanside ramp onto the Seashore beaches between April 2009 and March 2010, with a 95% confidence interval of 276,946 to 722,659. An estimated mean of 994,604 passengers were inside these vehicles with a 95% confidence interval of 654,961 to 1,334,247 passengers (table 37-2). As with the number of vehicle roundtrips, the estimated number of passengers is not directly comparable to the official statistics on recreational visitors to the Seashore. A visitor using the ramps could make several



roundtrips over the ramps in a day and would result in counting the same visitor multiple times (RTI 2010b).

The increased sampling coverage between April and November (49% of the weeks as opposed to 12% of the weeks between December and March), resulted in narrower confidence intervals around the April and November estimates. Between April and November, the 95% confidence interval is +/-17% of the point estimate of 344,999 vehicle roundtrips. Between December and March, the 95% confidence interval is +/-151% (table 37-2). In addition, the geographic distribution of ORV use in the Seashore could not be determined between December and March due to the lack of sampling coverage. April through November captures the majority of vehicle roundtrips that would be affected by the proposed management alternatives, providing the best estimates (RTI 2010b).

**TABLE 37-2. ESTIMATES AND 95% CONFIDENCE INTERVALS FOR NUMBER OF VEHICLES MAKING A ROUNDTRIP TO THE BEACH OVER AN OCEANSIDE RAMP AND ASSOCIATED PASSENGERS BY TIME CATEGORY**

Time Interval	Vehicle Roundtrips			Passengers		
	Estimate	95% Confidence Interval		Estimate	95% Confidence Interval	
		Lower Bound	Upper Bound		Lower Bound	Upper Bound
April 2009 to November 2009	344,999	284,696	405,302	768,948	625,928	911,968
December 2009 to March 2010	154,803	0	392,594	225,656	0	567,185
52 week total	499,802	276,946	722,659	994,604	654,961	1,334,247

NOTE: These vehicle access counts provide an estimate of the total number of vehicle roundtrips to the beach. Currently the NPS method for compiling visitation only uses the Whalebone Junction counts because a vehicle using the ramps could make several roundtrips in a day and would result in counting the same visitor multiple times.

Source: RTI 2010b

Table 37-3 reports the average daily vehicle roundtrips and associated passengers by ramp for the period of April to November 2009. The most popular ORV ramp between April and November was ramp 4 on Bodie Island, however ramps 43, 49, 55, and 70 were all estimated to average over 100 vehicle roundtrips a day between April and November 2009. These results were similar to the 2008 counts, which found that ramp 4 and ramps 43-49 were the most travelled ramps on both Memorial Day and Fourth of July (see figure 25 and table 37-1). During the 2009 vehicle counts, an estimated 59% of vehicle roundtrips took place on the various ramps on Hatteras Island, 26% on Ocracoke Island, and 15% on Bodie Island (table 37-3). Confidence intervals for the vehicle roundtrip estimates range from +/-18% for ramp 70 to +/-132% for ramp 44. These results for Hatteras Island are similar to the 2008 counts in figure 25 and table 37-1, which showed approximately 55% of vehicles on Hatteras Island on Memorial Day and 63% of vehicles on Hatteras Island on July 4. The 2008 vehicle counts for Bodie and Ocracoke islands on Memorial Day and July 4 differed slightly from the 2009 counts. The 2008 vehicle counts for Bodie Island (ramp 4 to Bodie Island Spit) showed approximately 31% on Memorial Day and 25% on July 4; the 2009 counts showed 15%. The 2008 vehicle counts for Ocracoke Island showed approximately 14% on Memorial Day and 12% on July 4; the 2009 counts showed 26%.

**TABLE 37-3. ESTIMATES AND 95% CONFIDENCE INTERVALS FOR DAILY VEHICLE ROUNDTRIPS AND ASSOCIATED PASSENGERS BY ORV RAMP (APRIL TO NOVEMBER 2009)<sup>a</sup>**

Ramp	Vehicle Roundtrips			Associated Passengers		
	Estimate	95% Confidence Interval		Estimate	95% Confidence Interval	
		Lower Bound	Upper Bound		Lower Bound	Upper Bound
2	40.4	26.8	54.1	66.2	40.8	91.6
4	173.0	95.1	250.8	409.0	195.8	622.3
23	55.0	0.0	110.5	105.0	0.0	212.9
27	57.6	17.2	98.1	141.8	21.2	262.5
30	53.7	15.9	91.5	138.3	31.7	245.0
34	60.4	25.3	95.5	123.7	49.2	198.3
38	82.2	45.3	119.1	177.8	89.8	265.8
43	133.9	52.9	214.9	273.3	78.1	468.4
44	86.5	0.0	200.3	229.7	0.0	547.1
49	134.2	8.9	259.5	349.3	10.8	687.8
55	152.1	57.9	246.2	325.6	89.6	561.6
59	66.3	37.6	95.0	152.9	74.8	231.1
67	48.1	19.8	76.4	99.6	37.4	161.8
68	13.9	1.5	26.2	25.8	0.3	51.3
70	155.5	127.5	183.4	318.1	226.6	409.7
72	76.4	14.5	138.3	167.4	28.6	306.3

<sup>a</sup> These vehicle access counts provide an estimate of the average daily number of vehicle roundtrips to the beach. Currently the NPS method for compiling visitation only uses the Whalebone Junction counts because a vehicle using the ramps could make several roundtrips in a day and would result in counting the same visitor multiple times.

Source: RTI 2010b

**Closures.** A number of areas throughout the Seashore have been closed to ORV travel over the years, either due to safety issues or for resource protection purposes. Temporary closures to ORVs also occur along the beaches to protect sea turtle nests and bird species such as piping plovers, American oystercatchers, and colonial waterbirds. The Seashore contains approximately 67 miles of shoreline that are available for public use, when not closed for resource or safety concerns. The 12 miles of beach that comprise Pea Island NWR are within the Seashore boundary and are managed separately and under a different regulatory framework by the USFWS; ORVs are not permitted on Pea Island beaches.

Currently, all the Seashore beaches are potentially open to ORV use during the winter, except a section near the Cape Hatteras Lighthouse (which is closed year-round), and those beaches under a safety closure. Some beaches are also closed to ORV use if they become too narrow. During the summer months, the amount of Seashore beach open can vary depending on resource closures and seasonal ORV closures of village beaches, as detailed in chapter 2 of this document. On the soundside, 18 access points are publicly available to ORVs. However, vehicular access is typically limited to short distances along sandy portions of the sound shoreline because the Seashore prohibits ORV use on vegetated areas, and most of the soundside areas have vegetation. Closures vary from year to year depending on a range of management considerations.

Following Hurricane Isabel, ORV use areas (restrictions) were put in place in March 2004 to protect sensitive habitat that opened up as a result of dune destruction and to provide for more consistent management of breeding and nesting bird closures. These closures did not significantly decrease the sum total of shoreline miles open to ORV access and public recreation nor did it impact the number of ramps open to allow ORV access to Seashore beaches. White posts were placed 150 feet landward from the average, normal high-tide line, or, if existing, at the vegetation or remnant dune line. Beach areas landward of the post line, although not open to ORV use, were open to pedestrian use (NPS 2004b).

Temporary resource closures are established throughout the Seashore, including within areas of ORV and pedestrian use, to comply with protection measures afforded nesting sea turtles and protected shorebirds. These closures are implemented at crucial periods during the life of these species. During these closures, the NPS routes ORV beach traffic around the temporary resource closure when possible. Temporary resource closures apply to both ORV and pedestrian use, although occasionally pedestrian access can be provided in pedestrian corridors. These closures include prenesting closures. Table 37-4 details the prenesting closures or resource closures that have taken place under alternative A (2007) and alternative B (2008 – 2010), beginning in 2007, showing dates when the closure began and when the area reopened.

**TABLE 37-4. RESOURCE CLOSURE DATES FOR POPULAR VISITOR SITES 2007-2010**

<b>2007 (Prenesting areas installed by April 1)</b>			
<b>Location</b>	<b>Closed</b>	<b>Reopened</b>	<b># of Days Closed</b>
Bodie Island Spit	July 15	August 16	32
Cape Point <sup>1</sup>	n/a	n/a	0
Hatteras Inlet "rip" <sup>2</sup>	May 8	May 10	2
North Ocracoke <sup>3</sup>	April 8	June 7	60
South Point Ocracoke (two events)	June 26 <sup>4</sup>	June 28	2
	July 10 <sup>5</sup>	July 11	1
<b>2008 (Prenesting areas installed by March 15)</b>			
<b>Location</b>	<b>Closed</b>	<b>Reopened</b>	<b># of Days Closed</b>
Bodie Island Spit	May 5	August 26	113
Cape Point	May 5	July 22/29 (Pedestrian/ORV)	78/85
Hatteras Inlet "rip"	April 9	July 24	75
North Ocracoke	June 5	July 11	37
South Point Ocracoke	May 5	August 18	105
<b>2009 (Prenesting areas installed by March 15)</b>			
<b>Location</b>	<b>Closed</b>	<b>Reopened</b>	<b># of Days Closed</b>
Bodie Island Spit	March 23	August 6	136
Cape Point	April 14	July 17/29 (Pedestrian/ORV)	101/113
Hatteras Inlet "rip"	March 11	July 15	125
North Ocracoke	May 9	August 28	111
South Point Ocracoke	May 22	August 9	80

2010 (Prenesting areas installed by March 15)			
Location	Closed	Reopened	# of Days Closed
Bodie Island Spit	May 9	August 23	106
Cape Point	May 13	July 7/July 21 (Pedestrian/ORV)	55/69
Hatteras Inlet "rip"	March 11	July 15	126
North Ocracoke	April 28	August 25	119
South Point Ocracoke	April 20	August 27	129

<sup>1</sup> Open to ORVs/pedestrians from east side, but not from west side

<sup>2</sup> Open to pedestrians only from soundside (south of terminus of Spur Road). Pole Road safety closure after a storm prevented access to Spur Road May 8-9. Ocean shoreline approximately 0.3 mile south of Pole Road closed to ORVs and pedestrians as prenesting area on March 28, then reopened on June 30 (94 days closed).

<sup>3</sup> Open to ORVs and pedestrian North of ramp 59 approximately to the inlet.

<sup>4</sup> Closed to access on June 26 (PIPL chicks); re-opened for daytime access on June 28; and re-opened to 24-hour access on July 2.

<sup>5</sup> Closed to access on evening of July 9 (AMOY chick); re-opened for daytime access on July 11; and re-opened for 24-hour access on July 16.

**Bird Closures.** The open sand flats near the three inlets in the Seashore (Oregon, Hatteras, and Ocracoke) and Cape Point are used by protected bird species and are also favorite fishing areas that visitors access in ORVs. Piping plover, American oystercatcher, and colonial waterbird breeding activity has been documented on and near the ocean beach in all of these locations.

In 2005, temporary resource closures occurred at multiple beach locations (including popular recreational fishing areas at the points and spits) to protect piping plovers, American oystercatchers, and colonial waterbirds from ORV and pedestrian use. These closures occurred on all three islands but were most concentrated on Hatteras Island, followed by Ocracoke. The Interim Strategy was published in January 2006 and finalized by a FONSI in July 2007 (NPS 2007a). The Interim Strategy presented a multifaceted approach that included the establishment of prenesting closures, species protection buffers, wintering habitat protection, and temporary resource closures. Although for the most part the Interim Strategy established specific distances for species buffers, it allowed for the reduction or expansion of buffers based on professional judgment of the resource management staff. Species and ORV management under the Interim Strategy resulted in beach closures similar to those that occurred in previous years. Management and resource closures were altered by a lawsuit in 2007 and subsequent consent decree in 2008.

In October 2007, Defenders of Wildlife and the National Audubon Society filed a lawsuit against the NPS alleging inadequacies in the management of protected species at the Seashore under the Interim Strategy and failure of the Seashore to comply with the requirements of the ORV executive order and NPS regulations regarding ORV use. On December 18, 2007, the Dare County Commissioners, Hyde County Commissioners, and the board of the Cape Hatteras Access Preservation Alliance were allowed to join the lawsuit as intervenor-defendants. However, a consent decree was filed on April 16, 2008, in U.S. District Court (signed on April 30, 2008), whereby the parties involved in the lawsuit agreed to a settlement of the case. The consent decree resulted in larger



**Typical Closure**

Credit: NPS

buffers than those prescribed in the Interim Strategy being established during portions of the spring and summer around bird breeding and nesting areas; this included creating a 1,000-meter (3,280-foot) vehicle buffer and a 300-meter (984-foot) pedestrian buffer around piping plover chicks until they have fledged. From May 15 through August 21, 2008, an average of 10 miles of oceanfront beach at the Seashore was closed to both pedestrians and ORVs. The largest amount of beach closures was reported on May 29, 2008, when 12.8 miles of beach were closed to all recreational use to protect piping plovers exhibiting breeding, nesting, and/or foraging behavior. The consent decree also established a prohibition on night driving on beaches between the hours of 10:00 p.m. and 6:00 a.m. from May 1 through September 15, with night driving allowed from September 16 through November 15 under the conditions of a permit.

**Sea Turtle Closures.** Temporary resource closures, which apply to ORVs and pedestrians, are implemented during nesting and hatching activities for all three sea turtle species that are known to nest at the Seashore. Generally, ORVs and pedestrians can negotiate around these posted closures for sea turtle nests. However, when the turtle eggs are ready to hatch, the NPS implements a beach closure with fencing from the nest to the water's edge. If sufficient room exists, ORVs and pedestrians can go around the landward side of the fence. In some cases, a full beach closure must be implemented because of the location of a nest relative to a dune or vegetation, preventing ORV and pedestrian access through the area. As mentioned previously, the consent decree signed in April 2008 included a prohibition on night driving to protect nesting sea turtles. The consent decree also contains provisions for full beach closures in the fall to allow existing turtle nests to hatch safely.

**Safety Closures.** Areas normally open to ORVs may close for safety reasons. Adverse weather conditions can result in narrow beach areas or flooded conditions, among other hazards, necessitating closures to vehicles. In November 2005, safety closures included 1.6 miles on Bodie Island, 22.8 miles on Hatteras Island, and 6.5 miles on Ocracoke Island (Stevens pers. comm. 2005). However, from May 15 through August 21, 2008, safety closures throughout the season consistently included a total of 11.1 miles of beach (NPS 2008m). Under current management, village beaches are closed to ORVs to protect pedestrians during the busy summer season.

## **CROWDING, VISITOR ENCOUNTERS, AND VISITOR SAFETY**

A University of Idaho study indicated that one of the reasons people visited the Seashore was to escape crowds and seek solitude. When asked about crowding, 27% of visitors said they felt "crowded" to "extremely crowded," while 43% of visitors felt "somewhat crowded." Thirty percent of visitors surveyed indicated that they felt "not at all crowded." Many visitor groups (49%) reported that crowding "detracted from" their park experience (University of Idaho 2003).

As part of the visitor experience, visitor safety is also considered. During public scoping for this plan/EIS, comments were received that indicated that some visitors felt that there was a potential for conflicts between visitors on foot and visitors using ORVs. The potential for accidents involving ORVs and pedestrians on beaches open to ORV use is well documented. For example, during 2010 in separate incidents in Volusia County, Florida, two children were run over and killed by ORV, one on New Smyrna Beach and one on Daytona Beach Shores (Cave 2010). Since 2005, 41 pedestrians have been hit by cars on the Volusia beaches (Hobson 2010). At the Seashore, law enforcement staff indicated in early 2009 that in the prior 10 years, there were no known case incident reports documenting pedestrians being struck by ORVs on Seashore beaches; however, public comment indicated a concern about the speed of ORVs on the beach and how close they are to other Seashore users. On September 27, 2009, a 7-year-old boy was accidentally hit by an ORV that was backing up on the beach in front of ramp 38. While the boy's parents and other family members were swimming and playing in the ocean, the boy decided to play on the beach digging holes and making sand castles with his hands. The driver of the vehicle that struck the boy had driven onto the beach to see if he and his passenger would surf at this location. The

individuals decided not to surf at this location and turned around to exit the beach. The beach is sloped from the ramp down to the water and the sand is soft in this area. The vehicle driver was having difficulty driving his vehicle up the slope and was backing up and going forward to try to get up the slope, (they had not reduced air pressure in their tires). While backing up, the driver did not see the boy playing in the sand. The vehicle struck the boy with the right rear bumper and tire. Neither of the boy's parents had observed the actual incident but had observed the vehicle maneuvering on the beach prior to the accident. They did not believe the vehicle was being operated carelessly or too fast. The boy was transported to the Outer Banks Hospital for examination and was released. Injuries included bruising to the arm and leg. The ORV operator was not charged with any violation (Murray pers. comm. 2009a).

## VISITOR SATISFACTION

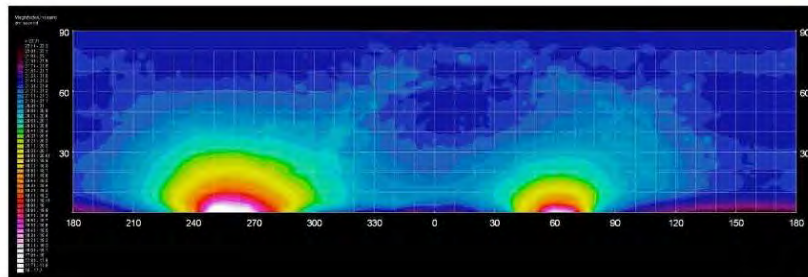
A visitor survey was conducted by the University of Idaho Park Studies Unit for units of the NPS in 2008. The survey was developed to measure each park unit's performance related to NPS *Government Performance Results Act* (GPRA) Goals IIa1 (visitor satisfaction) and IIb1 (visitor understanding and appreciation). Survey cards were distributed at the Seashore to a random sample of visitors from July 1 to July 31, 2008. The report included three categories of data: park facilities (which included visitor centers, exhibits, restrooms, walkways/trails/roads, and campgrounds / picnic areas), visitor services (assistance from park employees, park maps/brochures, ranger programs, and commercial services), and recreational opportunities (nature/history/cultural learning and outdoor recreation). Overall, the percentage of Seashore visitors satisfied with the three categories of facilities, services, and recreational opportunities taken together, was 95%. When asked about each component separately, 93% of visitors were satisfied with park facilities, 85% of visitors were satisfied with visitor services, and 89% were satisfied with recreational opportunities (University of Idaho 2008).

In the 2002 University of Idaho study, the researchers solicited visitor opinions about selected factors that affect visitor experience. As would be expected, vehicles on the beach were perceived very differently by different visitors, but most stated that the use of vehicles on the beach did not detract from their visitor experience. The factors receiving the highest proportion of "no effect" ratings were airplane overflights (50% of those surveyed), dogs off leash (35%), vehicles on the beach (34%), and visitors drinking alcohol (33%). Factors receiving the highest proportion of "added to my experience" ratings included vehicles on the beach (20%) and fires on the beach (16%), while those receiving the highest "detracted from my experience" ratings were litter (40%) and vehicles on the beach (18%). About 29% of those surveyed did not experience vehicles on the beach (University of Idaho 2003).

## Night Skies

The NPS defines a natural lightscape as "a place or environment characterized by the natural rhythm of the sun and moon cycles, clean air, and of dark nights unperturbed by artificial light. Natural lightscapes, including dark night skies, are not only a resource unto themselves, but are an integral component of countless park experiences"

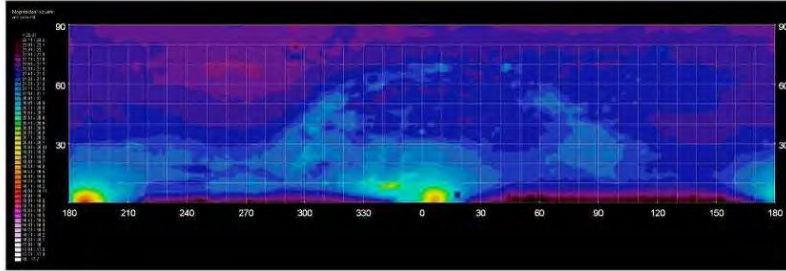
(NPS 2007b). The NPS created the Night Sky Team in 1999 to address increasing alarm over the loss of night sky quality throughout the network of national parks. The Night Sky Team functions as a center of



This picture was compiled from images captured on a boardwalk between Frisco and Hatteras. Frisco lies at about 60° azimuth and Hatteras at about 260° azimuth.

Credit: Night Sky Team Visit Report

expertise that provides advice, guidance, and technical support in characterizing and preserving park lightscares (NPS 2007b). According to the Night Sky Team, the Seashore is one of only a handful of sites in the eastern United States with a nearly natural regimen of light and dark, where light patterns are made up primarily of the dark sky, moon, and stars (NPS 2008f).



This picture was compiled from images captured on a boardwalk between Salvo and Avon. The combined light of Rodanthe, Salvo, and Waves can be seen at about 6° and Avon at 191°. Also note the presence of a few clouds reflecting the town lights at about 345°.

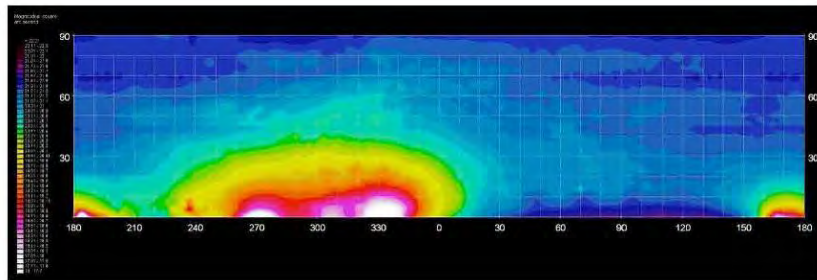
Credit: Night Sky Team Visit Report

In November 2007, the NPS Night Sky Team visited the Seashore to record preliminary measurements of night sky quality from three sites: the Bodie Island Maintenance Facility (Bodie Island); the boardwalk at ramp 27 (Hatteras Island); and the boardwalk south of Frisco (Hatteras Island) (NPS 2008f). During this visit, the team concluded that the Seashore has better night sky quality as compared to most other NPS

units east of the Mississippi River. Furthermore, measurements showed that light pollution sources beyond the Seashore boundary illustrated the need to be aware of the easily impacted night skies (NPS 2008f).

Measurements of the night sky at the Seashore were taken with a charge-coupled device (CCD) camera (a scientific-grade digital camera) that captures the known magnitude (a measure of stellar brightness) of known stars as an index to determine the ambient brightness of the nighttime sky. These measurements are influenced by atmospheric conditions, which affect how light travels through the sky. To account for these changes, multiple measurements are taken over a period of time. The initial measurements at the Seashore occurred over two nights, with more planned in the future (NPS 2008f).

Results from the November 2007 measurements found that sky brightness ranged from approaching a natural level of darkness to significantly light polluted, with the potential to threaten the ecological health of the coastal environment in some areas (NPS 2008f). To address those areas where there are high levels of light pollution, the Night Sky Team recommended retrofitting or swapping existing light fixtures in favor of turtle-friendly and night-sky-friendly fixtures, as well as working with park neighbors to enact night sky measures such as lighting ordinances (NPS 2008f).



This picture was compiled from images on Bodie Island, just south of the maintenance facility. A number of light domes are evident in this image, including the combined light from Harbor, Rodanthe, and Salvo between 165° and 168°; the lighthouse at 184°; Wanchese at 267°; and the combined light from Manteo, Kill Devil Hills, Nags Head, and Kitty Hawk between 304° and 333°. A considerable amount of light scattering occurs in this picture due to high humidity.

Credit: Night Sky Team Visit Report

## **SOCIOECONOMIC RESOURCES**

This section describes the social and economic environment that potentially would be affected by the proposed alternatives. The social and economic environment of a region is characterized by its demographic composition, the structure and size of its economy, and the types and levels of public services available to its citizens.

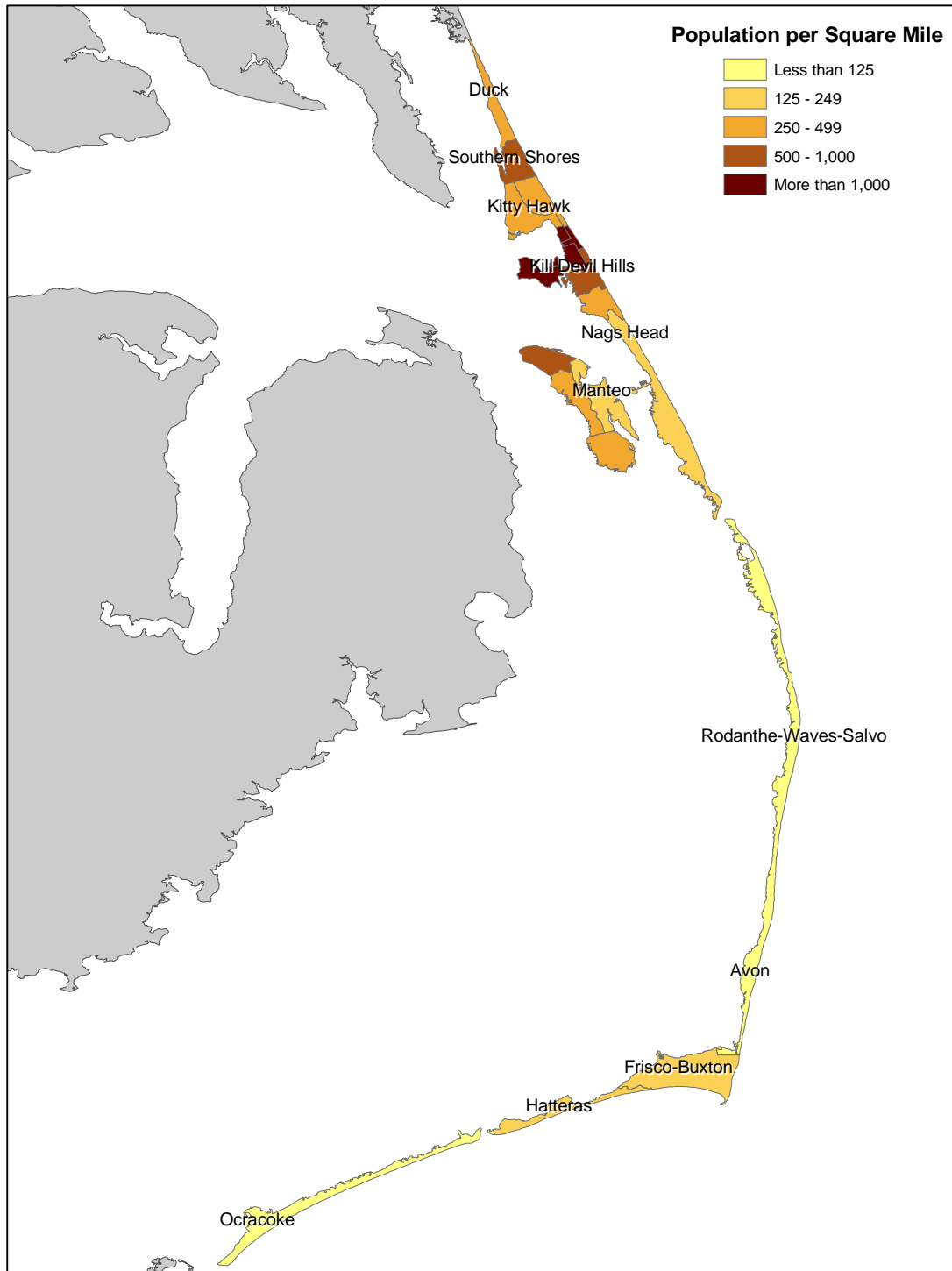
The socioeconomic environment evaluated for this plan/EIS encompasses the Outer Banks portion of two counties in North Carolina—Dare and Hyde. Hatteras and Bodie islands are part of Dare County while Ocracoke Island is within Hyde County. This area contains thirteen zip codes, eighteen of the nineteen block groups in Dare County, and one of the four block groups in Hyde County. Data not available at the block group or zip code level will be reported at the county level.

The Outer Banks portion of Dare and Hyde counties forms the economic region of influence (ROI) and defines the geographic area in which the predominant social and economic impacts from the proposed alternatives are likely to take place. The largest towns within the ROI include Nags Head, Kill Devil Hills, and Kitty Hawk, which are located on Bodie Island north of the Seashore. The villages of Ocracoke, Hatteras, Frisco, Buxton, Avon, Salvo, Waves, and Rodanthe would be most affected by the proposed actions because they are located within the Seashore and depend most directly on tourists visiting the Seashore for their livelihood. As discussed in the following sections, the northern part of the ROI, which is not adjacent to the Seashore, has a larger population and a larger business community. Although the relative impact of changes in visitation to the Seashore will be greater for the villages located within the Seashore, the economic base is larger in the part of the ROI north of the Seashore. The result is that smaller relative changes to businesses north of the park could generate similar total revenue changes to the changes experienced in the villages within the Seashore.

### **DEMOGRAPHICS**

The economic ROI is primarily rural in character, although portions of Dare County, especially in the north, are developed with large tracts of vacation homes and small businesses that support the area's robust tourism industry. Much of Dare County's permanent population also resides in this area, the most densely populated portion of the ROI (figure 26). Note that data presented are often taken from the U.S. Census Bureau. The census places people according to "usual residence" guidelines, so people are counted where they live most of the year.





Source: Environmental Systems Research Institute, Inc. 2002

**FIGURE 26. 2000 POPULATION DENSITY BY BLOCK GROUP**

In recent years, population trends have differed substantially for Dare and Hyde counties. Table 38 provides population statistics for the state of North Carolina, Dare and Hyde counties, and the Dare and Hyde County block groups located on the Outer Banks. Between 2000 and 2008, Dare County's population grew 12%, from 29,967 to 33,584. This is a slightly lower percentage change in population than the state of North Carolina as a whole. However, the portion of the state population occupying Dare County remained 0.4%. During this same time period, the population of Hyde County decreased by 11%, from 5,826 to 5,181 (U.S. Census Bureau 2008a), lowering the portion of the state population occupying Hyde County from 0.07% to 0.06%. The Dare County block groups within the ROI account for 96% of Dare County's population, while Hyde County block group represents only 13% of Hyde County's population (U.S. Census Bureau 2000).

**TABLE 38. POPULATION STATISTICS**

Geographic Area	2000 <sup>a</sup>	2007 <sup>b</sup>	2015 <sup>c</sup>	2029 <sup>c</sup>	Percent Change, 2000–2007	Percent Change, 2000–2029
North Carolina	8,049,313	9,222,414	10,429,282	12,769,797	15%	59%
Dare County	29,967	33,584	31,225	26,053	12%	-13%
Dare County block groups <sup>d</sup>	28,798	—	—	—	—	—
Hyde County	5,826	5,181	5,256	4,717	-11%	-19%
Hyde County block group <sup>e</sup>	730	—	—	—	—	—

Sources:

<sup>a</sup> U.S. Census Bureau 2000

<sup>b</sup> Population Division, U.S. Census Bureau 2009a

<sup>c</sup> Office of State Budget and Management, North Carolina 2009

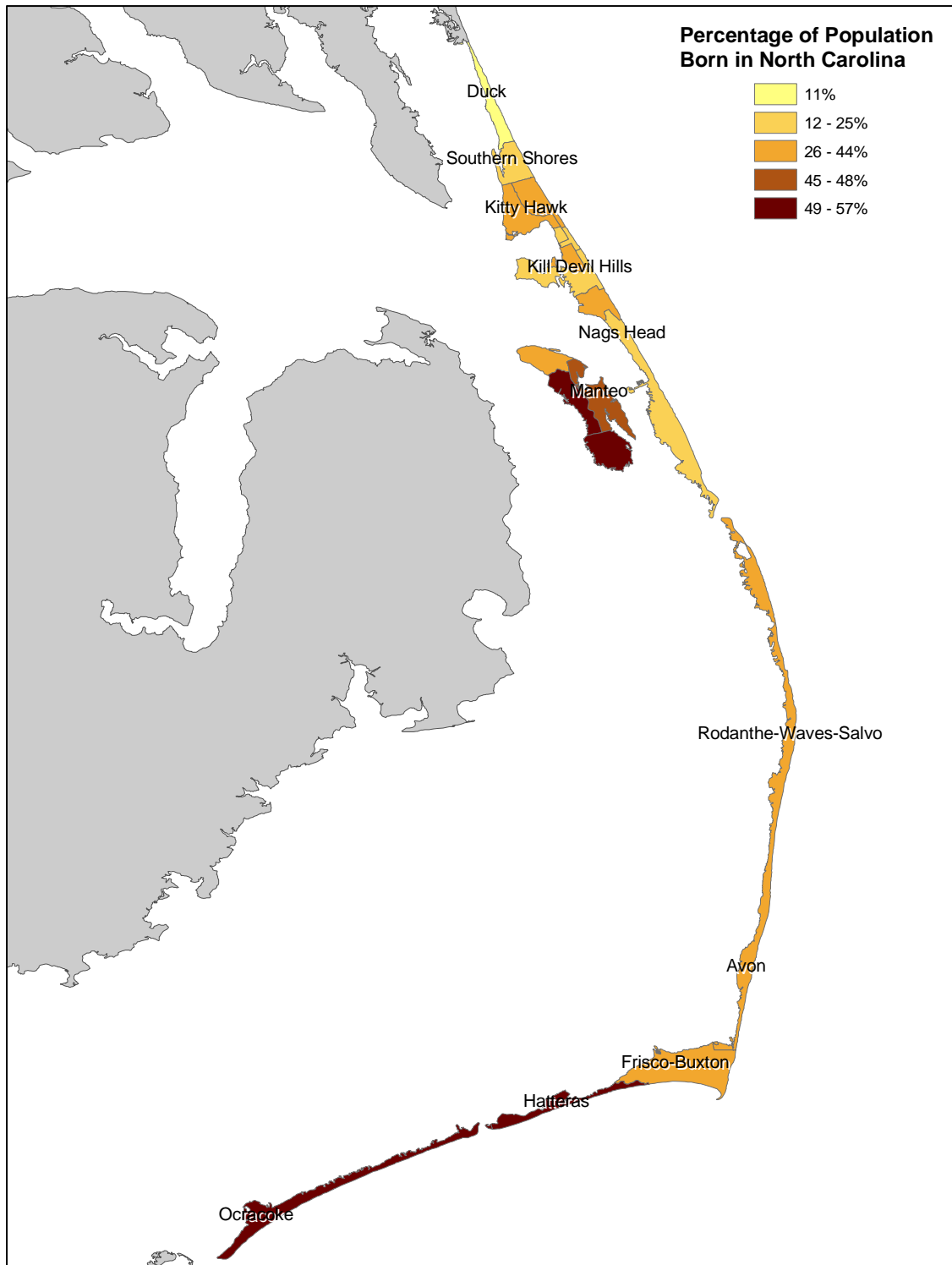
<sup>d</sup> The 18 Dare County block groups in the ROI

<sup>e</sup> The one Hyde County block group in the ROI

According to population projections published by the North Carolina Office of State Budget and Management's State Demographics unit, the state and Hyde County population trends are expected to continue into the foreseeable future, while Dare County is projected to lose residents. By 2029, the population in Dare County is projected to decrease to 26,053, a 13% reduction relative to 2000. The population of Hyde County is expected to fall further to 4,717, a 19% decrease relative to 2000 (Office of State Budget and Management North Carolina 2009).

Demographic and economic trends during the last three decades have contributed to growing differences in the population characteristics and income levels in the different areas of the ROI. The rate of change is especially rapid in northern Dare County, where a smaller percentage of residents were born in North Carolina, shown in figure 27.

In 1999, the areas within the ROI had a 13% greater per capita income than North Carolina as a whole, and 6% greater than the country as a whole (table 39). This distribution varies across the ROI. Ocracoke, southern Dare County, and portions of Roanoke Island all had a lower per capita income than the more densely populated block groups in the northern part of the ROI (figure 28).



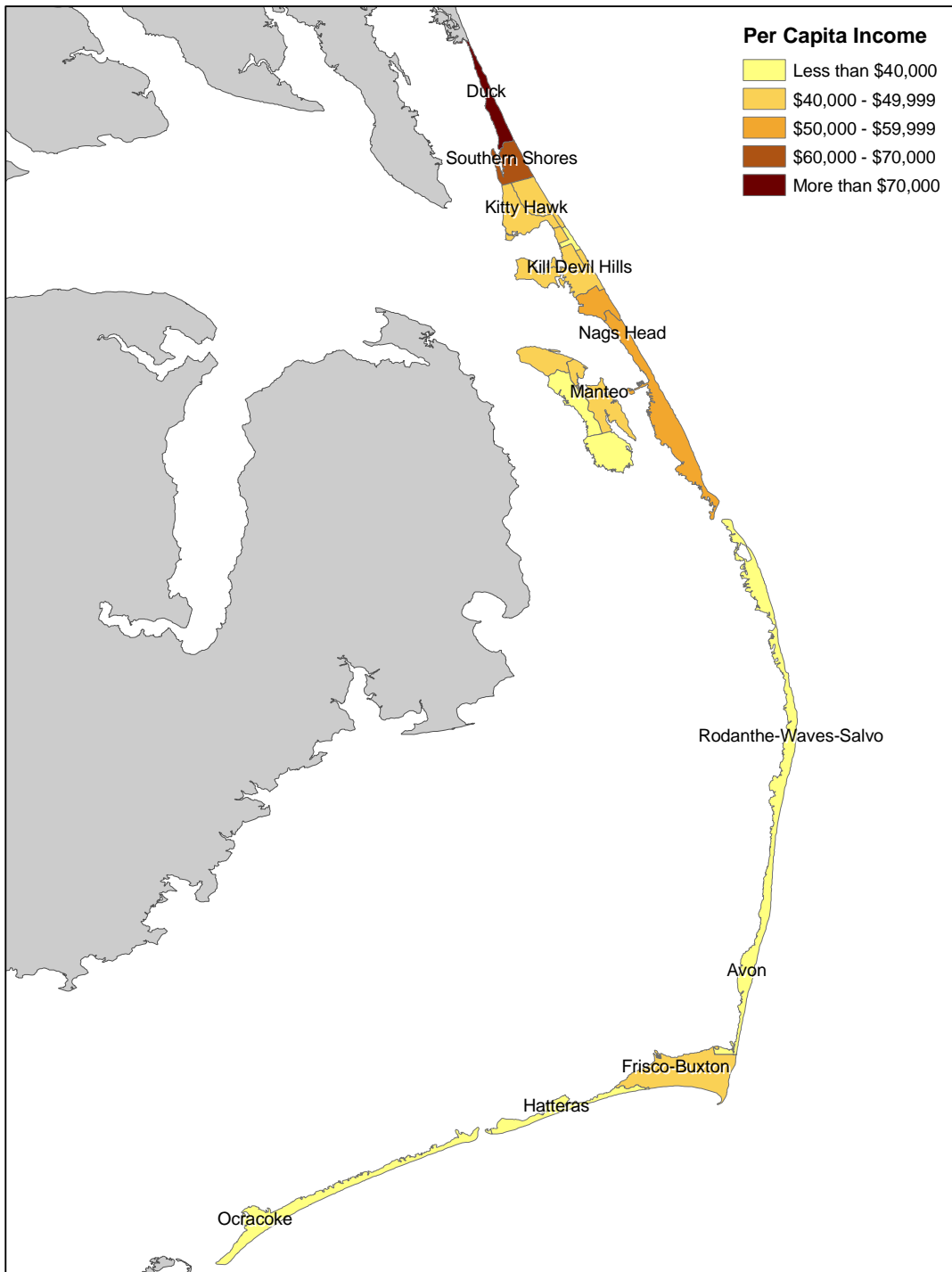
Source: U.S. Census Bureau 2000

**FIGURE 27. PERCENTAGE OF RESIDENTS BORN IN NORTH CAROLINA BY BLOCK GROUP, 2000**

TABLE 39. EMPLOYMENT BY SECTOR, 2000

Industry	Number of Employees	Percentage			Difference	
	ROI	ROI	NC	US	ROI-NC	ROI-US
Construction	2,102	14%	8%	7%	5%	7%
Accommodation and food services	1,857	12%	6%	6%	6%	6%
Real estate, rental and leasing	1,078	7%	2%	2%	5%	5%
Retail trade	2,296	15%	12%	12%	3%	3%
Agriculture; forestry; fishing and hunting	491	3%	1%	1%	2%	2%
Public administration	992	6%	4%	5%	2%	2%
Arts; entertainment; and recreation	453	3%	1%	2%	2%	1%
Utilities	162	1%	1%	1%	0%	0%
Management of companies and enterprises	0	0%	0%	0%	0%	0%
Other services (except public administration)	714	5%	5%	5%	0%	0%
Mining	4	0%	0%	0%	0%	0%
Administrative and support and waste management services	432	3%	3%	3%	0%	-1%
Information	379	2%	2%	3%	0%	-1%
Wholesale trade	414	3%	3%	4%	-1%	-1%
Professional; scientific; and technical services	688	4%	5%	6%	0%	-1%
Transportation and warehousing	365	2%	4%	4%	-1%	-2%
Educational services	986	6%	8%	9%	-2%	-2%
Finance and insurance	365	2%	4%	5%	-2%	-3%
Health care and social assistance	890	6%	11%	11%	-5%	-5%
Manufacturing	764	5%	20%	14%	-15%	-9%

Source: U.S. Census Bureau 2000



Source: U.S. Census Bureau 2000

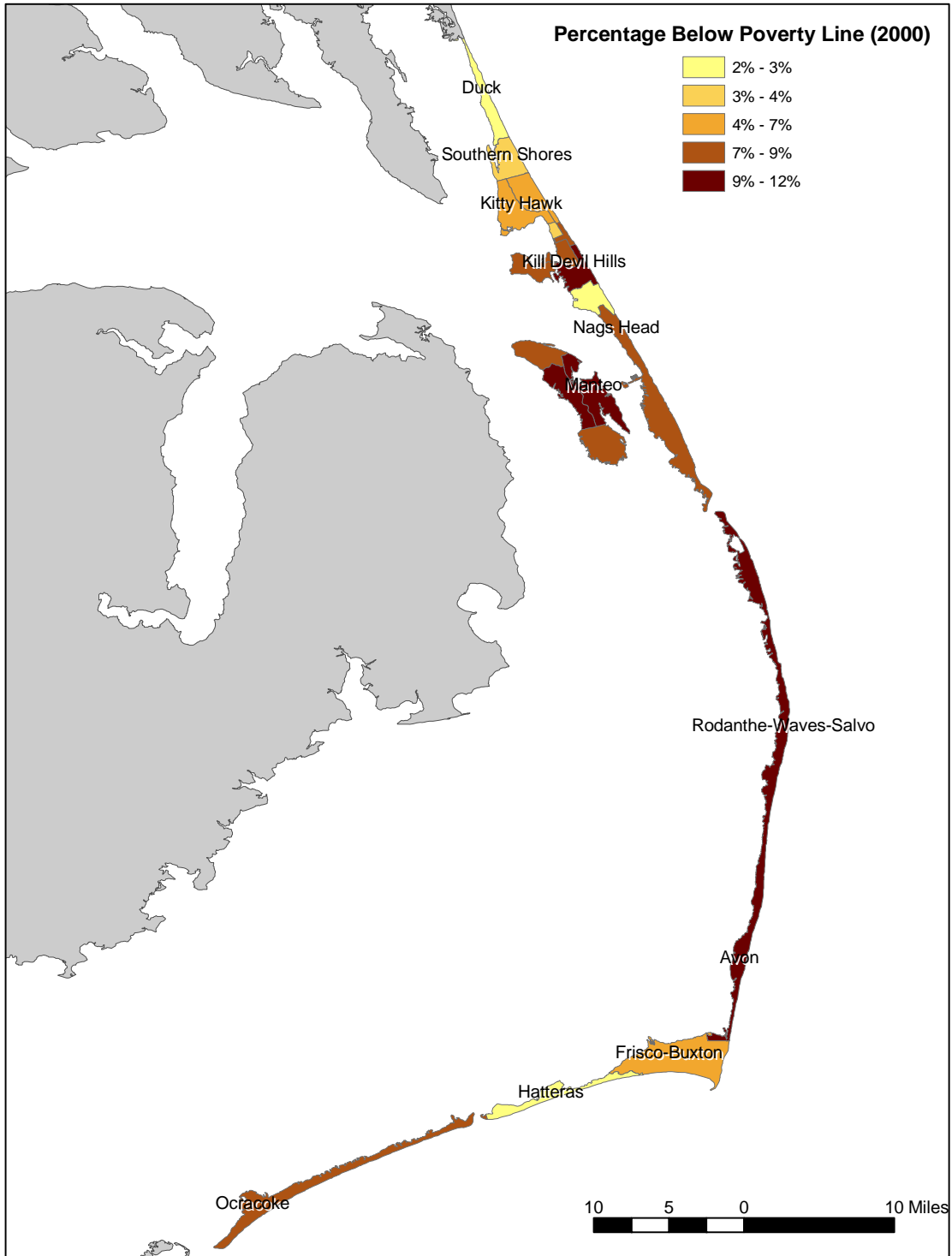
**FIGURE 28. 1999 PER CAPITA INCOME BY BLOCK GROUP**

In 2000, the ROI had a minority population of only 6% of the total (table 40). This is less than in North Carolina and the U.S. as a whole, which had 30% and 31% minority populations respectively. The ROI also had a lower percentage of individuals below the poverty level and a lower percentage of individuals without high school diplomas. The distribution of poverty rates by block groups is shown in figure 29.

**TABLE 40. ENVIRONMENTAL JUSTICE STATISTICS, 2000**

Geographic Area	Per Capita Income	Percent of Population		
		Minority	Below the Poverty Level	Without High School Diploma
United States	\$41,994	31%	12%	20%
North Carolina	\$39,184	30%	12%	22%
ROI	\$44,462	6%	8%	11%

Source: U.S. Census Bureau 2000



Source: U.S. Census Bureau 2000

**FIGURE 29. PERCENTAGE OF POPULATION BELOW THE POVERTY LINE BY BLOCK GROUP, 2000**

## EMPLOYMENT

As noted above, with the exception of the northern portion of Dare County, the ROI is primarily rural. There are no military bases, major federal facilities, state prisons, commercial airports, or four-year colleges in the ROI.

Within the ROI, much of the employment caters to tourists visiting the area. The sectors of construction; accommodation and food services; real estate, rental and leasing; and the retail trade accounted for 47.52% of the total employment within the ROI and 49.98% within the Hatteras block groups in 2000. These sectors only account for 26.50% of employment in the United States as a whole (table 39).

The majority of businesses within the ROI are located in the northern three zip codes of Dare County, encompassing the towns of Duck, Southern Shores, Kitty Hawk, Kill Devil Hills, and Nags Head. This area accounts for 64.8% of establishments and 69.6% of employment within the ROI in 2007 and has seen robust employment growth since 2000. Other areas of the ROI have experienced smaller gains or reductions in employment (figure 30). In 2007, Hatteras and Ocracoke islands contained 13.1% of the employees within the ROI. Small businesses are especially important within the ROI, with 1,713 of 2,104 establishments (81.42%) in the ROI operating with fewer than 10 employees in 2007, compared to 73.37% nationwide (Population Division, U.S. Census Bureau 2010).

In addition to these employees, Dare and Hyde counties had 5,470 of self-employed individuals in 2008. The construction, real estate, rental and leasing, and agriculture, forestry, fishing and hunting (of which 93% are commercial fishermen) industries comprise 47% of all nonemployers<sup>9</sup> in the two counties (table 41).

## UNEMPLOYMENT

In 2009 an average of 9.6% of the civilian labor force in Dare County was unemployed (2,179 individuals) and 8.3% in Hyde County (229 individuals, compared with an unemployment rate of 10.6% for North Carolina as a whole) (table 42).

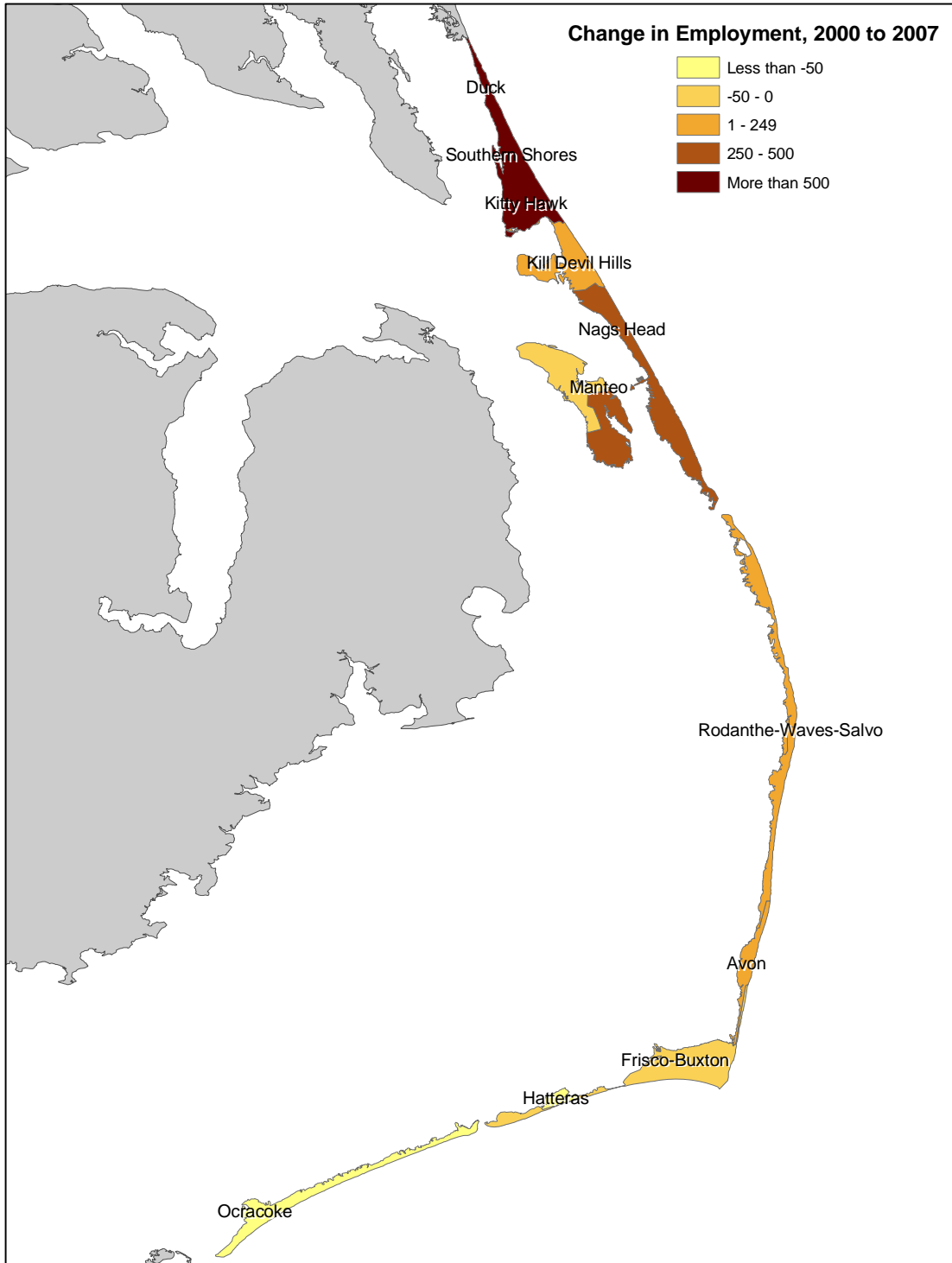
Within Dare County, establishments in construction, manufacturing, and retail trade industries accounted for 54% of private employment losses from 2007 to 2009. The retail trade and wholesale industries accounted for an additional 30% of private jobs. Within the retail trade, 53% of those job losses occurred in building material and garden equipment and supplies dealers and furniture and home furnishings stores. Sporting goods store employment declined 2.6% between 2007 and 2009 (Bureau of Labor Statistics 2010b).

In North Carolina, Dare and Hyde counties, and in the nation as a whole, unemployment rates began increasing in 2008 and continued to increase in 2009. Dare County's year-over-year unemployment change (change from the same month in the previous year) was greater than that for the state of North Carolina as a whole between November 2008 and March 2009 and lower than the state's unemployment change for the rest of 2009 (figure 31).

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<sup>9</sup> From <http://www.census.gov/econ/nonemployer/intro.htm>: "Nonemployers are typically self-employed individuals operating very small businesses, which may or may not be the owner's principal source of income...Data are primarily comprised of sole proprietorship businesses filing IRS Form 1040, Schedule C, although some of the data is derived from filers of partnership and corporation tax returns that report no paid employees."





Source: U.S. Census Bureau 2002a

**FIGURE 30. CHANGE IN EMPLOYMENT BY ZIP CODE**

TABLE 41. NONEMPLOYERS BY INDUSTRY, 2008

Industry	Number of Nonemployers	Percentage			Difference	
		Dare and Hyde Counties	Dare and Hyde Counties	NC	US	Counties - NC
Agriculture, forestry, fishing and hunting	619	11%	1%	1%	10%	10%
Construction	1,115	20%	15%	12%	6%	9%
Real estate and rental and leasing	859	16%	11%	10%	5%	6%
Administrative and Support and Waste Management and Remediation Services	503	9%	10%	9%	-1%	1%
Accommodation and food services	110	2%	1%	1%	1%	1%
Utilities	4	0%	0%	0%	0%	0%
Manufacturing	68	1%	1%	1%	0%	0%
Mining, quarrying, and oil and gas extraction	>0	0%	0%	1%	0%	-1%
Information	>46	1%	1%	1%	0%	-1%
Wholesale trade	64	1%	2%	2%	-1%	-1%
Arts, entertainment, and recreation	238	4%	5%	5%	0%	-1%
Educational services	76	1%	3%	3%	-1%	-1%
Finance and insurance	>96	2%	3%	3%	-1%	-2%
Retail trade	317	6%	9%	9%	-3%	-3%
Transportation and warehousing	>78	1%	4%	5%	-3%	-3%
Other services (except public administration)	582	11%	16%	14%	-5%	-4%
Health care and social assistance	190	3%	7%	8%	-3%	-5%
Professional, scientific, and technical services	477	9%	12%	14%	-3%	-5%
Total for all sectors	5,470	100%	100%	100%	0%	0%

Source: U.S. Census Bureau; generated by RTI International; using American FactFinder; "Sector 00: NS0800A2: 2008 Nonemployer Statistics: Geographic Area Series: Nonemployer Statistics for the US." <<http://factfinder.census.gov>>; (1 September, 2010)

**TABLE 42. EMPLOYMENT CHARACTERISTICS, 2009**

	North Carolina	Dare County	Hyde County
Labor Force	4,544,622	22,591	2,768
Employment	4,060,764	20,412	2,539
Unemployment	483,858	2,179	229
Unemployment Rate	10.6%	9.6%	8.3%

Source: Bureau of Labor Statistics 2010a

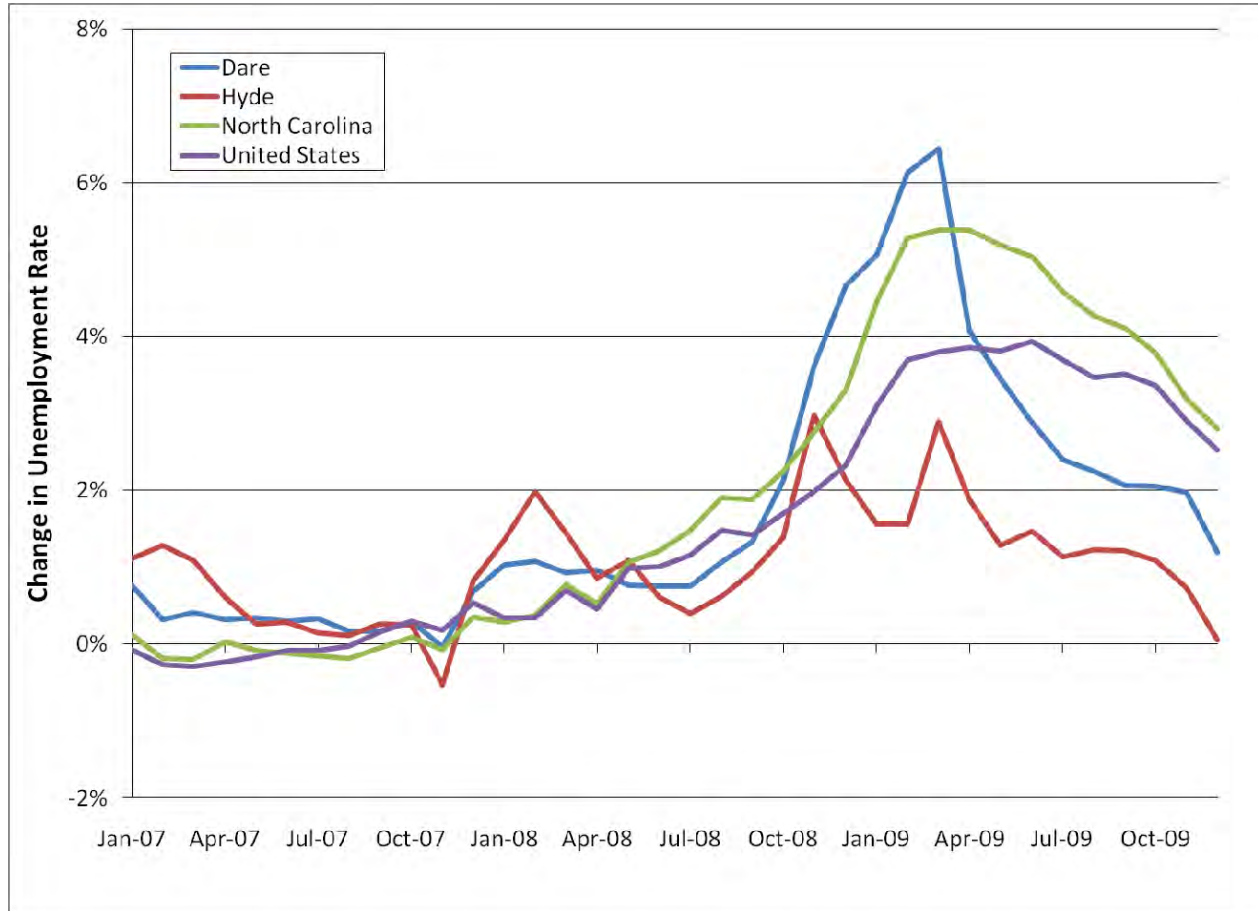
## 2000 UNEMPLOYMENT BY ZIP CODE

Using the 2000 census, one can calculate a measure of unemployment using information about labor force participation. Unemployment calculated with census data is somewhat different than the definition used by the Bureau of Labor Statistics. Within the ROI, the unemployment rate in 2000 varied between a low of 0% in the Waves and Frisco zip codes to a high of 21.6% in the Salvo zip code (table 42-1 and figure 31). The Employment Security Commission of North Carolina's Labor Market Information Division estimates zip code level unemployment data for 2010 by multiplying the current Bureau of Labor Statistics county unemployment estimate by the ratio of unemployment by zip code to unemployment within the entire county based on the 2000 census data. The differences in employment in 2000 does not provide information on how recent ORV regulations have impacted the ROI, but it does highlight how employment varied across the island in 2000.

**TABLE 42-1. LABOR FORCE AND UNEMPLOYMENT IN 2000 BY ZIP CODE**

Geographic Area	Zip Code	Labor Force	Unemployed	Unemployment Rate
Dare County		16,504	808	4.9%
Avon	27915	483	27	5.6%
Buxton	27920	882	108	12.2%
Frisco	27936	186	0	0.0%
Hatteras	27943	325	11	3.4%
Kill Devil Hills	27948	5,391	206	3.8%
Kitty Hawk	27949	3,033	114	3.8%
Manteo	27954	2,802	158	5.6%
Nags Head	27959	1,558	66	4.2%
Rodanthe	27968	186	17	9.1%
Salvo	27972	139	30	21.6%
Wanchese	27981	815	22	2.7%
Waves	27982	40	0	0.0%
Hyde County		2,360	124	5.3%
Ocracoke	27960	358	7	2.0%

Source: U.S. Census Bureau 2000



Source: Bureau of Labor Statistics 2010a

**FIGURE 31. CHANGE IN UNEMPLOYMENT RATE FROM SAME MONTH IN PREVIOUS YEAR**

## BUSINESS SURVEY

NPS contracted with RTI to conduct surveys of local businesses to provide additional information for the ORV planning process. The business survey (RTI 2010c) included questions about the characteristics and size of local businesses to assess the possible impacts of the action alternatives on revenue relative to the no-action alternatives, as discussed later in chapter 4. For the purposes of the survey, NPS divided businesses into two groups based on geographic location. The first group included businesses in the villages that directly border the Seashore, called the “Seashore villages” (Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras, and Ocracoke). These businesses depend heavily on tourists visiting the beaches on the Seashore. The second group included businesses located north of the Seashore boundary in the villages of Nags Head, Kill Devil Hills, and Kitty Hawk. These businesses serve tourists that visit the Seashore, but their customer base also includes visitors who use the beaches outside the Seashore on the Outer Banks.

Four primary industry categories were selected for interviewing: recreational supplies, rental homes, lodging excluding rental homes, and commercial fishermen. In addition to these four industry categories, several other industry categories serve tourists directly, which are addressed in the impact analysis (see chapter 4). These surveys all followed the same format, with appropriately worded questions for the

specific industries, and were administered by telephone. Up to 10 calls were made to each business if the number was busy or no one answered.

Businesses were first asked to provide general information describing their business, including services and products offered and seasons of operation. The second set of questions collected information on revenue and number of employees, including seasonal variation, to classify the size of businesses and characterize the business community in general. Next, businesses were asked to provide the change in revenue between 2007 and 2008 (which represent implementation of alternative A (2007) and alternative B (2008)). Finally, the survey requested the respondents' estimations of how different alternative management scenarios would affect their revenue. For the purposes of this survey, the two different alternative management scenarios generally represented the two action alternatives that contained elements from opposite ends of the management spectrum for elements of the action alternatives under consideration at the time. A question was also asked about the effects of closing soundside ramps to ORV use, but leaving them open to pedestrians (which represented the third scenario in the survey).

RTI conducted the surveys between June 1 and August 31, 2009. The timing of the surveys was dictated primarily by the schedule needed to meet the court-ordered deadline for finalizing the new rule and by the *Paperwork Reduction Act*, which requires Office of Management and Budget approval for information collection and public comment. Conducting the surveys over the summer ensured that seasonal businesses were available to participate; however, because business owners are busiest during the summer, the timing of the surveys made it difficult for some businesses to participate.

The overall response rate to the survey was 42%, although response rates varied depending on the business category and whether the business was located in one of the Seashore villages or in the villages just north of the Seashore. Businesses that responded to the survey were generally worried about the future impacts of the action alternatives. Many said they were already feeling the impacts, although they acknowledged that economic conditions and fuel prices in 2008 made it difficult to identify the impact of beach closures. Overall, the business survey provided the following general conclusions:

- All but eight of the businesses interviewed were categorized as small businesses based on Small Business Administration (SBA) definitions.
- Businesses north of the Seashore in Nags Head, Kill Devil Hills, and Kitty Hawk overall expected smaller impacts from any change in ORV management relative to the Seashore villages. The response rate from these businesses was lower, in part because the issue was not expected to have a big impact. However, some of the businesses that responded to the survey predicted significant drops in revenue from the two alternative management scenarios described in the survey.
- Businesses that rented vacation homes fared better between 2007 and 2008 than recreational supply and lodging businesses (lodging businesses are lodging that are not used for rental homes, for example, hotels).
- In all business categories, the majority of businesses reported that revenue fell between 2007 and 2008, but the majority also reported hiring the same number of full and part-time employees in 2007 and 2008.
- The majority of businesses thought that all alternative management scenarios described in the survey would result in decreased revenue compared to 2008. A smaller number expected no change or an increase.

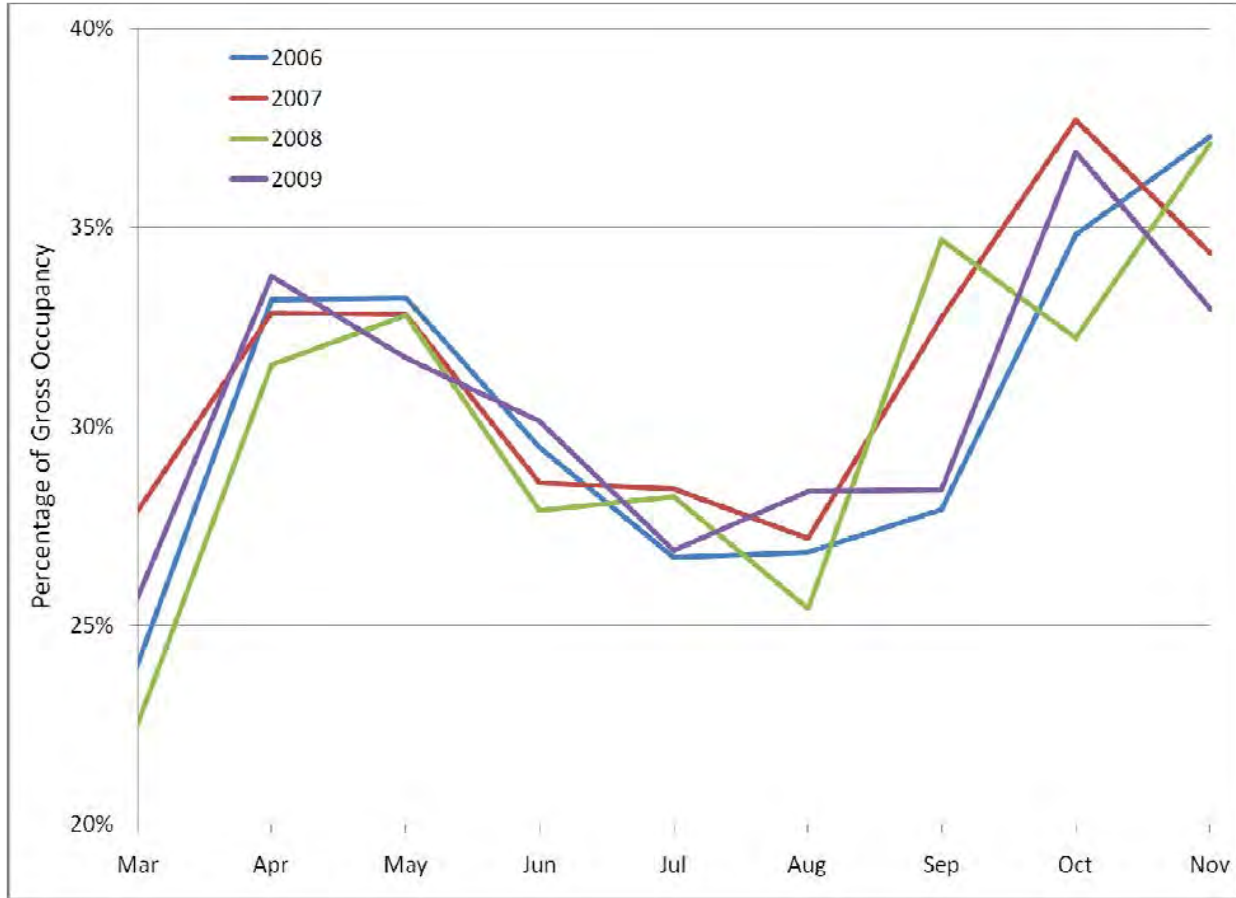
- The alternative management scenario under which all the spits and points were closed year-round was expected to result in the biggest decrease in revenue.
- Fewer businesses felt comfortable providing a quantitative forecast of the expected impact of the alternative management scenarios on revenue given the uncertainties surrounding the cause of changes in revenue between 2007 and 2008, the impact of the alternatives on visitation, and the year-to-year variation in weather and species nesting patterns.
- From the businesses providing quantitative forecasts: Businesses forecast median decreases of 0% to 25% in annual revenue compared to 2008 for the alternative management scenario that would completely close the points and spits and a few miles of beach between ramp 27 (south of Salvo) and Buxton all year. For the second alternative, which did not involve the year-round closures of points and spits but would create ORV and pedestrian corridors to some popular spots (such as Bodie Island Spit, about a mile of the Cape Point area and the South Point area of Ocracoke) the median change in revenue compared to 2008 ranged from a decrease of 12% to no change. When asked about the potential impacts of closing the soundside ramps, survey respondents indicated median estimates of revenue loss ranging from no change to -4%.

### **TOURISM CONTRIBUTIONS TO THE ECONOMY**

The economy of the ROI is largely driven by the region's tourist draw, mainly during the summer months. As estimated by the North Carolina Department of Commerce, travel expenditures in Dare County have increased faster than those for the state as a whole (table 43); however, travel expenditures in Hyde County have decreased since 2000. In 2008, the Department of Commerce estimated that tourism was responsible for 11,250 jobs in Dare County and 370 jobs in Hyde County (North Carolina Department of Commerce 2009).

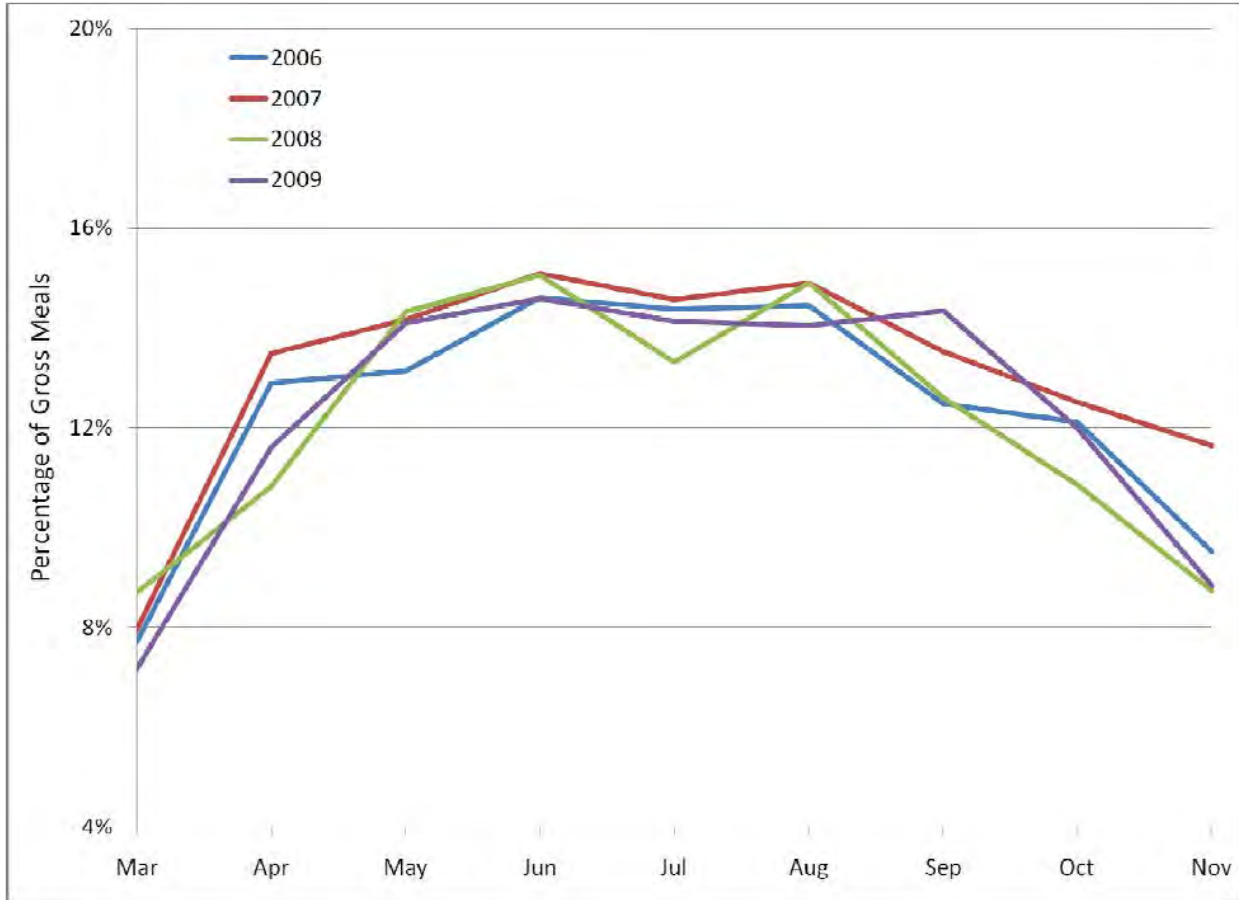
### **REGIONAL DISTRIBUTION OF TAX RECEIPTS WITHIN DARE COUNTY**

The Outer Banks Visitors Bureau posts monthly data on gross tax receipts from lodging and meals (Outer Banks Visitors Bureau 2010a and 2010b). Over the years, the county has made changes to the tax rate and the items that are taxed, so it is difficult to directly compare tax receipts across years. The data are provided for Dare County as a whole and the Seashore villages. Although year-to-year totals cannot be directly compared, assuming that taxes are consistent across the entire county, the percentage of tax receipts for all of Dare County generated by the Seashore villages provides one measure of how the tourism economy of the Seashore villages compares over time with the whole of Dare County. The Seashore villages contributed between 22% and 38% of the gross occupancy receipts in Dare County from March through November in the years 2006 through 2009 (figure 31-1). The Seashore village contribution is higher in the spring and fall, and has been consistent over the years. For gross meal receipts, however, the Seashore villages contribute between 8% and 15% of the receipts in Dare County, with their contribution higher in the summer. The gross meal receipts have also been consistent over the years (figure 31-2; table 43).



Source: Outer Banks Visitors Bureau 2010a and 2010b

**FIGURE 31-1. TAX RECEIPTS FROM THE SEASHORE VILLAGES AS A PERCENTAGE OF TOTAL TAX RECEIPTS FOR DARE COUNTY FOR LODGING**



Source: Outer Banks Visitors Bureau 2010a and 2010b

**FIGURE 31-2. TAX RECEIPTS FROM THE SEASHORE VILLAGES AS A PERCENTAGE OF TOTAL TAX RECEIPTS FOR DARE COUNTY FOR MEALS**

**TABLE 43. ESTIMATED DOMESTIC TRAVEL EXPENDITURES IN 2009 (IN MILLIONS)**

Geographic Area	1991	2000	2008	2000 to 2008 CAGR
North Carolina	\$11,092.58	\$15,089.89	\$16,864.60	1.6%
Dare County	\$377.40	\$624.14	\$777.41	3.2%
Hyde County	\$17.93	\$29.58	\$28.11	-0.7%

Source: North Carolina Department of Commerce 2009

**Housing**

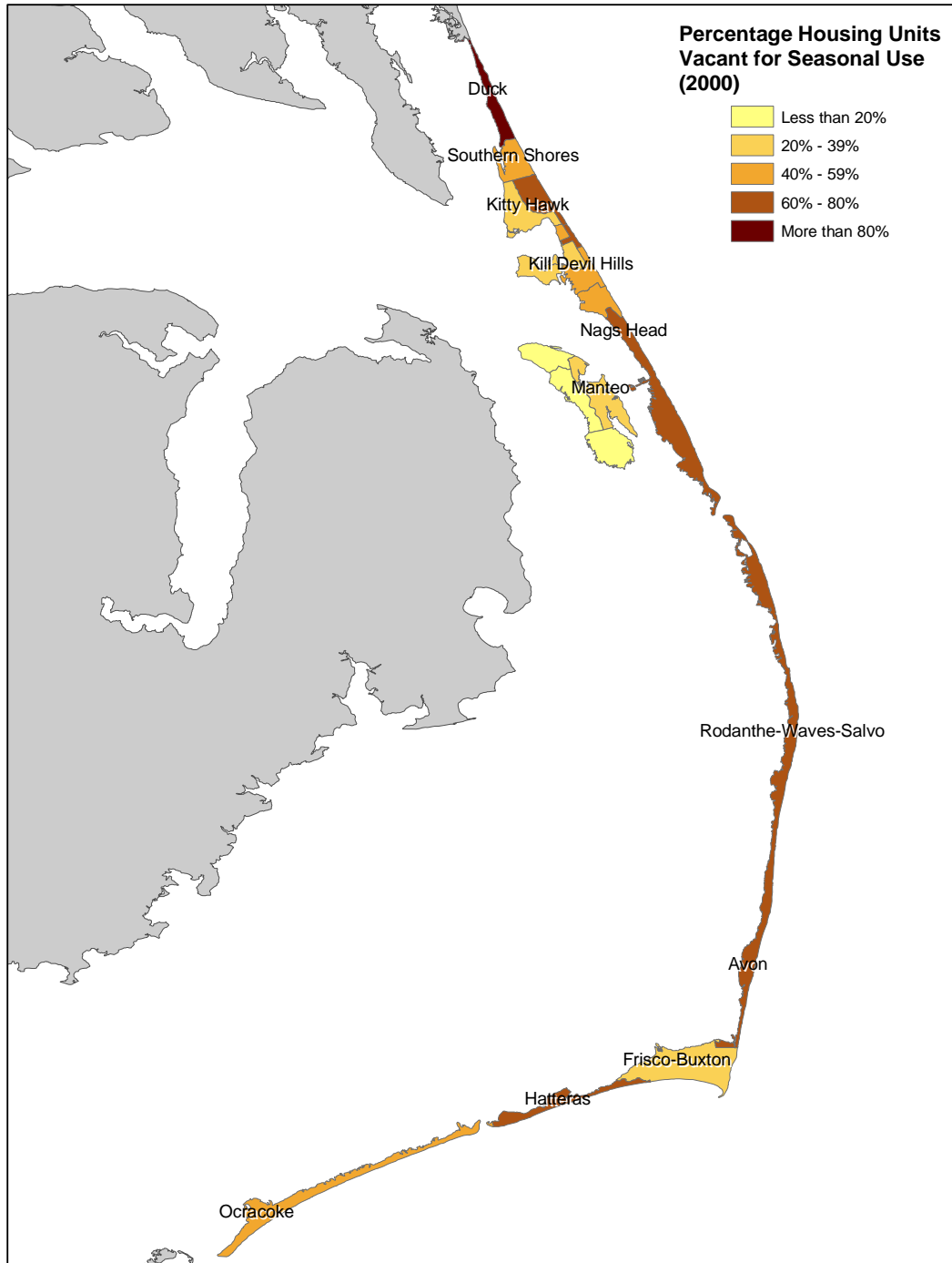
In 2000, the ROI had a total of 26,891 housing units, with 97% of these located in the Dare County block groups. The ROI’s housing is roughly 54% urban and 46% rural, with 100% of the urban housing units being located in Dare County block groups. Over 50% of the housing units in the ROI are for seasonal, recreational, or occasional use (table 44). The distribution of vacant housing units for seasonal, recreational, or occasional use is shown in figure 32. This is further evidence of the importance of tourism’s contributions to the region’s economy.



TABLE 44. HOUSING UNIT STATISTICS, 2000

	United States	North Carolina	ROI
Total	115,904,641	3,523,944	26,891
Urban	89,966,555	2,080,729	14,578
% of Total	78%	59%	54%
Occupied	105,480,101	3,132,013	12,588
Vacant	10,424,540	391,931	14,303
For seasonal, recreational, or occasional use	3,872,468	147,087	13,771
% of Total	3%	4%	51%

Source: U.S. Census Bureau 2000



Source: U.S. Census Bureau 2000

**FIGURE 32. PERCENTAGE OF HOUSING UNITS VACANT FOR SEASONAL, RECREATIONAL, OR OCCASIONAL USE BY BLOCK GROUP, 2000**

Since 2000, Dare County has experienced a 21% increase in the number of housing units, relative to a 14% change state wide (table 45). However, in October of 2008, Dare County had the fifth highest foreclosure rate of any county in North Carolina, with one in every 679 housing units in foreclosure (RealtyTrac.com 2008).

**TABLE 45. CHANGE IN HOUSING UNITS**

Geographic Area	2000	2008	Percent Change 2000–2008
United States	115,904,641	129,065,264	11%
North Carolina	3,523,944	4,201,378	19%
Dare County	26,671	32,749	21%
Hyde County	3,302	3,495	5%

Source: Population Division, U.S. Census Bureau 2009b, 2009c

### Quality of Life

Quality of life encompasses those attributes of resources (man-made or naturally occurring) of a region that contribute to the well-being of its residents. The relative importance of these attributes to a person's well-being is subjective (e.g., some individuals consider outdoor recreational opportunities essential to their well-being, others require access to cultural institutions essential to their quality of life, and still others may hold public safety as their primary quality-of-life concern). Quality-of-life analyses typically address issues relating to potential impacts of the proposed action on the availability of public services and leisure activities that contribute to the quality of life of an affected ROI's inhabitants. For the purpose of this study, the quality-of-life affected environment includes the natural environment, public schools, law enforcement, medical facilities, and fire protection services.

The natural environment, including beaches and wildlife, provide the primary basis for quality of life on the Outer Banks. As discussed above, beach-related tourism drives the economy of the area. Local residents also receive significant recreational benefits from the area's natural assets. In addition to the Seashore, the ROI includes Jockey's Ridge State Park and Pea Island NWR (Outer Banks Chamber of Commerce 2008). There are also public beaches, marinas, piers, and other recreational outlets. Two categories of outdoor recreation pertinent to the assessment of alternative management plans, recreational fishing and bird watching, are discussed further below using data from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

### Fishing

North Carolina is the sixth most popular state for fishing, with an estimated 1,263,000 residents and nonresidents participating in 2006 (U.S. Census Bureau 2008b). Recreational fishing is a significant part of North Carolina's economy, attracting spending from both local and out-of-state anglers. Approximately 519,000 anglers in North Carolina engaged in saltwater fishing in 2006 (table 46). Expenditures from fishing trips totaled an estimated \$692,977,000 in 2006, with \$450,313,000 coming from saltwater anglers. While only 40% of anglers report participating in saltwater fishing, nearly 65% of all trip-related expenditures go toward this activity.

**TABLE 46. RECREATIONAL FISHING IN NORTH CAROLINA, BY RESIDENTS AND NONRESIDENTS**

	Resident	Nonresident	Total
Total participants	868,000	395,000	1,263,000
% Total participants	69%	31%	100%
# Saltwater	253,000	266,000	519,000
% Saltwater	49%	51%	100%
Total trip-related expenditures	\$395,296,000	\$297,681,000	\$692,977,000
Average trip-related expenditures per participant	\$456	\$753	\$549

Source: U.S. Census Bureau 2008b

Nonresident angler expenditures are important to regional economic impacts, as they represent an addition to area wealth rather than a change in the mix of spending by residents. Nonresidents make up only 31% of all anglers in North Carolina but comprise 51% of saltwater anglers. Nonresidents, who often must pay greater lodging and transportation fees, spend an average of 65% more than residents for trip-related expenditures over all types of fishing.

Separate expenditure data for residents and nonresidents on saltwater fishing were not available. However, trip-related expenditures (including food, lodging, transportation, ice, bait, guide and usage fees, rental equipment, and other items, but excluding the cost of purchased equipment) are much higher for saltwater anglers than for all anglers combined, averaging \$754 per person for both residents and nonresidents, compared to \$549 per person for all fishing. Saltwater fishermen spend more per angler on food and lodging, transportation, and other trip costs, but spend proportionally less on transportation and slightly more on food, lodging, and other costs. Overall, saltwater fishing such as that on Cape Hatteras attracted a greater percentage of out-of-state residents and averaged 56% greater trip-related expenditures than all types of fishing combined.

Dare and Hyde counties sold 40% of coastal recreational fishing licenses sold within the eight coastal counties in North Carolina and 18% of all coastal recreational fishing licenses sold in 2008. Dare County ranks first among all North Carolina counties in coastal recreational fishing license sales (table 47).

**TABLE 47. NUMBER OF COASTAL RECREATIONAL FISHING LICENSES SOLD BY NORTH CAROLINA COUNTY OF SALE (LOCATION WHERE LICENSE SALES AGENT RESIDES), EXCLUDING BLANKET COASTAL RECREATIONAL FISHING LICENSES, BY CALENDAR YEAR**

County	2007	2008
Dare	93,225	82,635
Hyde	6,322	5,358
Brunswick	38,721	33,303
Carteret	46,813	38,456
Currituck	2,660	2,435
New Hanover	34,556	28,558
Onslow	16,098	15,185
Pender	17,462	14,733
Total	469,521	411,886

Source: NCWRC 2008a

## Wildlife Watching

Among all states, North Carolina ranks nineteenth for number of wildlife watchers, with 2,641,000 participants in 2006. Wildlife watching is classified as activities for which wildlife watching is the primary purpose, and does not include trips to zoos or museums or accidental observation of wildlife. Wildlife watchers may be feeding, photographing, or observing wildlife. Approximately 15% of wildlife watchers in North Carolina were nonresidents in 2006.

Away-from-home wildlife watching is defined as wildlife observation occurring at least one mile away from home. Table 48 presents information about away-from-home wildlife watching in North Carolina. Among away-from-home wildlife watchers in North Carolina, approximately 56% are nonresidents. Away-from-home bird watchers made up 620,000 or 90% of all away-from-home wildlife watchers. Of these, 50% reported watching “other waterbirds.” This category includes shorebirds, cranes, herons, and all other waterbirds not classified as waterfowl and serves as the best representation of birds on Cape Hatteras. Among wildlife watchers observing “other waterbirds,” nonresidents made up 69% of participants. Thus, wildlife watching for birds like those on Cape Hatteras is far more likely to be participated in by nonresidents than other wildlife watching.

**TABLE 48. AWAY-FROM-HOME WILDLIFE WATCHING IN NORTH CAROLINA, BY RESIDENT AND NONRESIDENT**

	Resident	Nonresident	Total
Total away-from-home participants	300,000	386,000	686,000
Percent of total participants	44%	56%	100%
Total away-from-home birders	284,000	336,000	620,000
Total birders	46%	54%	100%
Away-from-home “other waterbird” observers	95,000	215,000	310,000
Percent of “other waterbird” observers	31%	69%	100%
Total trip-related expenditures	\$84,245,000	\$162,662,000	\$246,906,000
Average trip-related expenditure per participant	\$281	\$421	\$360

Source: U.S. Census Bureau 2008b

Wildlife watchers in North Carolina spent a total of \$246,906,000 in trip-related costs in 2006. This number includes food, lodging, transportation, rented equipment, and guide or permit fees, but not expenditures on purchased equipment. Away-from-home resident wildlife watchers spent an average of \$281 per person per trip, while nonresident participants spent \$421. Although separate expenditure data for other waterbird watchers were not available, other waterbirds such as shorebirds are more likely to attract out-of-state wildlife watchers, who then spend on average 50% more than resident wildlife watchers.

## Preservation and Nonuse Values

Preservation or nonuse impacts represent a category of values held by people independent of their use of the resources that also includes existence value and bequest value. The main assumption underlying the concept of nonuse values is that individuals’ welfare can be enhanced simply by the *knowledge* that specific ecosystems are being protected or improved. As the name implies, individuals receive these types

of services without any specific use of or interaction with the ecosystems. For example, nonuse values from preserving a natural area may come from the knowledge that future generations are more likely to experience and enjoy the area (i.e., “bequest values”).

Economic theory recognizes that individuals can hold value for the Cape Hatteras National Seashore and the ecosystems contained within its boundaries because they want future generations to enjoy the area, because they value the protected species supported by the area, or because they feel the natural communities contained within the National Seashore have intrinsic value separate from the value they provide to visitors.

Measuring values for these “nonuse” services is more difficult and involves more uncertainty than for recreational and aesthetic services. Nevertheless, a variety of studies demonstrate that nonuse values exist and may be quite large depending on the resource in question. Loomis and White (1996) synthesized key results from 20 threatened and endangered species valuation studies using meta-analysis methods. They were able to identify variables that explain the observed variation in estimated willingness-to-pay (WTP) values for threatened and endangered species and examine how per-household benefit estimates compare with cost estimates for protection. In their meta-analysis, Loomis and White reviewed 20 contingent value studies coming from both the published and gray literature. They found that annual WTP estimates range from a low of \$8 for the Striped Shiner fish to a high of \$124 for the Northern Spotted Owl. Using these 20 studies, they applied regression based methods to combine valuation findings and to identify statistically significant determinants of estimated values for threatened and endangered species. Some of their key findings include statistically significant effects on WTP of (1) the size of the change in a species population; (2) whether those expressing values for the species are users of the affected resource; and (3) whether the species is a marine mammal or bird. Loomis and White also used the meta-analysis results to conduct a rough benefit-cost analysis. They noted that even in supposedly “high cost” cases, such as the Northern Spotted Owl, costs per household are relatively low and are well below the benefits found in WTP studies.

## SEASHORE OPERATIONS AND MANAGEMENT

Management of ORV use at the Seashore, and implementation of the related administrative activities and field operations, involves all five NPS operational divisions, as well as the Superintendent’s Office (Park Management). The baseline for Seashore operations and management will be discussed both in terms of pre-consent decree (under the Interim Strategy) (before 2008) and post-consent decree (2008).

**Management and Administration.** Management and administrative staff members at the Seashore have a variety of responsibilities related to ORV management, including compiling and sending out weekly access and resource updates, managing payroll for the Seashore, fielding questions from visitors regarding ORV management, fulfilling human resources functions and supervisory roles, and providing information technology and other technical support, in addition to the superintendent’s role in ORV management. Administrative costs address the need to provide technical assistance to the approximately 25 field and administrative staff members associated with ORV management. Administrative support related to ORV management required approximately 4.75 full-time equivalent (FTE) (\$428,750) under the Interim Strategy. This number increased to 5.35 (\$480,950) plus approximately \$3,000 of direct materials costs (total cost \$483,950) in 2008 with the implementation of measures under the consent decree. The increased level of effort for administration is primarily related to the increased need for information technology support as the use of technology was increased to inform the public about areas open for ORV use or closed for species protection.

**Visitor Protection.** Law enforcement officers at the Seashore are responsible for enforcing all applicable regulations, including those related to ORV and species management. In relation to ORV management,

duties of law enforcement include patrolling the Seashore, as well as providing on-the-spot interpretation to visitors as to the reason for certain ORV regulations and species management efforts. Other duties include responding to violations and conducting investigations. Support (or materials) costs for these Seashore staff members include vehicles, fuel, training, travel, field supplies, and radio support. Visitor protection support related to ORV management required approximately 13 FTE (\$1,047,500) and \$100,000 in support costs (total cost approximately \$1,147,500) under the Interim Strategy. This number increased to 16.5 FTE (\$1,321,500) and \$160,000 in support costs (total cost approximately \$1,481,000) in 2008 with the implementation of measures under the consent decree. This increased level of effort for law enforcement is primarily related to the increased amount of time patrol rangers are devoting to ORV management, such as addressing the night-driving restrictions under the consent decree.

**Resources Management.** Resources management staff members at the Seashore are responsible for all monitoring and surveying of species at the Seashore, as well as establishing and changing the required resource closures once state- or federally listed species are found at the Seashore. This staff includes supervisory roles as well as full- and part-time field staff to implement species management measures. Support (or materials) costs for these Seashore staff members include vehicles (such as four-wheel drive vehicles, ATVs/Utility Terrain Vehicles [UTVs]), fuel, training, field supplies (such as signs, string, flagging, and rope), monitoring supplies, and travel. Resources management efforts at the Seashore required approximately 9.5 FTE (\$423,500) and \$85,000 in support costs (total cost approximately \$508,500) under the Interim Strategy. This number increased to 15 FTE (\$778,000) and \$35,000 in support costs (total cost approximately \$813,000) in 2008 with the implementation of measures under the consent decree. This increased level of effort for resource management staff is primarily related to the need for additional field staff and Geographic Information Systems (GIS) staff to address the closure requirements and to be able to provide weekly reports and mapping of the closures to keep the public informed of their activities. Resources management staff is also responsible for preparation of all required annual reports for protected species, research on protected species or factors that affect the species, predator control activities, and coordination of regulatory and scientific activities with other entities such as the USFWS and NCWRC.

**Interpretation.** Interpretation staff members at the Seashore are responsible for providing information programs to Seashore visitors, specifically on the subject of species management. Support (or materials) costs for these Seashore staff include printing newsletters and brochures, and obtaining materials for visitor programs. Interpretation efforts at the Seashore required approximately 1.5 FTE (\$58,500) and \$10,000 in support costs (total cost approximately \$68,500) under the Interim Strategy. This number increased to 3.0 FTE (\$181,500) and \$12,000 in support costs (total cost approximately \$193,000) in 2008 with the implementation of measures under the consent decree. This increased level of effort for interpretation staff is primarily related to the increased level of programs and information provided to the public regarding areas available for ORV use, as well as providing information about why certain ORV and species management measures are being implemented at the Seashore. With the increase in programs, the number of staff members devoted to ORV management issues has also increased.

**Facility Management.** Facility management staff members at the Seashore are responsible for providing maintenance and repairs for beach ramps and parking lots, as well as installation of informational signs along the beach. This division of the Seashore is also responsible for maintaining and repairing the vehicles used by all other divisions of the Seashore, including those used for law enforcement and resource management patrols. Support (or materials) costs for these Seashore staff members include ramp fill material, vehicle parts, and vehicle maintenance supplies. Facility management efforts required approximately 0.6 FTE (\$46,500) and \$10,000 in support costs (total cost approximately 56,500) under the Interim Strategy. This number increased to 3.6 FTE (\$158,600) and \$20,000 in support costs (total cost approximately \$178,600) in 2008 under the implementation of the consent decree. This increased level of effort for facility management staff is primarily related to the need to increase the number of

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maintenance workers and laborers. The increase in both law enforcement and resource management staff results in an increased number of vehicles that need to be maintained. The additional signage and educational requirements require more staff and effort to install, and an increased level of effort.



## CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This “Environmental Consequences” chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this long-term ORV plan/EIS. This chapter also includes a summary of laws and policies relevant to each impact topic, definitions of impact thresholds (e.g., negligible, minor, moderate, and major), methods used to analyze impacts, and the analysis methods used for determining cumulative impacts. As required by the CEQ regulations implementing NEPA, a summary of the environmental consequences for each alternative is provided in table 13, which can be found at the end of chapter 2. The resource topics presented in this chapter, and the organization of the topics, correspond to the resource discussions contained in “Chapter 3: Affected Environment.”

### SUMMARY OF LAWS AND POLICIES

Three overarching environmental protection laws and their implementing policies guide the actions of the NPS in the management of the parks and their resources—the *Organic Act of 1916*, NEPA and its implementing regulations, and NPOMA. For a complete discussion of these and other guiding authorities, refer to the section titled “Related Laws, Policies, Plans, and Constraints” in “Chapter 1: Purpose of and Need for Action.” These guiding authorities are briefly described below.

The *Organic Act of 1916* (16 USC 1), as amended and supplemented, commits the NPS to making informed decisions that perpetuate the conservation and protection of park resources, leaving them unimpaired for the benefit and enjoyment of future generations.

NEPA is implemented through regulations of the CEQ (40 CFR 1500–1508). The NPS has, in turn, adopted procedures to comply with these requirements, as found in Director’s Order 12 (NPS 2001a) and its accompanying handbook.

NPOMA (16 USC 5901 et seq.) underscores the NEPA provisions in that both acts are fundamental to park management decisions. Both acts provide direction for connecting resource management decisions to the analysis of impacts and communicating the impacts of those decisions to the public, using appropriate technical and scientific information. Both acts also recognize that such data may not be readily available, and they provide options for resource impact analysis should this be the case.

Section 4.5 of Director’s Order 12 adds to this guidance by stating, “when it is not possible to modify alternatives to eliminate an activity with unknown or uncertain potential impacts, and such information is essential to making a well-reasoned decision, the National Park Service will follow the provisions of the CEQ regulations (40 CFR 1502.22).” In summary, the NPS must state in an environmental assessment or impact statement (1) whether such information is incomplete or unavailable; (2) the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific adverse impacts that is relevant to evaluating the reasonably foreseeable significant adverse impacts; and (4) an evaluation of such impacts based on theoretical approaches or research methods generally accepted in the scientific community. Collectively, these guiding regulations provide a framework and process for evaluating the impacts of the alternatives considered in this plan/EIS.

## **GENERAL METHODOLOGY FOR ESTABLISHING IMPACT THRESHOLDS AND MEASURING EFFECTS BY RESOURCE**

The following elements were used in the general approach for establishing impact thresholds and measuring the effects of the alternatives on each resource category:

- General analysis methods as described in guiding regulations, including the context and duration of environmental effects.
- Basic assumptions used to formulate the specific methods used in this analysis.
- Thresholds used to define the level of impact resulting from each alternative.
- Methods used to evaluate the cumulative impacts of each alternative in combination with unrelated factors or actions affecting Seashore resources.
- Methods and thresholds used to determine if impairment of specific resources would occur under any alternative.

These elements are described in the following sections.

### **GENERAL ANALYSIS METHODS**

The analysis of impacts follows CEQ guidelines and Director's Order 12 procedures (NPS 2001a) and incorporates the best available scientific literature applicable to the region and setting, the resource evaluated, and the actions considered in the alternatives.

For each resource topic addressed in this chapter, the applicable analysis methods are discussed, including assumptions and impact intensity thresholds.

### **ASSUMPTIONS**

#### **Duration and Type of Impacts**

The following assumptions are used for all impact topics (the terms "impact" and "effect" are used interchangeably throughout this document):

- **Short-term:** Impacts are temporary (i.e., they occur for a matter of hours up to weeks at a time) without lasting effects. Examples include impacts from the ability of a visitor to access a certain area during a resource closure event.
- **Long-term:** Impacts are continuous throughout the life of the plan, with potentially permanent effects. Examples include ongoing impacts to Seashore management and operations.
- **Direct:** Impacts would occur as a direct result of ORV management actions.
- **Indirect:** Impacts would occur from ORV management actions but would occur later in time or farther in distance from the action.
- **Beneficial:** A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
- **Adverse:** A change that moves the resource away from a desired condition or detracts from its appearance or condition.

## Impacts of Climate Change

Studies predict that coastal barrier islands and their natural and cultural resources will be affected by sea level rise and potentially stronger storm events resulting from climate change. Relative sea level is currently rising in northeastern North Carolina at a rate of 16 to 18 inches per century, a substantially higher rate than the 7 inches per century one hundred years ago and the 3 inches per century rate 200 years ago. The current rate will likely continue to increase into the future as the climate continues to warm (Riggs et al. 2008). Various alternatives for human adaptation to changing conditions on the barrier islands have been proposed (Riggs et al. 2008), but much of government, business, organization and individual response to the challenges of climate change is undetermined. Future threats of deterioration, segmentation, and collapse of the barrier islands along the North Carolina Outer Banks coast as a result of increased sea-level rise and storm activity have been described (Culver et al. 2007, 2008; Riggs and Ames 2003; Riggs et al. 2009). Given the complex interactions among multiple factors and the uncertainties over human response to climate change on the barrier islands, the level of uncertainty about possible effects on specific resources or impact topics over the 10–15 year planning period makes analysis for impacts of climate change in this document speculative. It is assumed that management that would build resiliency into the Seashore's wildlife and plant resources (e.g., management measures to allow increases in populations of protected species during the next 10–15 years) would be beneficial to those resources as they adapt to changed conditions over future decades.

## Impact Thresholds

Determining impact thresholds is a key component in applying NPS *Management Policies 2006* and Director's Order 12. These thresholds provide the reader with an idea of the intensity of a given impact on a specific topic. The impact threshold is determined primarily by comparing the effect to a relevant standard based on applicable or relevant/appropriate regulations or guidance, scientific literature and research, or best professional judgment. Because definitions of intensity vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this document. Intensity definitions are provided throughout the analysis for negligible, minor, moderate, and major impacts. Except for the threatened and endangered species topic, the impact thresholds are defined for adverse impacts, and beneficial impacts are addressed qualitatively. For endangered and threatened species, both beneficial and adverse impacts are qualified to facilitate Section 7 compliance.

## CUMULATIVE IMPACTS

The CEQ regulations to implement NEPA require the assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative impacts are considered for all alternatives, including the no-action alternatives.

Cumulative impacts were determined by combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects and plans at the Seashore and, if applicable, the surrounding region. Table 49 summarizes the actions that could affect the various resources at the Seashore. These actions are described in more detail in the “Related Policies, Laws, Plans, and Actions” section of this document (see “Chapter 1: Purpose of and Need for Action”). Recreational use, past, present, and future, is considered as an integral part of the action alternatives and is, therefore, not addressed within the cumulative impact scenario.

The analysis of cumulative effects was accomplished using four steps:

Step 1—Resources Affected. Fully identify resources affected by any of the alternatives.

Step 2—Boundaries. Identify an appropriate spatial and temporal boundary for each resource.

Step 3—Cumulative Action Scenario. Determine which actions to include with each resource.

Step 4—Cumulative Impact Analysis. Summarize the cumulative impact of the proposed action plus the other actions affecting the resource in question, defining context, intensity, duration and timing; defining thresholds, methodology, etc.

**TABLE 49. CUMULATIVE IMPACT SCENARIO**

Impact Topic	Study Area	Past Actions	Present Actions	Future Actions (life of plan/EIS)
Wetlands and floodplains	Seashore boundary, plus adjacent non-NPS lands on Bodie, Hatteras, and Ocracoke islands	Oregon Inlet dredging Storms and other weather events County Land Use Development Plan for Dare and Hyde counties Hurricane recovery Resource Management Plan Berm construction under the CCC and subsequent maintenance Continued maintenance of NC-12 and berms	Same as past actions	Same as present actions, plus NC-12 improvements on Bodie Island Bonner Bridge replacement
Federally listed threatened, or endangered species	Specific to species as identified in USFWS recovery plans (piping plover, sea turtles) or based on habitat range (seabeach amaranth)	Oregon Inlet dredging Storms and other weather events County Land Use Development Plan for Dare and Hyde counties Hurricane recovery Resource Management Plan Berm construction under the CCC and subsequent maintenance Continued maintenance of NC-12 and berms Long-range Interpretive Plan Previous attempts to complete ORV plans Concession permits/operations Species research efforts USFWS species recovery plans Commercial fishing Species management at Cape Lookout National Seashore	Same as past actions, plus Predator Management Plan (under development) Species management at Cape Lookout National Seashore, including implementation of the Interim Protected Species Management Plan/EA	Same as present actions, plus NC-12 improvements on Bodie Island Bonner Bridge replacement Development of Cape Lookout National Seashore ORV Management Plan/EIS Revision of the Cape Hatteras General Management Plan Revision of the Land Use Development Plan for Dare County

Impact Topic	Study Area	Past Actions	Present Actions	Future Actions (life of plan/EIS)
State-listed or special status species	North Carolina populations	Same as rare, unique, threatened, or endangered species	Same as rare, unique, threatened, or endangered species	Same as rare, unique, threatened, or endangered species
Wildlife and wildlife habitat (birds, invertebrates)	Seashore boundary, plus adjacent non-NPS lands on Bodie, Hatteras, and Ocracoke islands	Same as rare, unique, threatened, or endangered species	Same as rare, unique, threatened, or endangered species	Same as rare, unique, threatened, or endangered species
Soundscapes	Seashore boundary	Oregon Inlet dredging Storms and other weather events Continued maintenance of NC-12 and berms	Same as past actions, plus Increased vehicle traffic and village events Designation of Outer Banks Scenic Byway	Same as present actions, plus: Bonner Bridge replacement NC-12 improvements on Bodie Island Potential for military training operations, overflights
Visitor use and experience	Seashore boundary	Oregon Inlet dredging Storms and other weather events Hurricane recovery Resource Management Plan Previous attempts to complete ORV plans Continued maintenance of NC-12 and berms General Management Plan Long-Range Interpretive Plan Commercial fishing	Same as past actions, plus: Predator Management Plan (under development) Designation of Outer Banks Scenic Byway	Same as present actions, plus NC-12 improvements on Bodie Island Bonner Bridge replacement Development of Cape Lookout National Seashore ORV Management Plan/EIS Revision of the Cape Hatteras General Management Plan Revision of Land Use Development Plan for Dare County
Socioeconomic resources including local commercial fishing activities	Regional—counties	Storms and other weather events Commercial fishing Continued maintenance of NC-12 and berms	Same as past actions, plus: Designation of Outer Banks Scenic Byway	Same as present actions, plus: Development of Cape Lookout National Seashore ORV Management Plan/EIS Revision of Land Use Development Plan for Dare County

Impact Topic	Study Area	Past Actions	Present Actions	Future Actions (life of plan/EIS)
Seashore management and operations	All NPS facilities and lands managed by the Outer Banks Group	Oregon Inlet dredging Storms and other weather events Hurricane recovery Resource Management Plan General Management Plan Long-range Interpretive Plan Commercial fishing Continued maintenance of NC-12 and berms	Same as past actions, plus Ongoing law enforcement (note related to species or ORV management) Ongoing research studies Ongoing maintenance Ongoing surveying Predator Management Plan (under development)	Same as present actions, plus NC-12 improvements on Bodie Island Revision of the General Management Plan

## IMPAIRMENT ANALYSIS METHOD

Chapter 1 describes the related federal acts and policies regarding the prohibition against impairing Seashore resources and values in units of the national park system. According to *NPS Management Policies 2006*, an action constitutes an impairment when an impact “would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values” (NPS 2006c, sec. 1.4.5). To determine impairment, the NPS must evaluate “the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts” (NPS 2006c, sec. 1.4.5).

Since publication of the Cape Hatteras National Seashore Off-Road Vehicle Management Plan/Draft Environmental Impact Statement in March 2010, the NPS has issued Interim Guidance for Impairment Determinations in NPS NEPA Documents (Interim Guidance) (NPS 2010h). Consistent with the Interim Guidance, the draft written impairment determination only for the preferred alternative is included in appendix E of the final EIS.

On rare occasions, the no-action alternative, if continued may result in impairment. When this is the case, the fact that the no-action alternative will result in impairment should be discussed in the impact analysis for the no-action alternative. Therefore for this FEIS an impairment discussion is provided at the end of the impact analysis for alternative A for the following resources: sea turtles (in the “Federally Listed Threatened or Endangered Species” section), common tern, gull-billed tern and black skimmer (in the “State-Listed and Special Status Species” section). The content of the impairment determination for alternative A for these species has been revised in this final EIS to reflect the Interim Guidance.

## WETLANDS AND FLOODPLAINS

### GUIDING REGULATIONS AND POLICIES

Impacts on wetlands and floodplains are addressed under two federal executive orders: Executive Order 11990, Protection of Wetlands, and Executive Order 11988, Floodplain Management. NPS Director’s Order 77-1 establishes policies, requirements, and standards for implementing Executive Order 11990 for wetlands, while NPS Director’s Order 77-2 applies to all NPS-proposed actions that could adversely

affect the natural resources and functions of floodplains, including coastal floodplains, or increase flood risks.

According to Director's Order 77-1 and accompanying Procedural Manual 77-1, direct or indirect adverse impacts on wetlands should be avoided, or where impacts cannot be avoided, degradation or loss must be minimized by every practicable effort. The order adopts a "no net loss of wetlands" policy and states that the NPS will use the Cowardin classification system as the standard for defining wetlands for purposes of compliance with Executive Order 11990, which means that non-vegetated shorelines and mudflats are included in the wetlands classification. Any NPS activities that involve the discharge of dredged or fill materials into wetlands or "other waters of the United States" must also comply with the *Clean Water Act* and Section 404 regulations (33 CFR 1344) and Section 10 of the *Rivers and Harbors Act* (33 CFR 403), which prohibits the unauthorized obstruction or alteration of navigable waters of the United States.

If adverse impacts to wetlands would occur from a proposed project, a Statement of Findings is prepared, unless the actions are exempted for the various reasons provided in Procedural Manual 77-1, Section 4.2(A). Exceptions may include actions designed for restoring wetlands and water dependent actions that have minor impacts. As described more fully in the impact analysis, the rebuilding or expansion of any parking areas or access roads under any action alternative would be limited to developed or non-wetland areas, thereby avoiding impacts to wetlands. Indirect impacts may include minor effects from runoff to nearby wetlands. Impacts related to the management or improvement of access for ORVs would not require a Statement of Findings as long as new areas are not opened up for ORV use in wetland areas (Green and Noon pers. comm. 2008), although impacts related to this use are addressed in this section of the EIS. For these reasons, and as further detailed under the impact analysis, a Statement of Findings for wetlands was not required for this project.

Director's Order 77-2 states that when it is not practicable to locate or relocate development or inappropriate human activities to a site outside of and not affecting the floodplain, the NPS will prepare and approve a Statement of Findings, in accordance with procedures described in Procedural Manual 77-2, Floodplain Management, and take all reasonable actions to minimize the impact to the natural resources of floodplains. Because the study area is located entirely within a floodplain, and the action alternatives include construction of additional parking areas (or expansion of existing parking areas) and access in the floodplain, the NPS prepared a Statement of Findings for the preferred alternative (alternative F) in accordance with procedures described in Procedural Manual 77-2 (see appendix B for the Statement of Findings).

*NPS Management Policies 2006* also specifically address wetlands and floodplains in Sections 4.6.5 and 4.6.4, respectively. Section 4.6.5 refers to compliance with Executive Order 11990 and states that, when practicable, the NPS will not simply protect but will also seek to enhance wetland values. For any proposed new development or other activities that could adversely impact wetlands, the NPS will first avoid impacts, then minimize impacts, and then compensate for impacts on at least a one-to-one basis. Section 4.6.4 states that the NPS will protect, preserve, and restore the natural resource function of floodplains, avoid the long- and short-term environmental effects associated with the occupancy and modification of floodplains, and avoid floodplain development that could cause adverse impacts or flood risks.

## **ASSUMPTIONS, METHODOLOGY, AND IMPACT THRESHOLDS**

To assess the magnitude of impacts to Seashore wetlands and floodplains under the various alternatives, wetland types and floodplain boundaries were identified as needed for impact analysis, based on the sources described in "Chapter 3: Affected Environment." Actions under each alternative were considered and impacts were assessed by examining the types of uses and impacts that could occur in or near various

wetlands or in floodplains, examining the area that could be directly or indirectly affected by the proposed development of parking and access, and assessing impacts on wetland and floodplain functions and values using best professional judgment, input from NPS staff and EIS team members, and a review of relevant literature.

## WETLANDS

### Impact Thresholds

The impact thresholds for wetlands are based on the size, integrity, and connectivity of the wetlands affected. These indicators are defined as follows:

**Size.** The severity of impacts to wetlands depends on the size of the wetland impacted. A small area of impact in a large wetland would be likely to have less of an effect than a large area of impact in a small wetland. The change in the size of a wetland, as a result of an impact, would also influence the integrity and connectivity of the wetland.

**Integrity.** Highly intact wetland areas with little prior disturbance would be more susceptible to impacts from direct development than a wetland previously degraded by development or other activities. The loss of function and productivity of the higher quality wetland would be a greater loss than that of a lower quality wetland. Additionally, indirect impacts due to human trampling or a change in vegetation or hydrology would also impact the integrity of the wetland.

**Connectivity.** The relationship of wetlands to other wetlands or other valuable natural resources is also important in determining the degree of impact. Plant communities that are isolated from each other are less productive and functional than those that are connected. For example, narrow, previous trail corridors that are infrequently or seasonally used would have less fragmenting effect than would a wide hard-surface roadway with high volumes of vehicular or pedestrian traffic. Establishment of structures in wetland areas could also create barriers to the natural dispersal of plants and animals and impact the connectivity of wetlands.

A summary of wetland impacts under all alternatives is provided in table 50 at the end of this section. The following thresholds for evaluating impacts to wetlands were defined.

*Negligible:* No measurable or perceptible effects on size, integrity, or connectivity of wetlands would occur.

*Minor:* The effect on wetlands would be measurable or perceptible, but small in terms of area and the nature of the impact. A small effect on size, integrity, or connectivity would occur; however, the overall viability would not be affected. If left alone, an adversely affected wetland would recover, and the impact would be reversed.

*Moderate:* The impact would cause a measurable effect on one of the three wetlands indicators (size, integrity, connectivity) or would result in a permanent loss or gain in wetland acreage, but not to large areas. Wetland functions would not be affected in the long term.



*Major:* The impact would cause a measurable effect on all three wetlands indicators (size, integrity, connectivity) or a permanent loss or gain of large wetland areas. The impact would be substantial and highly noticeable. The character of the wetland would be changed so that the functions typically provided by the wetland would be substantially altered.

*Duration:* Short-term effects for vegetative wetlands: recovers in less than three years from any action taken.

Long-term effects for vegetative wetlands: takes longer than three years to recover, or effect is almost permanent.

Short-term effects for non-vegetated wetlands (shorelines): recovers within days to months.

Long-term effects for non-vegetated wetlands (shorelines): effects last longer than a few months.

## Study Area

The study area for assessment of the various alternatives is the Seashore. The study area for the cumulative impacts analysis is the Seashore plus the adjacent lands outside of the Seashore boundaries on Bodie, Hatteras, and Ocracoke islands.

## Impacts Common to All Alternatives

**Non-vegetated marine wetlands.** Non-vegetated marine intertidal wetlands are located at the Seashore between extreme high tide and extreme low tide. Each alternative provides for some ORV access (whether for surveying and management or recreational use) in varying areas of the Seashore according to where an ORV corridor is provided. The ORV corridor generally occurs approximately 150 feet landward of the average, normal high tide line, or if less than 150 feet of space is available, at the vegetation or the toe of the remnant dune line. This width may vary among alternatives, dependent on sensitive species location, but generally stays the same.

Impacts to wetland areas where ORVs are used include rutting and compaction of soils from ORV use by visitors or by staff during species management activities; however, due to the dynamic nature of the intertidal area, impacts would be expected to be short-term negligible adverse. These impacts would be short-term due to the continuous movement and deposition of sand in the intertidal areas and the ability of the shoreline to “restore” itself in the long term. Due to the nature of the impacts and the consistent regeneration of wetland soils impacted by ORV use due to wave action, impacts on marine intertidal wetlands are not discussed in detail under each alternative below; rather, it was assumed that impacts from ORV driving to non-vegetated marine intertidal wetlands would be short-term negligible adverse across all alternatives. The impact analysis therefore focuses on impacts to vegetated estuarine (soundside and interior) wetlands and addresses impacts to marine intertidal wetlands in the conclusions only.

Impacts to marine wetland habitats also affect invertebrate species that reside there, and are discussed in detail in the “Wildlife and Wildlife Habitat” section.

### **Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy**

Under alternative A, there would be no new construction of ramps or roads and, therefore, no direct adverse impacts to wetlands in the Seashore as a result of construction activities. The only other actions associated with this alternative that could result in wetland impacts would be impacts from the continued use of ORVs throughout the Seashore.

Under alternative A, Seashore staff would continue to survey for various species as identified in the FONSI for the Interim Strategy. Seashore staff would use ATVs/UTVs and occasionally ORVs to conduct species surveys and to establish resource closures as required based on species behavior. There would be no impacts to estuarine wetlands, however, because species surveying and management would not typically occur in any areas where vegetated wetlands are located.

Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps). Anecdotal evidence from Seashore staff has demonstrated that some areas of estuarine wetlands at the Seashore have been denuded of vegetation from ORV use along the soundside shoreline. Studies at Cape Cod National Seashore also have noted the impacts from ORV use on vegetation (Broadhead and Godfrey 1977). Wetlands are also damaged when drivers attempt to avoid standing water on interior ORV routes at Cape Hatteras and, instead, drive over vegetation adjacent to these routes, as noted by Seashore staff. This use has the potential to result in wider roads and crushed or dead wetland vegetation. Long-term minor adverse impacts to estuarine vegetated wetlands at the Seashore would continue to occur under alternative A, as ORV drivers would continue driving over wetland vegetation along the soundside shoreline and adjacent to interior ORV routes.

Overall, under alternative A, there would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes.

**Cumulative Impacts.** Other past, present, and future planned actions within and around Cape Hatteras National Seashore have the potential to impact wetlands. The dredging of Oregon Inlet has occurred in the past and would continue to be conducted on an annual basis by the Corps. Material from the dredging of Oregon Inlet is used primarily for replenishment of Pea Island NWR beaches. Because the dredged material is not deposited in vegetated wetlands, there should be no measurable impact to wetlands from this activity. However, the replacement of the Herbert C. Bonner Bridge is likely to adversely affect wetlands outside the NPS property because the preferred alternative for the bridge project would result in the filling and permanent loss of 3.1 acres of wetlands and open water habitat and would also involve temporary impacts to 12.5 acres of wetlands. To mitigate the permanent loss of 3.1 acres of wetlands, the Corps would restore, create, or enhance wetlands at agency-approved ratios at locations to be determined. Potential compensatory wetland mitigation would include on-site restoration and enhancement of in-kind wetlands as compensation for as much of the permanently affected area as possible; however, the limited availability of potential mitigation sites in the immediate vicinity of the project area would necessitate an exploration of additional options, which include off-site restoration, creation, and enhancement of wetlands (FHWA 2007).

The final bridge alignment could result in the closure of ramp 4 and the construction of a new ramp 3 and associated parking north of Oregon Inlet Campground. However, there would be sufficient upland area in which to construct ramp 3 and any associated parking. Therefore, there would be no impacts to wetlands

related to the construction of this new ramp and parking facilities. Because the bridge project would fill wetlands, it would have long-term impacts to wetlands, but mitigation would lessen these impacts. Other planned actions, such as improvements slated for NC-12 on Bodie Island, would not impact wetlands because there are no wetlands in the proposed project areas. The overall impacts of these past, current, and future actions on wetlands would be long-term minor to moderate adverse because construction would occur in wetland areas and would result in permanent wetland loss that would have a measurable effect on wetland indicators, but it would only impact 3.1 acres out of more than 1,000 acres of wetlands in the Bonner Bridge project area.

Local planning efforts and their policies toward development could also affect wetlands in the surrounding area. For example, the Hyde County Land Use Plan contains policy statements that indicate that the county will not adopt any local land use ordinances to regulate development in non-tidal wetlands. However, both Dare and Hyde counties recognize the importance of coastal wetlands, and these resources are protected as Areas of Environmental Concern (AECs) under the land use plans of both jurisdictions. In its 2003 Land Use Plan, Dare County recognizes the Buxton Woods forest as an example of one of the most unique maritime forests in North Carolina and establishes a special environmental zoning district (SED). SED-1 generally allows only single-family residential development, provides limits on vegetation clearing and impervious cover, and establishes a 50-foot buffer from wetlands. Almost all the wetlands in the study area are coastal, so they would also be afforded protection as an AEC under the North Carolina CAMA, which limits development in these areas to water-dependent uses only. Impacts to wetlands from potential new projects in Dare and Hyde counties, which would follow local planning policies, would be long-term adverse, but only negligible as these policies would ensure that development in coastal wetlands is minimized.

The effects of the actions described above—when combined with the short- and long-term negligible to minor adverse impacts to wetlands under alternative A—would result in long-term minor to moderate adverse cumulative impacts on wetlands in the area of analysis.

**Conclusion.** There would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes.

Cumulative impacts to wetlands would be long-term minor to moderate adverse.

### **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

Under alternative B, there would be no new construction of ramps or roads and therefore no direct adverse impacts to Seashore wetlands as a result of construction activities. The only other actions associated with this alternative that could result in wetland impacts would be impacts from the continued use of ORVs throughout the Seashore.

Seashore staff would continue to conduct species surveying and management actions, as indicated in the FONSI and modified by the consent decree. The Seashore staff would use ATVs/UTVs and occasionally ORVs to conduct species surveys and establish resource closures as required based on species behavior. There would be no impacts to estuarine wetlands, however, because species surveying and management would not typically occur in any areas where vegetated wetlands are located. The level of impact from species surveying and management practices would be the same under the management that occurred before the modification of the consent decree on June 2, 2009.

Recreational use and other activities under alternative B would be similar to alternative A, except for seasonal restrictions on night driving and increased resource protection buffer distances. Although ORV traffic would be restricted in certain areas of the Seashore due to temporary resource closures and eliminated seasonally during the evening hours, there would still be ORV use along the soundside and interior, where damage to vegetated wetlands would continue during the day year-round and at nighttime from September 15 to April 30. Therefore, new restrictions on recreational ORV use under alternative B would not result in a measurable change in wetland impacts when compared to alternative A. Therefore, wetland impacts from recreational ORV use under alternative B would be long-term minor adverse.

Overall, under alternative B, there would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative B would be identical to those under alternative A. The effects of these actions—when combined with the short- and long-term minor adverse impacts to wetlands under alternative B—would result in long-term minor to moderate adverse impacts on wetlands in the area of analysis.

**Conclusion.** Overall, under alternative B, there would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes.

Cumulative wetland impacts would be long-term minor to moderate adverse.

### **Impacts of Alternative C: Seasonal Management**

Unlike the no-action alternatives, alternative C would involve the construction and relocation of ORV access ramps (with some additional ramps being added), the construction or expansion of public parking areas, and the establishment of a new interdunal road. In addition to the construction activities proposed under alternative C, surveys for species presence or absence, associated management activities, and the recreational use of ORVs could potentially impact wetlands within the Seashore.

Access for recreational use and other activities under alternative C would be similar to alternatives A and B, except for the establishment of specific seasonal closures at the approximately 18 miles of SMAs under alternative C. Other areas outside of SMAs would be seasonally closed to ORV use under alternative C, according to table 7 in chapter 2. Under alternative C, the number of soundside access points would not change, but signs would be installed at the terminus of the soundside access points to reduce potential damage from vehicles to estuarine wetlands. Although alternative C includes additional measures for wetland protection on the soundside, long-term negligible adverse impacts to vegetated wetlands would occur due to the potential for ORVs driving over wetland vegetation along and adjacent to interior routes (including the expanded interdunal road network) and access roads that lead to soundside destinations.

Implementation of alternative C would involve the construction or relocation of six ORV access ramps, construction or expansion of seven public parking areas, and the establishment of a new interdunal road between ramps 45 and 49. All new access ramps and parking areas would be located exclusively in upland areas, thereby avoiding direct wetland impacts. Ramps would be surfaced with a semi-permeable clay/shell base, reducing runoff to any adjacent wetlands. New or expanded parking areas would be

designed and constructed with a semi-permeable clay/shell base, turf block, or some other porous material, using environmentally sensitive standards to minimize stormwater runoff. The new interdunal road proposed under alternative C would extend from the existing interdunal road at ramp 45 to ramp 49 (see figure 2, chapter 2 alternative C maps). Wetland maps indicate there is a sufficient upland area to extend the interdunal road, while avoiding wetland areas. The interdunal road would be primitive in nature (for example, not paved or otherwise hardened) and would not require surfacing. Wetland impacts resulting from the extension of the interdunal road would be avoided, although heavy use of the road could result in inadvertent wetland damage if vehicles were to leave the road surface for any reason, as wetlands are immediately adjacent to this area. Construction activities under alternative C would avoid wetland areas and use materials and management practices that would reduce surface runoff, resulting in indirect long-term negligible adverse impacts to wetlands.

Overall, under alternative C, there would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by the installation of signage under this alternative. Construction activities under alternative C would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative C would be identical to those under alternative A. The effects of these actions—when combined with the short- and long-term negligible adverse impacts to wetlands under alternative C—would result in long-term minor to moderate adverse impacts on wetlands in the area of analysis.

**Conclusion.** There would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Impacts to soundside wetlands would remain at a long-term negligible adverse level due to the protection provided by the installation of signage under this alternative. Construction activities under alternative C would avoid wetland areas and use materials and management practices that would reduce surface runoff, resulting in long-term negligible adverse impacts to wetlands.

Cumulative impacts under alternative C would be long-term minor to moderate adverse.

### **Impacts of Alternative D: Increased Predictability and Simplified Management**

Alternative D would involve the construction or relocation of four ORV access ramps. In addition to the ramp construction proposed under alternative D, species surveying and management activities and the recreational use of ORVs could potentially impact wetlands within the Seashore.

Vehicular access for recreational use and other activities under alternative D would be limited with the year-round “vehicle free” designation of all points, spits, and village beaches (see figure 2, chapter 2, alternative D maps). Soundside access would be managed the same as in alternative A, resulting in long-term negligible to minor adverse impacts to estuarine vegetated wetlands.

The proposed access ramps would be located exclusively in upland areas, thereby avoiding direct wetland impacts. Ramps would be constructed using environmentally sensitive standards to minimize stormwater runoff, as detailed in alternative C.

Overall, there would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term negligible to minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands along interior routes and on the soundside, which would not be protected with signage under this alternative. Construction activities under alternative D would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative D would be identical to those under alternative A. The effects of these actions—when combined with the short- and long-term negligible to minor adverse impacts to wetlands under alternative D—would result in long-term minor to moderate adverse impacts on wetlands in the area of analysis.

**Conclusion.** There would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term negligible to minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands along interior routes and on the soundside, which would not be protected with signage under this alternative. Construction activities under alternative D would avoid wetland areas and use materials and management practices that would reduce surface runoff, resulting in indirect long-term negligible adverse impacts to wetlands.

Cumulative impacts to wetlands under alternative D would be long-term minor to moderate adverse in the area of analysis.

### **Impacts of Alternative E: Variable Access and Maximum Management**

Implementation of alternative E would involve the installation or relocation of 7 ORV access ramps, construction or expansion of 14 public parking areas, and the establishment of 1 new interdunal road and 1 pedestrian trail. All new access ramps and parking areas would be located exclusively in upland areas, thereby avoiding direct impacts to wetlands. Ramps and parking areas would be constructed using environmentally sensitive standards to minimize stormwater runoff, as detailed in alternative C. The interdunal road under alternative E would extend from the existing interdunal road at ramp 45 to ramp 49. Wetland maps indicate that there is a sufficient upland area in which to extend the interdunal road, although there are adjacent wetland areas. Therefore, wetland impacts from the interdunal road extension would be avoided, although heavy use of the road could result in inadvertent wetland damage if vehicles were to leave the road surface for any reason, as Seashore staff indicates currently occurs. The proposed pedestrian trail and interdunal road extension would not involve any formal surfacing or removal of vegetation and would avoid all wetland features. Construction activities under alternative E would avoid wetland areas and use materials and management practices that would reduce surface runoff, resulting in long-term indirect negligible adverse impacts to wetlands.

To protect soundside wetland resources, several soundside access areas would be closed and protective signage would be installed at those areas that remain open to vehicular use. Closing some of the soundside access points would reduce the potential for damage to estuarine wetlands from vehicles and provide beneficial impacts to wetlands in these areas. Although wetlands on the soundside would be given more protection under this alternative, long-term negligible adverse impacts to wetlands would occur in areas where ORV access continues due to the potential for ORVs driving over wetland vegetation adjacent to the extended interdunal road network.

Overall, under alternative E, there would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior

ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by signage and closure of access points under this alternative. Construction activities under alternative E would avoid wetland areas resulting in indirect long-term negligible adverse impacts to wetlands.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative E would be identical to those under alternative A. The effects of these actions—when combined with the short- and long-term negligible adverse impacts to wetlands under alternative E—would result in long-term minor to moderate adverse impacts on wetlands in the area of analysis.

**Conclusion.** There would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Impacts to soundside wetlands would remain at a long-term negligible adverse level due to the protection provided by signage and closure of access points under this alternative. Construction activities under alternative E would avoid wetland areas and use materials and management practices that would reduce surface runoff, resulting in indirect long-term negligible adverse impacts to wetlands.

Cumulative impacts under alternative E would be long-term minor to moderate adverse.

### **Impacts of Alternative F: NPS Preferred Alternative**

Implementation of alternative F would include the construction of 4 ORV access ramps and the relocation of 2 ramps, 2 new interdunal roads, pedestrian trails on Bodie and Ocracoke islands, and 12 new or expanded parking areas that would be surfaced, with a pervious material such as clay shell, with associated pedestrian access to the beach, that would add a total of approximately 135 parking spaces along the Seashore. All new access ramps and parking areas would be located exclusively in upland areas, thereby avoiding impacts to wetlands. Ramps and parking areas would be constructed using environmentally sensitive standards to minimize stormwater runoff, as detailed under alternative C. Under alternative F, new interdunal roads are proposed from ramp 45 to ramp 49 (with a new ramp at 47.5) and on Hatteras Inlet spit from the intersection of Pole and Spur roads southwest toward the inlet (stopping 100 meters from the inlet). Wetland maps indicate that there is a sufficient upland area in which to develop these interdunal roads. Therefore, direct wetland impacts from the interdunal road extensions would be avoided, although heavy use of the roads could result in inadvertent wetland damage if vehicles were to leave the road surface for any reason. The proposed pedestrian trail and interdunal road extensions would not require any formal surfacing or removal of vegetation and would avoid all wetland features.

To protect soundside wetlands and vegetation under alternative F, protective signage would be installed at all soundside access points to reduce the potential for resource damage from ORV use, thereby resulting in a beneficial impact. Although alternative F includes additional measures for wetland protection on the soundside, long-term negligible adverse impacts to wetlands would occur due to the potential for ORVs driving over wetland vegetation along and adjacent to interior routes (including the expanded interdunal road network) and access roads that lead to soundside destinations.

Overall, there would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by the

installation of signage. Construction activities under alternative F would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.

In accordance with NPS Director's Order 77-1: Wetlands Protection (and associated Procedural Manual 77-1), the preferred alternative, alternative F, was also evaluated for compliance with Executive Order 11990: Protection of Wetlands. Executive Order 11990 requires federal agencies to assess potential impacts to wetlands and avoid those impacts where possible. NPS activities that may adversely impact wetlands are subject to the provisions of Executive Order 11990 as implemented through Director's Order 77-1 and Procedural Manual 77-1. As stated in Procedural Manual 77-1, "the basic test for determining if a proposed action will have adverse impacts on wetlands is if the activity has the potential to degrade any of the natural and beneficial ecological, social/cultural, or other functions and values of wetlands...Such activities may require compliance due to direct impacts (e.g., placement of fill in a wetland) or due to indirect impacts (e.g., secondary or offsite impacts that reach into wetlands). Examples of activities with the potential to have adverse impacts on wetlands include drainage, water diversion, pumping, flooding, dredging, channelizing, filling, nutrient enrichment, diking, impounding, placing of structures or other facilities, livestock grazing, and other activities that degrade natural wetland processes, functions, or values" (Section 4.1.3).

Based on the above analysis, the continued use of ORVs and proposed construction activities under alternative F would not have new or additional measurable or perceptible effects on the size, integrity, or connectivity of wetlands. In addition to physical impacts to wetlands, new or additional impacts to the biological functions of wetlands, which provide habitat for invertebrates and birds foraging on the shoreline, were also considered. As described in the impact analysis under "Other Wildlife and Wildlife Habitat," impacts to these species from ORV use could be detectable (e.g., shorebirds foraging on the shoreline could be observed flushing due to disturbance by passing ORVs in those areas where ORVs would be allowed). These effects are considered minor because they would not be outside the range of natural variability. The preferred alternative would not create new or additional adverse impacts on wetland-dependent wildlife compared to existing ORV use. Alternative F would provide more area of shoreline that would not be open to ORV use than the existing and long-standing past management, which allowed ORV travel on almost all of the Seashore's oceanside beach, and also increased pedestrian impacts to foraging birds by carrying people to more distant locations. Therefore, it was determined that alternative F would not increase the degradation of wetlands functions and values as described in the NPS Procedural Manual 77-1, and in fact would decrease such impacts compared to existing ORV use. Therefore, a Statement of Findings for Wetlands was not prepared for this action.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative F would be identical to those described under alternative A. The effects of these actions—when combined with the short- and long-term negligible adverse impacts to wetlands under alternative F—would result in long-term minor to moderate adverse impacts on wetlands in the area of analysis.

**Conclusion.** There would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas and long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Impacts to soundside wetlands would remain at a long-term negligible adverse level due to the protection provided by the installation of signage. Construction activities under alternative F would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.

Cumulative impacts under alternative F would be long-term minor to moderate adverse.



**TABLE 50. SUMMARY OF IMPACTS TO WETLANDS UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Under all alternatives, there would be short-term negligible adverse impacts to marine intertidal wetlands due to continued ORV use in these areas.					
Under alternative A, there would be long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes.	Under alternative B, there would be long-term minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes.	Under alternative C, there would be long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by the installation of signage.	Under alternative D, there would be long-term negligible to minor adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside, which would not be protected with signage. Impacts to vegetated wetlands along interior ORV routes would continue.	Under alternative E, there would be long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by signage and closures of soundside access points.	Under alternative F, there would be long-term negligible adverse impacts to wetlands due to direct damage from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Impacts to soundside wetlands would remain at a negligible level due to the protection provided by the installation of signage.
There would be no construction (or related impacts) under the no-action alternatives.		Construction activities would avoid wetland areas, resulting in indirect long-term negligible adverse impacts to wetlands.			

**FLOODPLAINS**

**Assumptions**

Assumptions made in assessing potential impacts to floodplains include the following:

- FEMA Flood Insurance Rate Maps indicate almost the entire Seashore is within the 100-year floodplain.
- The floodplains in the project area do not serve the same function (i.e., as a natural moderator of floods) as floodplains in non-coastal areas because water levels in the project area are not dependent on floodplain storage capacity. Rather the project area is subject to coastal flooding caused by both hurricanes and other storm systems that can raise water levels substantially via storm surge.
- Recreational ORV use in the project area would not result in impacts to floodplain functions or values. The only impacts to floodplains from the implementation of the alternatives would be those impacts associated with proposed construction activities.

**Impact Thresholds**

A summary of floodplains impacts under all alternatives is provided in table 51 at the end of this section. The following thresholds for evaluating impacts to floodplains were defined.

- Negligible:* Impacts would result in a change to floodplain functions and values, but the change would be so slight that it would not be of any measurable or perceptible consequence.
- Minor:* Impacts would result in a detectable change to floodplain functions and values, but the change would be expected to be small, of little consequence, and localized. There would be no appreciable increased risk to life or property. Mitigation measures, if needed to offset adverse effects, would be simple and successful.
- Moderate:* Impacts would result in a change to floodplain functions and values that would be readily detectable and relatively localized. Location of operations in floodplains could increase risk to life or property. Mitigation measures, if needed to offset adverse effects, could be extensive, but would likely be successful.
- Major:* Impacts would result in a change to floodplain functions and values that would have substantial consequences on a regional scale. Location of operations would increase risk to life or property. Extensive mitigation measures would be needed to offset any adverse effects, and their success would not be guaranteed.
- Duration:* Short-term: the floodplain recovers in less than one year from any action taken.
- Long-term: the floodplain takes longer than one year to recover or the effect is almost permanent.

## Study Area

The study area for assessment of the various alternatives is the Seashore. The study area for the cumulative impacts analysis is the Seashore plus the adjacent lands outside of the Seashore boundaries on Bodie, Hatteras, and Ocracoke islands.

### **Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy**

Under alternative A, no construction is proposed. The management actions associated with alternative A (including the use of ORVs and ATVs/UTVs for recreation and species management activities) would not have a measurable effect on floodplains because driving on beaches, interior ORV routes, or along soundside ORV access routes would not impact the natural function of the floodplain.

**Cumulative Impacts.** Because there would be no impacts on floodplain functions or values under the no-action alternative, no cumulative impacts would occur.

**Conclusion.** Implementation of alternative A would result in no impacts to the functions or values of the currently existing floodplains found within the study area.

Because there would be no impacts on floodplain functions or values under the no-action alternative, no cumulative impacts would occur.

## **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

**Analysis.** No construction is proposed under alternative B. No management actions associated with alternative B (including the use of ORVs and ATVs/UTVs for recreation or species management activities) would have a measurable effect on floodplains as driving on beaches, interior ORV routes, or along soundside ORV access routes would not impact the natural function of the floodplain. Management practices in use prior to the modification of the consent decree on June 2, 2009, would not result in any impacts to floodplains.

**Cumulative Impacts.** Because there would be no impacts on floodplain functions or values under alternative B, no cumulative impacts would occur.

**Conclusion.** Implementation of alternative B would result in no adverse, beneficial, or cumulative impacts on the functions or values of the currently existing floodplains found within the study area. Because there would be no impacts on floodplain functions or values under the no-action alternative, no cumulative impacts would occur.

## **Impacts of Alternative C: Seasonal Management**

The use of vehicles for species management and recreational access would not result in any impacts to floodplain functions or values, as described under the no-action alternatives. However, construction activities proposed under alternative C have the potential to impact the floodplain, as discussed below.

Alternative C would involve the construction or relocation of six ORV access ramps, construction or expansion of seven public parking areas, and the establishment of one new interdunal road, as shown on figure 2 in chapter 2. Because all of the area between access roads (interdunal or NC-12) and the shoreline is in the 100-year floodplain, no options for constructing the proposed facilities outside of the regulatory floodplain exist. Ramps would be surfaced with a natural semi-permeable clay/shell base, reducing stormwater runoff and limiting the potential for impacts to the floodplain's function. New or expanded parking areas would be designed and constructed with a semi-permeable clay/shell base, turf block, or some other porous material, using environmentally sensitive standards to minimize stormwater runoff. All of the parking areas would be located within the 100-year floodplain, with none of the new or expanded lots located in areas seaward of the primary dune line. New or expanded parking areas would be located outside of coastal high hazard areas subject to flash flooding, when possible. Although Director's Order 77 allows the construction of day-use parking facilities within the 100-year floodplain in high hazard areas, signs informing visitors of flood risk and suggested actions in the event of flooding must be posted, and are included as part of alternative C, if it is not possible to locate all of the proposed parking areas outside of high hazard areas. The interdunal road proposed under alternative C would extend from the existing interdunal road at ramp 45 to ramp 49. The road, constructed at grade, would not alter topography or require a finished surface, limiting the potential for impacts to floodplain function. The construction or expansion of the seven parking areas would result in the placement of hardened, pervious surface in the 100-year floodplain and would have a limited effect on the ability of the floodplain to convey floodwaters from storm surge. Although impacts would result in a detectable change in floodplain functions and values, the change would be of little consequence and localized in nature. Therefore, under alternative C, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of seven parking areas in the floodplain.

**Cumulative Impacts.** Other past, present, and future planned actions within and around the Seashore have the potential to impact floodplains. The dredging of Oregon Inlet has occurred in the past and would continue to occur on an annual basis. Material from the dredging of Oregon Inlet is used primarily for the

replenishment of Pea Island NWR beaches. The deposition of this material has the potential to impact the function of the floodplain if substantial changes to topography resulted in the diversion of floodwaters into developed or inhabited areas. However, due to the dynamic coastal processes that continually reshape the area of deposition and the lack of development in the vicinity, impacts to the floodplain from dredging activities would be negligible at most. The replacement of the Herbert C. Bonner Bridge is likely to affect floodplains because all of the replacement bridge corridor alternatives—as well as the existing Bonner Bridge and NC 12—are within the floodplain. However, the replacement bridge should not have measurable impacts on floodplain values because the piles of the bridge substructure would not create backwater or adverse hydraulic conditions, and floodplain functions would not be expected to be impacted. All alternatives for the replacement of the Herbert C. Bonner Bridge conform to applicable state and local floodplain protection standards because they would not affect the storm surge elevation. However, the location of structures and impervious surfaces in the floodplain could result in localized flooding during heavy rain events. Other planned actions, such as improvements slated for NC-12 on Bodie Island would contribute limited adverse impacts to floodplains because they would result in additional development or hardened surfaces in the floodplain that could impact the overall floodplain functions. The overall impacts of these past, current, and future actions on floodplains would be long-term minor to moderate adverse due to the development that would occur in the floodplain and the resulting potential to impact floodplain functions.

Local planning efforts and their policies toward development could also affect floodplains in the surrounding area. Both Dare and Hyde counties recognize the risks associated with floodplain development and support the administration and enforcement of all applicable floodplain management regulations and the National Flood Insurance Program. Almost all of the shoreline in the study area is in a high hazard flood area and would also be protected as an AEC under the CAMA, which limits development in these areas. Impacts to floodplains from local planning policies would be beneficial because the local policies, along with existing federal regulations, would limit development in these areas. However, some level of development would be expected to occur in these areas in the future, so these floodplains would continue to be impacted.

The effects of the actions described above—when combined with the long-term minor adverse impacts to floodplains under alternative C—would result in long-term minor to moderate adverse impacts on floodplains in the area of analysis.

**Conclusion.** There would be long-term minor adverse impacts to floodplains resulting from the implementation of alternative C due to the construction or expansion of seven parking areas within the 100-year floodplain. Installation of ORV access ramps would not impact floodplains because they would be composed of pervious materials. Interdunal roads would not be surfaced and would therefore not result in floodplain impacts.

Past, present, and reasonable foreseeable future actions—when combined with the impacts of implementing alternative C—would result in long-term minor to moderate adverse cumulative impacts to floodplains in the area of analysis.

### **Impacts of Alternative D: Increased Predictability and Simplified Management**

The use of vehicles for species and management and recreational access would not result in any impacts to floodplain functions or values, as described under the no-action alternatives. However, construction activities proposed under alternative D have the potential to impact the floodplain, as discussed below.

Alternative D would require the least amount of construction of the action alternatives and would involve the construction or relocation of four ORV access ramps. Because nearly the entire Seashore is within the

floodplain, there would be no options for constructing the proposed facilities outside of the regulatory floodplain. The four ramps proposed under alternative D would be surfaced with a natural semi-permeable clay/shell base, thereby reducing stormwater runoff and limiting the potential for impacts to floodplain function. There would be no additions or alterations to interdunal roads or parking areas under alternative D. Therefore, under alternative D, there would be long-term negligible adverse impacts to floodplains due to the location of four ORV access ramps in the 100-year floodplain.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative D would be identical to those under alternative C. The effects of these actions—when combined with the long-term negligible adverse impacts to floodplains under alternative D—would result in long-term minor to moderate adverse impacts to floodplain functions and values in the area of analysis.

**Conclusion.** There would be long-term negligible adverse impacts to floodplains resulting from the implementation of alternative D due to the installation or relocation of four ORV access ramps.

Past, present, and reasonable foreseeable future actions—when combined with the impacts of implementing alternative D—would result in long-term minor to moderate adverse cumulative impacts to floodplains in the area of analysis.

### **Impacts of Alternative E: Variable Access and Maximum Management**

The use of vehicles for species management and recreational access would not result in any impacts to floodplain functions or values, as described under the no-action alternatives. However, construction activities proposed under alternative E have the potential to impact the floodplain, as discussed below.

Implementation of alternative E would involve the construction or relocation of 7 ORV access ramps, construction or expansion of 14 public parking areas, and the establishment of 1 new interdunal road and 1 pedestrian trail. As discussed under alternative C, the establishment of ramps and extension of interdunal roads would not result in floodplain impacts because no impervious surfaces or above-grade structures would be constructed and floodplain functions would not be altered. The development of a pedestrian trail near Oregon Inlet under alternative E also would not result in floodplain impacts because the trail would be primitive in nature and would not be paved or surfaced. Because all of the area between access roads (interdunal or NC-12) and the shoreline is in the 100-year floodplain, no options for constructing the proposed facilities outside of the regulatory floodplain exist. Ramps and parking areas would be designed and constructed using environmentally sensitive standards and materials to minimize stormwater runoff, as detailed in alternative C. All of the parking areas would be located within the 100-year floodplain, with none of the new or expanded lots located in areas seaward of the primary dune line. New or expanded parking areas would be located outside of coastal high hazard areas subject to flash flooding when possible. Although Director's Order 77 allows the construction of day-use parking facilities within the 100-year floodplain in high hazard areas, signs informing visitors of flood risk and suggested actions in the event of flooding must be posted, and are included as part of alternative E, if it is not possible to locate all of the proposed parking areas outside of high hazard areas. The construction or expansion of the seven parking areas would result in the placement of hardened, pervious surface in the 100-year floodplain and would have a limited effect on the ability of the floodplain to convey floodwaters from storm surge. Although impacts would result in a detectable change in floodplain functions and values, the change would be of little consequence and localized in nature. Therefore, under alternative E, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of 14 parking areas in the floodplain.

**Cumulative Impacts.** Under alternative E, the same past, present, and planned future activities within the Seashore that have the potential to affect floodplains would occur, and impacts would be the same as described under alternatives C and D. The effects of these actions—when combined with the long-term minor adverse impacts to floodplains under alternative E—would result in long-term minor to moderate adverse impacts to floodplain functions and values in the area of analysis.

**Conclusion.** There would be long-term minor adverse impacts to floodplains resulting from the implementation of alternative E due to the construction or expansion of 14 parking areas throughout the Seashore.

Past, present, and reasonable foreseeable future actions—when combined with the impacts of implementing alternative E—would result in long-term minor to moderate adverse cumulative impacts to floodplains in the area of analysis.

### **Impacts of Alternative F: NPS Preferred Alternative**

The use of vehicles for species and management and recreational access would not result in any impacts to floodplain functions or values, as described under the no-action alternatives. However, construction activities proposed under alternative F have the potential to impact the floodplain, as discussed below.

Implementation of alternative F would include the construction of 4 ORV access ramps and the relocation of 2 ramps, 2 new interdunal roads, pedestrian trails on Bodie and Ocracoke islands, and 12 new or expanded parking areas that would be surfaced, with a pervious material such as clay shell, with associated pedestrian access to the beach, that would add a total of approximately 135 parking spaces along the Seashore. As discussed under alternative C, the establishment of ramps and interdunal roads would not result in floodplain impacts because no impervious surfaces or above-grade structures would be constructed, and floodplain functions would not be altered. The development of pedestrian trails under alternative F would also not result in floodplain impacts because the trails would be primitive in nature and would not be paved or surfaced in any way.

Because all of the area between access roads (interdunal or NC-12) and the shoreline is in the 100-year floodplain, no options for constructing the proposed facilities outside of the regulatory floodplain exist. Ramps and parking areas would be designed and constructed using environmentally sensitive standards and materials to minimize stormwater runoff, as detailed in alternative C. All of the parking areas would be located within the 100-year floodplain, with none of the new or expanded lots located in areas seaward of the primary dune line. New or expanded parking areas would be located outside of coastal high hazard areas subject to flash flooding when possible. Although Director's Order 77 allows the construction of day-use parking facilities within the 100-year floodplain in high hazard areas, signs informing visitors of flood risk and suggested actions in the event of flooding must be posted, and are included as part of alternative F, if it is not possible to locate all of the proposed parking areas outside of high hazard areas. The construction or expansion of 12 proposed parking areas would result in the placement of hardened, pervious surface in the 100-year floodplain and would have a limited effect on the ability of the floodplain to convey floodwaters from storm surge. The two on-sand parking areas accessible by 4-wheel drive vehicles at the terminus of the new interdunal routes would not require a hardened surface because vehicles would travel over sand to reach them. Although impacts would result in a detectable change in floodplain functions and values, the change would be of little consequence and localized in nature. Therefore, under alternative F, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of 12 parking areas with permeable surfaces in the floodplain. Per Director's Order 77, a Statement of Findings for floodplains has been prepared for this alternative and is attached in appendix B of this document.

**Cumulative Impacts.** Under alternative F, the same past, present, and planned future activities within the Seashore that have the potential to affect floodplains would occur, and impacts would be the same as described under alternatives C, D, and E. The effects of these actions—when combined with the long-term minor adverse impacts to floodplains under alternative F—would result in long-term minor to moderate adverse impacts to floodplain functions and values in the area of analysis.

**Conclusion.** There would be long-term minor adverse impacts to floodplains resulting from the implementation of alternative F due to the construction or expansion of 12 parking areas in the 100-year floodplain.

Past, present, and reasonable foreseeable future actions—when combined with the impacts of implementing alternative F—would result in long-term minor to moderate adverse cumulative impacts to floodplains in the area of analysis.

**TABLE 51. SUMMARY OF IMPACTS TO FLOODPLAINS UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
There would be no construction under alternative A. As a result, there would be no impacts to the functions or values of floodplains.	There would be no construction under alternative B. As a result, there would be no impacts to the functions or values of floodplains.	Under alternative C, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of seven parking areas in the floodplain.	Under alternative D there would be long-term negligible adverse impacts to floodplains due to the location of four ORV access ramps in the 100-year floodplain.	Under alternative E, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of 14 parking areas in the floodplain.	Under alternative F, there would be long-term minor adverse impacts to floodplains due to the construction or expansion of 12 parking areas with permeable surfaces in the floodplain.

## FEDERALLY LISTED THREATENED OR ENDANGERED SPECIES

### GUIDING REGULATIONS AND POLICIES

The ESA (16 USC 1531 et seq.) mandates that all federal agencies consider the potential effects of their actions on species listed as threatened or endangered. If the NPS determines that an action may affect a federally listed species, consultation with the USFWS is required to ensure that the action would not jeopardize the species' continued existence or result in the destruction or adverse modification of critical habitat. *NPS Management Policies 2006* state that the NPS will survey for, protect, and strive to recover all species native to NPS units that are listed under the ESA, and proactively conserve listed species and prevent detrimental effects on these species (NPS 2006c, sec. 4.4.2.3). *NPS Management Policies 2006* also state that “[the NPS will] manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible” (NPS 2006c, sec. 4.4.2.3).

### ASSUMPTIONS, METHODOLOGY, AND IMPACT THRESHOLDS

The following information was used to assess impacts on all listed species from ORV management actions:

1. Species found in areas likely to be affected by actions described in the alternatives.
2. Habitat loss or alteration caused by the alternatives.

3. Displacement and disturbance potential of the actions and the species' potential to be affected by the activities.

According to the ESA, the term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

Specific methodologies and assumptions pertaining to the piping plover, sea turtles, or seabeach amaranth are described under the relevant descriptions in the following text.

When examining the impacts of artificial light on threatened and endangered species (primarily sea turtles), the lighting zones developed for Cape Hatteras National Seashore by the NPS Night Skies Team were considered. In these zones, special consideration is given to areas with sensitive wildlife, and alternate guidance is provided to enhance the protection of nocturnal habitat. These special lighting zones represent the conditions that should be present at the Seashore, not necessarily actual current conditions, and create a buffer when two varying zones abut each other.

Although the action alternatives involve the construction of ramps, parking areas, and interdunal roads, construction activities would occur outside of the bird breeding season, during daylight hours, and outside of any protected species breeding or foraging habitat. In the unlikely event that threatened and endangered species are found in a construction area, the area would be under a resource closure and no construction would occur. Therefore, impacts from construction were assumed to be negligible.

The following assumption was made regarding the analysis for all alternatives:

An indirect impact from recreation use is the attraction of mammalian and avian predators to trash associated with recreation use (USFWS 1996a, 2009a). Predation continues to be a major factor affecting the reproductive success of piping plovers (Elliot-Smith and Haig 2004). The Seashore would enforce proper trash disposal and anti-wildlife feeding regulations to reduce the attraction of predators to the area under all alternatives. Nevertheless, as demonstrated by the Seashore's annual piping plover reports, predation continues to be a threat to piping plover success at the Seashore (see “Chapter 3: Affected Environment”). Recreational use that brings humans into areas where plovers reside would continue to have indirect impacts by attracting predators, resulting in long-term moderate impacts under all alternatives as impacts could be detectable and outside the range of natural variability, but would not result in large declines in population as the Seashore takes steps to protect listed species from predation.

The ESA defines the terminology used to assess impacts to the piping plover, sea turtles, and seabeach amaranth as follows.

- No effect:* When a proposed action would not affect a listed species or designated critical habitat.
- May affect / not likely to adversely affect:* When effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where “take” occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.



*May affect / likely to adversely affect:* When any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species, but is also likely to cause some adverse effects, the proposed action “is likely to adversely affect” the listed species. If incidental take is anticipated to occur as a result of the proposed action, then it “is likely to adversely affect” the species. Incidental take is the take of a listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity.

*Is likely to jeopardize species / adversely modify critical habitat:* The appropriate conclusion when the NPS or the USFWS identifies an adverse effect that could jeopardize the continued existence of a species or destroy or adversely modify critical habitat of a species within or outside Seashore boundaries.

The EIS will serve as the biological assessment in compliance with Section 7 consultation requirements and analyzes impacts using the above terminology. Each alternative includes an ESA summary after the conclusion section to facilitate this compliance. To provide the public with additional information on the intensity of impacts, the NEPA thresholds for each species were defined and used throughout the analysis.

## Study Area

The study area for assessment of the various species is described separately for each listed species.

## PIPING PLOVER

### Species-Specific Methodology and Assumptions

Potential impacts on the federally threatened piping plover populations and habitat were evaluated based on available data on the species’ past and present occurrence at Cape Hatteras National Seashore, scientific literature on the species, life history, scientific studies on the impacts of human disturbance on piping plovers, as well as documentation of the species’ association with humans, pets, predators, and ORVs. Information on habitat and other existing data were acquired from staff at Cape Hatteras National Seashore, the USFWS, and available literature.

### Piping Plover Impact Thresholds

A summary of piping plover impacts under all alternatives is provided in table 52 at the end of this section.

The following thresholds for evaluating impacts to piping plovers were defined.

*Negligible:* There would be no observable or measurable impacts to piping plovers, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.

- Minor Adverse:* Impacts on piping plovers would be detectable, but would not be outside the natural range of variability. Occasional responses by some individuals to disturbance could be expected, and may result in minimal interference to feeding, reproduction, resting, or other factors affecting population levels, but would not be expected to result in changes to local population numbers, population structure, and other demographic factors. Some impacts might occur during critical reproduction periods for piping plover, but would not result in injury or mortality. Sufficient habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.
- Minor Beneficial:* Impacts on piping plover, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Improvements to key characteristics of habitat and/or protection to key life history stages in the Seashore would sustain or slightly improve existing population levels, population structure, or other factors and maintain a sustainable population in the Seashore.
- Moderate Adverse:* Impacts on piping plover, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses by some individuals to disturbance could be expected, with some negative impacts to feeding, reproduction, resting, or other factors affecting local population levels. Small changes to local population numbers, population structure, and other demographic factors may occur. Some impacts might occur during critical periods of reproduction or in key habitats in the Seashore and result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.
- Moderate Beneficial:* Impacts on piping plover, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Changes to key characteristics of habitat in the Seashore and/or protection to key life history stages would minimize or prevent harassment or injury to individuals and improve the sustainability of the species in the Seashore.
- Major Adverse:* Impacts on piping plover, their habitats, or the natural processes sustaining them would be detectable and would be expected to be outside the natural range of variability. Frequent responses by some individuals to disturbance would be expected, with negative impacts to feeding, reproduction, or other factors resulting in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts would occur during critical periods of reproduction or in key habitats in the Seashore and result in direct mortality or loss of habitat. Local population numbers, population structure, and other demographic factors might experience large declines.
- Major Beneficial:* Impacts on piping plover, their habitats in the Seashore, or the natural processes sustaining them during key life history stages would be detectable and would be expected to be outside the natural range of variability. Changes to key characteristics of habitat in the Seashore and/or protection to key life history stages would substantially lessen mortality or loss of habitat and would result in notable increases in Seashore population levels.

*Duration:* Short-term effects would be one to two breeding seasons for piping plover.

Long-term effects would be anything beyond two breeding seasons for piping plover.

## Study Area

The study area for assessment of the various alternatives is the Seashore. The study area for the cumulative impacts analysis is the Seashore and the region, including the Carolina area included in the recovery plan for the piping plover (USFWS 1996a).

## Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy

### Resources Management Activities

Under alternative A, piping plover surveys would occur at the spits, Cape Point, and South Beach once a week from March 15 to March 31, and increase to three times a week from April 1 to June 15. When nests are located, surveying would further increase to once daily.

*Establishment of Prenesting Closures.* Prenesting closure areas would be established in areas used by piping plover sometime during the past three breeding seasons (defined as “recent breeding” habitat) with symbolic fencing to minimize human disturbance. An annual habitat assessment would be conducted in February or March. Based on this assessment, new habitat and suitable portions of recent breeding habitat, such as some shoreline foraging areas and nesting habitat, would be closed to the public with symbolic fencing by April 1 each year. This annual habitat assessment would include Bodie Island Spit, Cape Point, South Beach, Hatteras Inlet Spit, North Ocracoke Spit, and South Point. Alternative A would provide protection at recent breeding sites, closing portions of them to access by April 1, but would not protect habitat not used prior to the last three years. This could cause adverse impacts, because any piping plovers attempting to use these unprotected areas in the early spring (prior to April 1) may abandon their attempts due to human disturbance (e.g., vehicles, pedestrians, kites) prior to being detected by weekly surveys. Under alternative A, piping plovers would likely benefit from surveying and resultant closures in the prenesting phase, however since closures are not established until April 1, individuals nesting prior to that would not benefit from these closures and would receive protection only if found during surveying (see below). As early nesting piping plover would not be afforded protection from prenesting closures, there would be long-term minor to moderate adverse impacts, since there may be impacts during critical periods of reproduction. Once the prenesting closures are in place, long-term moderate beneficial impacts would occur for piping plover at the Seashore.

*Surveying and Monitoring.* Beginning March 15 staff would survey recent piping plover breeding areas once a week and beginning April 1, staff would survey recent piping plover breeding areas three times per week. A range of observations, as required by the USFWS Amended Biological Opinion (USFWS 2007a, outlined in table 1 of the FONSI), would occur for each bird species by qualified staff across all life stages. Staff would observe species activities and potentially close areas, outside of defined prenesting closures, being used by piping plovers or other protected bird species. Closures would be removed if no bird activity is seen by July 15 or when the area has been abandoned for a 2-week period, whichever comes later. When piping plover nests are found in existing or newly established closure areas, Seashore staff would collect a variety of data including number of observations of plovers performing territorial defense or courtship outside symbolic fencing; number of observations of plovers making nest scrapes outside the symbolic fencing; and the number of vehicles, pedestrians, or pets within the symbolic fencing

and/or in which tracks are observed crossing into posted habitat. Although surveying would bring people and/or essential vehicles into direct short-term contact with piping plovers and their habitat, and these activities themselves are a known risk factor, implementing precautions to minimize impacts, for example, using scopes to watch the birds from a distance and remaining outside closures to the extent possible, and the protection that results from surveying may result in long-term minor to moderate beneficial impacts.

*Buffer/Closure Establishment.* Under alternative A, outside of prenesting closures, if courtships or copulations are observed for two consecutive survey days, a buffer would be established, or expanded, to ensure a 164-foot buffer for the observed birds. When nesting occurs, a 164-foot buffer/closure would be established around piping plover nests outside existing closures. These closures would be expanded, if necessary to prevent disturbance, using flexible increments dependent on observed bird behavior. When resource closures are created around nests, the ORV corridor would be adjusted whenever possible to allow for vehicle passage, and the width of this corridor would be reduced if necessary. Closures could also be expanded if adults are observed foraging outside of a closure on two consecutive surveys, and in this case, the buffer would be expanded to include the foraging site. For unfledged chicks, alternative A would establish a minimum 600-foot buffer on either side of the brood based on observation of bird behavior and terrain conditions at the site. Chicks would be observed continuously during daylight hours during the first week. Based on observed behavior, the buffer area may require expansion up to 3,000 feet if chicks are highly mobile. Based on observed behavior (i.e., mobility of the brood) and the capability to continually observe mobility and behavior, the buffer zone could be reduced after the first week to no less than 300 feet, but might require expansion up to 3,000 feet if chicks are subsequently observed to exhibit high mobility. After the first week, if the closure is reduced or remains the same, continuous observation would continue and if the closure is enlarged, observations would be reduced to once daily. These buffers would move with the chicks and provide them with more protection than stationary buffers. Bypass routes would be closed at night if the buffer zone is less than 600 feet.

When closures are created around broods, the ORV corridor would be adjusted whenever possible to allow vehicle passage. For areas in which the buffer zone eliminates the ORV corridor, alternate ORV routes would be identified if available. If there are no alternate ORV routes, a bypass would be established if possible. Under alternative A, beaches would be closed to recreational access down to the waterline, if necessary, to allow chicks access to foraging areas, thereby providing chicks with maximum protection during this sensitive life stage. Under this type of management, staff would observe piping plover chicks from a distance to minimize disturbing the birds and allow the birds to forage or rest as they would under undisturbed conditions.

Alternative A provides for protection of piping plover nests through the use of buffer distances recommended in the Piping Plover Recovery Plan (USFWS 1996a). Further, additional information would be collected during this life stage from daily observations via use of optical equipment outside the symbolic fencing and from close approaches to nests once per week to observe and record data. Staff observing bird location and behavior would have the flexibility to adjust closure buffers, as some individual piping plovers might require larger buffers than others (USFWS 1996a). Adverse impacts could result to piping plovers if adjustments to the buffer are not made in a timely manner or if nests are missed by observers. Except for the once per week nest examination, the buffers under alternative A would be expected to have long-term minor beneficial effects on the species as Seashore personnel and recreationists who respect resource closures would be kept a safe distance (at least 150 feet) from incubating adults and their nests.

Piping plovers would likely experience minor long-term benefits from the size of resource closures and observation intensity adjustments in response to chick behavior, which would be especially responsive to highly mobile broods. However, basing buffer size on chick behavior and adjusting these buffers as

necessary may also result in long-term moderate adverse impacts as frequent adjustment of the buffers may result in additional disturbance to piping plover, and buffers that are not adjusted in a timely manner could result in less than optimal protection for the species.

*Management of Wintering/Nonbreeding Populations.* As provided in the USFWS Amended Biological Opinion (USFWS 2007a), the NPS would monitor the presence, abundance, and behavior of migrating and wintering piping plovers from August 1 to March 31 of each year. During surveys, specific observations would be made regarding vehicle, pedestrian, and pet tracks in posted habitat; signs of predators, including species; specific management measures in place at the time of the observation; observed behaviors; and reactions to disturbance by pedestrians, pets, or vehicles. Data collected would result in minor to moderate beneficial impacts to plovers by providing Seashore managers with information on the types and locations of habitats used, seasonality of plover use of the Seashore, tidal influence on habitat use, and potential threats the habitat may contain. Surveying would increase knowledge on how and when piping plovers use the Seashore.

Under alternative A, suitable interior habitats at spits and at Cape Point would be closed year-round to all recreational users and would result in long-term minor beneficial impacts as this would prevent degradation or disturbance of habitat during key life stages of the species. Suitable habitats could include ephemeral ponds and moist flats at Cape Point, Hatteras Inlet Spit, North Ocracoke Spit, South Point (Ocracoke), and Bodie Island Spit. Actual locations of suitable foraging and resting habitat would change periodically due to natural processes such as tides and storms.

*Education/Public Outreach.* Under alternative A, the public would continue to receive information at the visitor centers about piping plovers and their ecology and the measures the Seashore is taking to protect the species. The public would also continue to be notified about closures that would limit ORV or pedestrian traffic, as well as when these closures reopen. Such public outreach is beneficial to the species as it educates the public to the specific needs of the species and alerts the public ahead of time to areas where they cannot go due to potential impacts to the species. Therefore, public outreach as part of species management would have long-term minor beneficial impacts.

*Overall Impacts of Resources Management Activities.* Overall, impacts to piping plover from resources management activities (primarily resulting from the effects of species surveying and field activities), would be long-term minor to moderate adverse. Although the management of the species would provide a certain level of benefit, the manner in which buffers would be established, along with the need to adjust buffers frequently would have an adverse impact on the species.

## **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps). This would have potential adverse impacts, since it would not guarantee that all piping plover foraging and nesting habitat would be protected as one contiguous unit. Alternative A would designate an approximately 100-foot-wide ORV corridor above the mean high tide line in breeding areas used within the past three years and would delineate the corridor with posts placed up to 100 feet above the high tide line. In areas of reduced corridor width (i.e., less than 100 feet), traffic signs would be posted indicating a 10 mph speed limit. The ORV corridor would be adjusted whenever possible to allow vehicle passage. If the ORV corridor is not feasible for safety reasons or insufficient area, an alternate ORV route would be identified, if possible. If no alternate route is available, Seashore staff would consider establishing a bypass route. Under alternative A, Seashore staff would allow observations to be responsive to individuality in bird behavior when determining

adequate size of closure zones. As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative A would allow for beach driving during the day outside of resource closures, with no restrictions on night driving. This level of access would result in long-term minor to moderate impacts expected to invertebrate populations (discussed later in this chapter), and therefore would reduce the food source to birds at the Seashore, resulting in long-term moderate impacts.

A temporary ORV bypass could be used under alternative A, but based on past management this would be expected to be an uncommon occurrence. Such bypasses, if established, would be far removed from piping plover territory as impacts to plovers from human disturbance are well documented in scientific literature and could result in direct mortality (Melvin et al. 1994; Patterson et al. 1991; Flemming et al. 1988; Lafferty 2001a) and behavioral changes (Lafferty 2001b), resulting in lower reproductive success (Zonick 2000; Burger 1991; Burger et al. 2004). These bypasses would not have an impact on piping plovers as they would be established in a manner that protects habitat and does not impede the brood from foraging.

Although buffers established under alternative A were designed to protect piping plover, as demonstrated in “Chapter 3: Affected Environment,” compliance with buffers, corridors, and closures is not absolute, which can result in people, vehicles, and pets in proximity to plovers and within plover habitat. Under alternative A, chances for non-compliance (either intentional or unintentional) would be increased as the buffers are variable based on chick behavior and could change frequently. Regular patrols of areas by law enforcement rangers, trained observers, and field biologists would help to deter closure violations. In addition, partnerships with local organizations would help to provide peer-based compliance with closures. However, under alternative A, there is an ORV corridor that provides a conduit or access to the Seashore and no closed ORV areas, so non-compliance would be more possible. A lack of compliance with resource protection closures, including non-compliance (intentional or unintentional) due to variable buffer sizes, could result in short-term moderate to major adverse impacts at a particular location, and would result in long-term moderate to major adverse impacts if there is a chronic lack of compliance.

*Night-Driving Restrictions.* Under alternative A, there would be no limitations on night driving. Plovers are known to be active at night (Staine and Burger 1994; Majka and Shaffer 2008), and plover chick response to vehicles can increase their vulnerability to ORVs (USFWS 1996a; 2009a). Allowing night driving under alternative A would result in long-term moderate adverse impacts as some impacts might occur during critical periods of reproduction and result in harassment, injury, or mortality to one or more individuals.

*Commercial Fishing.* Under alternative A, commercial fishing would be managed under special use permit. As part of this permit, terms and conditions would be placed on the permit holder, including a prohibition on entering resource closures. All other closures (safety and seasonal) would be accessible by commercial fishing permit holders. As resource closures would be off limits to commercial fishermen, there would be long-term negligible adverse impacts to piping plover from this use.

*Permitting/Carrying Capacity Requirements.* Under alternative A, there would be no permit or carrying capacity requirements placed on ORV users at the Seashore. A permit system would provide the Seashore with a method for dealing with non-compliance, as well as providing education to ORV users regarding piping plover habitat at the Seashore and its importance to the species. Lack of a permit system would have long-term moderate adverse impacts. Lack of a carrying capacity requirement is not expected to impact piping plover as ORVs would not be allowed in resource protection areas.

*Pet/Other Recreational Activity Restrictions.* Alternative A would prohibit camping, restrict beach fires to the hours of 6:00 a.m. to 12:00 a.m., and permit pets at the Seashore year-round, in accordance with 36 CFR 2.13. The prohibition of camping and restriction of beach fires would have long-term minor benefits to piping plover, as disturbance from these activities would be reduced. The presence of pets at the Seashore, including during breeding season, has the potential to adversely impact piping plover as some visitors to the Seashore do not observe the requirement for pets to be restrained in some manner, as observed by Seashore staff. If there is little or limited compliance with pet restrictions in the areas of closures, a negative effect on the plovers could result (USFWS 1996a; 2009a). This would be mitigated by the prohibition of pets from the landward side of the posts delineating the ORV corridor at the spits and Cape Point, the prohibition of pets within symbolic fencing around any bird closure area, and through education and outreach efforts via the Seashore field personnel and partnerships with local volunteers and organizations, but could still result in long-term minor to moderate adverse impacts, due to non-compliance.

*Overall Impacts from ORV and Other Recreational Use.* Overall, impacts to piping plover from ORV and other recreational use would be long-term moderate to major adverse as much of the Seashore would be open to recreational use, with an increased potential that piping plover could be impacted due to disturbance from ORV use and other recreational activities. Lack of a permit system for education and law enforcement, no night-driving restrictions, and lack of compliance with pet leash requirements would contribute substantially to these adverse impacts.

**Cumulative Impacts.** Past, present, and future actions discussed under the cumulative impact scenario could be expected to have a range of impacts on piping plover. Various dredging activities are occurring in the vicinity of the Seashore, such as the dredging of the federally authorized navigation channel at Oregon Inlet. These dredging activities fall under two categories, major dredging projects and maintenance activities. For the dredging of Oregon Inlet, major projects occur every four to five years, with sand being deposited in areas outside the Seashore, such as on Pea Island. Major dredging of Oregon Inlet is typically avoided during the breeding season; however, maintenance dredging does occur and could result in short-term minor adverse impacts due to disturbance. When major dredging projects do occur, it is common for piping plover foraging and nesting habitat at the southern end of Bodie Island Spit to slough off into the channel for a number of months after the dredging operation, which could cause minor to moderate adverse effects to piping plover.

Storms and other weather events during the piping plover breeding season (March–August) can result (depending upon storm intensity) in temporary displacement of and disturbance to nesting birds or even in the washing away or flooding of nests and eggs (Haig and Oring 1988; Houghton 2005; Cohen et al. in prep; Muiznieks pers. comm. 2009). In addition to the timing of summer storms, storm severity is also an important variable. Powerful storms can surge and overwash large areas of piping plover habitat including even up to the toe of the dune and beyond and result in loss of scrapes, nests, eggs, chicks, and even breeding adults. Conversely, winter, late fall, and early spring storms are capable of having benefits to piping plovers by depositing new materials and creating overwash areas and hence new nesting and foraging habitat for piping plovers or negative impacts by eroding and removing otherwise suitable habitat. Hence, the impacts of storms and piping plovers depend on the timing and severity of storm events and whether they result in piping plover habitat creation or destruction (Cohen et al. 2008).

Berm construction under the Civilian Conservation Corps (CCC) provided dune stabilization that changed the habitat available to piping plover at the Seashore. These stabilization efforts provided for the establishment of NC-12 and subsequent development, removing this area from potential habitat. These past actions resulted in long-term moderate adverse impacts to all shorebird species at the Seashore. Similarly, continual maintenance of NC-12 and berm maintenance would have a short-term, minor to moderate, adverse impact to the extent that it takes place during piping plover breeding season and if

maintenance results in encroachment on any nest buffers or resource closures, these impacts would be greater. If encroachment occurs, it could result in habitat loss that would have short-term, minor to moderate, adverse impacts to piping plover nesting and foraging. The degree to which this activity is negative is a function of the timing and location of the activity itself relative to piping plover nesting and the degree to which the activity results in the creation or stabilization of any high-quality piping plover habitat.

Hurricanes can also affect the piping plover because of their impact on staff resources. Storm recovery that pulls staff from resources management (including species monitoring or law enforcement) duties during piping plover breeding season would have adverse impacts. Conversely, hurricane recovery that takes place outside of the breeding season would have no direct effect on piping plover and could enhance piping plover habitat.

Commercial fish harvesting would have negligible impact on piping plovers because plovers do not feed on any commercially important fish. However, plovers do feed on some of the same prey items of fish species that may be harvested and, as such, harvest of fish may mean greater prey encounters for plovers. In this case, the impact of commercial fishing could result in long-term minor to moderate increases in prey availability that would have a beneficial impact on piping plover foraging.

Several of the local and NPS past, current, and future planning efforts can also affect locally sensitive bird species. For example, new development that has occurred in Dare and Hyde counties under their land use plans had increased the residential housing and related services in the areas within the Seashore. This land development within the Seashore, as well as throughout the counties, has reduced the amount of habitat available to species, resulting in adverse impacts. In addition to past actions, new development could result from the implementation of the County Land Use Development Plans for Dare and Hyde counties, including expected revisions to the Dare County Plan. The details of any plan revisions are not certain and the potential for impacts on piping plovers is indeterminate at this time. If increased development within the Seashore's boundaries would result from the implementation of these plans and increase recreational use of the beaches, adverse impacts to plovers could occur.

The education component of the Seashore's Long-Range Interpretive Plan would provide long-term minor to moderate benefits as it would help to educate visitors about the conservation needs of the birds that inhabit the Seashore and the conservation measures enacted to help protect them.

Current predator control and the Predator Management Plan would provide long-term major benefits by helping to control mammalian predators, such as fox and others, which prey upon plover adults, eggs, and young. Continuing to remove fox (both red and gray fox), raccoons, cats, and other predators from the Seashore and continuing to use predator exclosures would be beneficial to the piping plover. However, predator management actions such as the placement and checking of predator exclosures and traps would bring people, essential vehicles, and equipment into direct contact with piping plovers and their habitat because actions and some essential vehicle traffic would occur inside the established buffer. This could cause short-term minor adverse impacts. Predator trapping might result in short-term minor disturbance to nests and young, or result in loss of nests or hatchlings if trappers are not cognizant of nest locations. However, overall predator management actions would be highly beneficial.

The Cape Lookout Interim Protected Species Management Plan/EA provides long-term moderate to major beneficial impacts to piping plover at the neighboring Seashore through the management policies that it employs. However, even with those management measures in place, adverse impacts would still occur to the species as recreational uses, including night driving, would still occur, but would be mitigated to an extent by the management measures being employed. The measures that are in place now under the interim plan increase protections, in part, by providing earlier prenesting closures and allowing



for buffers for protected species to expand if needed, as noted in the Cape Lookout Interim Protected Species Management Plan/EA. The outcome of the Cape Lookout National Seashore ORV Management Plan/EIS would also have direct long-term impacts on bird populations within the Seashore, as well as within the state of North Carolina. Specifically, it would have an impact on the region's goal of achieving compliance with the Piping Plover Recovery Plan (USFWS 1996a). However, whether the impact of the ORV plan would be moderate to major beneficial or adverse to piping plovers would depend upon the management decisions that are made and ultimately implemented.

The replacement of the Herbert C. Bonner Bridge would occur in the vicinity of the Seashore. An EIS and Biological Opinion for this project found, "the proposed replacement of the Bonner Bridge... as proposed, is not likely to jeopardize the continued existence of these species [including piping plover], and is not likely to destroy or adversely modify proposed critical wintering habitat for the piping plover." Given these findings, this project would be expected to result in short-term negligible adverse impacts to piping plovers if minimal disturbance from construction noise and lighting to courting, nesting, and foraging plovers would potentially be experienced.

The overall cumulative impacts of these past, current, and future actions would be long-term negligible to minor, depending on the intensity and duration of unpredictable factors such as storm events, with long-term moderate beneficial impacts from actions such as increased interpretive programs as part of the long-range interpretive plan and predator management within the Seashore. Many of these actions do not directly impact piping plover habitat in the area, as most of this habitat is located within the Seashore and is impacted by NPS management actions more than any of the aforementioned past, present, and future actions. These impacts, combined with the impacts of alternative A, would be long-term moderate to major adverse, as actions within the Seashore would act as a driver for overall cumulative impacts.

**Conclusion.** Overall, impacts to piping plover from resources management activities would be long-term minor to moderate adverse. Although the management of the species would provide a certain level of benefit, the manner in which buffers would be established, along with the need to adjust buffers frequently, would have an adverse impact on the species. Overall, impacts to piping plover from ORV and other recreational use would be long-term moderate to major adverse as much of the Seashore would be open to recreational use, with an increased potential that piping plover could be directly impacted by disturbance from recreational activities. Lack of a permit system for education and law enforcement purposes, no night-driving restrictions, and lack of compliance with pet leash requirements would contribute substantially to these adverse impacts. The impacts to piping plover under alternative A (and all other alternatives) are shown in table 52.

Cumulative impacts under alternative A would be long-term moderate to major adverse.

**Determination of Effect.** Under the ESA, the actions taken under alternative A may affect / are likely to adversely affect piping plover due to the minor adverse effects from monitoring and surveying and from moderate to major adverse effects of ORV and other recreational use, including the potential for an increase in the presence of pets and predators that often accompany recreation/ORV use. ORV and other recreational use could result in short- and long-term moderate to major adverse impacts, especially with the high level of non-compliance that could result from buffers that adjust often and unpredictably. Further, the lack of night-driving restrictions could contribute to long-term moderate adverse impacts to plovers under alternative A as they are known to forage on the shoreline during all hours. These impacts would result in a finding of may affect/ are likely to adversely affect piping plovers under the ESA because the action would result in direct or indirect impacts to the species that are not discountable, insignificant, or beneficial. And while there may be beneficial impacts from species monitoring and surveying, and management of recreation, the actions under alternative A would also likely result in adverse effects.

Under the ESA, the actions taken under alternative A may affect / are likely to adversely affect designated critical habitat for wintering piping plover due to the level of recreational access provided within these critical habitat areas and the impact of that access on the value of the habitat. There would be long-term, minor beneficial effects from closing suitable interior habitats at spits and at Cape Point to all recreational users, as these interior habitats are considered one of the PCEs that comprise the designated critical habitat for wintering piping plover. However, year-round recreational use would continue to occur on the majority of the intertidal sand beaches, spits, and backshore, which are also PCEs of designated critical habitat. The level of recreational use (through the designation of the majority of the Seashore an ORV route or area year-round) could result in vehicular and pedestrian disturbance to foraging plovers and a reduction of invertebrate prey due to disturbance or destruction of the wrack from vehicles driving in and around the wrack. Although this alternative would not result in a direct loss of critical habitat, the impacts of recreational use would result in a reduction in the value of the designated critical habitat for wintering plovers.

Implementation of alternative A would result in a finding of may affect / is likely to adversely affect designated critical habitat for wintering piping plover under the ESA because the action would result in direct or indirect impacts to the critical habitat for the species that are not discountable, insignificant, or beneficial. And while there would be beneficial impacts from the protection of suitable interior habitat, there would be adverse effects on the value of the primary constituent elements of critical habitat, due to the majority of spits, intertidal sand beaches, and ocean backshore being open to recreational use during wintering.

### **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

#### **Resources Management Activities**

*Establishment of Prenesting Closures.* Under alternative B, piping plovers would likely benefit from the increased surveying and resultant closures in the prenesting phase. Specifically, in February or early March of each year, Seashore staff would conduct an annual assessment of piping plover breeding habitat and implement prenesting closures in recent breeding areas by posting symbolic fencing by March 15. The prenesting areas would not be reduced to accommodate an ORV corridor, including in the event of naturally occurring erosion or accretion of the area, except in emergency situations. The closures would remain in place until the later of July 15 or two weeks after the last piping plover, tern, black skimmer, American oystercatcher, or Wilson's plover chick within the area has fledged, as determined by two consecutive monitoring events. The establishment of these closures earlier in the season would ensure those piping plovers arriving early are afforded protective buffers, and would result in long-term moderate benefits for the species.

*Surveying and Monitoring.* Under alternative B, surveying would follow guidelines in the 1996 USFWS Piping Plover Recovery Plan, as well as survey procedures identified in the Interim Strategy, as modified by the consent decree. Seashore staff would survey piping plover habitat at Cape Point, South Beach, Hatteras Inlet Spit, North Ocracoke Spit, and South Point at least once every two days from March 15 to April 15, and daily from April 16 to July 15, to determine if any birds are exhibiting prenesting and/or breeding behavior. The Seashore would monitor Bodie Island Spit at least daily from March 15 to July 15. Potential new habitat, if any, at other locations would be surveyed two times per week.

By surveying the historic areas and new potential habitat beginning March 15, the likelihood that any piping plovers establishing territories in these areas would be detected increases. Observations of piping plover in these areas would continue until at least July 15, which would positively affect plovers that might not establish nests until later in the season. Prenesting areas would be left in place until July 15 or

two weeks after all chicks of any species in the area have fledged, whichever occurs later. Other buffers for piping plovers (e.g., buffers installed based on observed breeding or foraging behavior) would be removed two weeks after the last observed activity, or after chicks have fledged.

Surveying would bring people and/or essential vehicles into direct short-term contact with piping plovers and their habitat, and these activities themselves are a known risk factor, especially during the more sensitive life stages of early prenesting and territory establishment. However, many precautions would be taken by staff to minimize impacts, for example, using scopes to watch the birds from a distance and remaining outside closures to the extent possible, and the protection that results from surveying would result in long-term moderate beneficial impacts, as any changes in species behavior would be detected and appropriate management measures implemented.

*Buffer/Closure Establishment.* Under alternative B, if breeding behavior, including but not limited to territorial behavior, courtship, mating, confirmed scrapes, or other nest building activity, or breeding adult piping plover foraging occurs outside of an established closure, Seashore staff would establish a 50-meter (164-foot) buffer around the observed activity. If disturbance from ORVs and/or pedestrians occurs within the given buffer distance, the buffer zone would be expanded in 50-meter (164-foot) increments until no disturbance occurs. Behaviors indicating disturbance would include defensive displays, alarm calls, flushing, leaving a nest or feeding area, or diving and mobbing pedestrians, dogs, or vehicles. Deliberate acts of vandalism or acts that result in disturbance to bird behavior would result in an automatic expansion of prenesting areas or buffers in increments of 50 meters, 100 meters, and 500 meters.

If buffers are expanded for any of the reasons stated above, the ORV corridor would not be adjusted to accommodate ORV use. For observed piping plover prenesting and/or breeding behavior, NPS would establish the prescribed buffers as quickly as possible, but always within eight daylight hours. Upon discovery of an active nest or chicks that are outside an existing closure, protective measures would be taken immediately to close and establish the buffers described above. Symbolic fencing with the applicable buffer distances stated above would be installed as soon as Seashore staff can reasonably be mobilized to install the fencing, but always within six daylight hours.

Under alternative B, all broods would be observed in the mornings and late afternoons; however, buffer distances for piping plover chicks would be substantially larger for the first two weeks after hatching and may sometimes stay in effect until fledging. The larger buffers would be longer lasting under Alternative B, and would result in moderate benefits to piping plover chicks. The size of buffers for piping plover chicks could be reduced after two weeks, but special monitoring provisions would apply, as described in the next section.

Alternative B provides for protection of piping plover nests through the use of buffer distances recommended under the Piping Plover Recovery Plan (USFWS 1996a). Further, additional information would be collected during this life stage from daily observations via use of optical equipment from an adequate distance to prevent disturbance and from close approaches to nests once per week to visually inspect the nest and check on the enclosure. Staff observing bird location and behavior would implement the prescribed buffers as a minimum, but would have the flexibility to increase the size of closures, as some individual piping plovers may require larger buffers than others (USFWS 1996a; 2009a). Except for the potential disturbance caused by the once per week nest examination, the larger and more responsive buffers under alternative B would be expected to have long-term minor to moderate beneficial effects on the species as Seashore personnel and recreationists who respect resource closures would be kept a safe distance from incubating adults and their nests.

*Management of Wintering/Nonbreeding Populations.* As provided in the USFWS Amended Biological Opinion (USFWS 2007a) and described in alternative A, Seashore staff would monitor the presence, abundance, and behavior of migrating and wintering piping plovers from August 1 to March 31 of each year following the SECN survey protocol, and close suitable habitat as described under alternative A. These closures would provide beneficial impacts to species during this life stage, as described under alternative A, and the addition of a surveying plan would provide Seashore managers with information on the types and locations of habitats used, seasonality of plover use of the Seashore, tidal influence on habitat use, and potential threats the habitat may contain. Surveying would increase knowledge on how and when piping plovers use the Seashore and enable adaptive management initiatives. These actions would result in long-term moderate beneficial impacts.

*Education and Outreach.* Under alternative B and as described under alternative A, the public would continue to receive information at the visitor centers about piping plovers and their ecology and the measures the Seashore is taking to protect the species. In addition, the Seashore would provide public education by posting protected species information at all access points. As with alternative A, public outreach as part of species management would have long-term minor beneficial impacts, with the expanded outreach having greater impacts than alternative A.

*Overall Impacts of Resources Management Activities.* Overall, impacts under alternative B from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term minor to moderate beneficial. Buffers for piping plover would be larger and provide more protection compared to buffers under alternative A. Minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures early in the breeding season, monitoring activities, education and outreach efforts, and establishment of prescribed buffers would provide long-term minor to moderate beneficial impacts to the species.

### **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under alternative B, management of ORV and pedestrian access at the Seashore would be a continuation of management under alternative A, except where modified by specific species protection measures from the April 30, 2008, consent decree. These management modifications include installation of prenesting areas by March 15 (two weeks earlier than under alternative A), increasing the size of some of the buffers provided to various species at the Seashore, as well as restrictions imposed related to night driving. Specifically, ORV corridors under alternative B are the same as alternative A, except that from March 15 to November 30 at all locations not in front of the villages that are open to ORV use, NPS would provide an ORV-free zone in the ocean backshore at least 10 meters wide, wherever there is sufficient beach width to allow an ORV corridor of at least 20 meters above the mean high tide line. As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative B would allow for beach driving in the wrack during the day in areas of the Seashore open to ORV use (not within resource closures), but would maintain nighttime closures reducing disturbance in this area at night for a portion of the year. Overall impacts to invertebrates would be long-term and minor (as discussed later in this chapter), and would reduce the food source available to birds at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

Alternative B would designate the all the ocean and inlet shoreline and the existing soundside routes as ORV routes or areas year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps), and would provide for closures of piping plover prenesting areas, as well as closures based on observations of breeding behavior, foraging, and chick movement. Alternative B would designate an

approximately 100-foot (30-meter) wide ORV corridor above the mean high tide line outside of prenesting areas in breeding areas used within the past three years. The speed limit on Seashore beaches would be 15 mph from May 15 to September 15, unless otherwise posted; and 25 mph from September 16 to May 15, unless otherwise posted. Under alternative B and as described in the previous section, staff would monitor piping plover habitat for signs of breeding behavior and human disturbance, ensure the timely installation of resource closures, and ensure adequacy of prescribed buffers. Resource closures, including prenesting areas, would not be adjusted to accommodate ORV use.

Impacts to plovers from human disturbance are well documented in scientific literature and could result in direct mortality (Melvin et al. 1994; Patterson et al. 1991; Flemming et al. 1988; Lafferty 2001b; Page et al. 2009) and behavioral changes resulting in lower reproductive success (Zonick 2000; Burger 1991; Burger et al. 2004). Alternative B is designed to redirect ORV routes and corridors to areas that would not impact the brood, and any ORV route would be closed if it were within 1,000 meters (3,281 feet) of a brood. Trained Seashore staff in the area would be able to monitor bird behavior, as well as observe acts of disturbance. Through contact on the beach, websites, posted information at access points, and information available at the visitor centers, the public would be informed of alternate routes and ways to reduce their effect on the plovers (e.g., removing trash, reduced speed limit, etc.).

If Seashore staff observes disturbance of piping plovers from ORV or pedestrians, the buffer zone would be expanded in 50 meter increments until no disturbance occurs. When piping plover chicks are present, an ORV closure area would extend for 1,000 meters (3,281 feet) on each side of a line drawn through the nest site and perpendicular to the long axis of the beach for the first two weeks after hatching. The resulting ORV closure would extend from the oceanside low water line to the soundside low water line or the dune line if no soundside habitat exists, and ORV use would be prohibited in these areas. Under alternative B, a pedestrian buffer of 300 meters would be established when chicks are present.

ORVs may be allowed to pass through portions of the protected area, where the protected area is considered by Seashore staff to be inaccessible to piping plover chicks because of steep topography, dense vegetation, or other naturally occurring obstacles. All of the ocean beach at Cape Point, South Beach, and North Ocracoke Spit and the entire soundside and ocean beach at Bodie Island Spit and South Point would be considered accessible to piping plover chicks. Within the 1,000-meter piping plover unfledged chick buffer at Hatteras Inlet Spit, all of the ocean beach and that part of the soundside beach at the overwash fans and from the inlet east to a point 200 meters east of the point where the Spur Road from the Pole Road meets the sound would be considered accessible to piping plover chicks in these areas.

Under alternative B, during daylight hours only, Seashore staff may allow ORV access within the 1,000-meter unfledged piping plover chick buffer two weeks after the chicks have hatched. When ORV access is allowed, a buffer distance of 300 meters between piping plover chicks and ORVs would be maintained at all times. The chicks would be monitored from dawn to dusk by Seashore staff with at least one full season of experience monitoring piping plovers or snowy plovers. The modified access area would not be open to ORVs each morning until the location of the brood has been determined by a qualified monitor and an adequate buffer has been assured. If a piping plover adult or chick moves within 200 meters of ORVs or an ORV access corridor, Seashore staff on site would immediately take protective measures to close the access corridor and re-establish the 1,000-meter buffer, including contacting law enforcement to begin evacuation of the area; no additional nonessential ORVs would be allowed within the 1,000-meter unfledged piping plover chick buffer. NPS would retain the discretion to re-establish the 1,000-meter buffer at any time, if it deems the full closure to be necessary. Locations of the described buffers would be adjusted to accommodate chick movement.

Given the increased level of monitoring at the key piping plover breeding areas and the significantly larger buffers when piping plover chicks are present, alternative B would offer more protection from recreational use than alternative A. However, due to all the ocean and inlet shoreline and the existing soundside routes of the Seashore being designated as an ORV route, the potential for impacts to piping plover from recreational use would still exist, resulting in long-term moderate adverse impacts.

*Night-Driving Restrictions.* Under alternative B, night driving of all recreational ORV traffic would be prohibited from 10:00 p.m. until 6:00 a.m. from May 1 to September 15. However, from September 16 to November 15, night-driving permits would be available for authorized nonessential driving between the hours of 10:00 p.m. and 6:00 a.m. The permit has an educational component, and the permit would contain restrictions on light use during the September 16 to November 15 permitted night-driving period. Furthermore, NPS retains the discretion to limit night driving to certain areas or routes, based on resource protection considerations. Because plovers are known to be active at night (Staine and Burger 1994; Majka and Shaffer 2008), and plover chick and fledgling response to vehicles can increase their vulnerability to ORVs (USFWS 1996a, 2009a), seasonal restrictions on night driving under alternative B would provide long-term minor to moderate benefits to piping plovers; however, alternative B could still result in long-term minor adverse impacts during times when night driving is permitted (until 10:00 p.m. May 1 – September 15 and all nighttime hours from September 16 through April 30).

*Commercial Fishing.* Commercial fishing restrictions under alternative B would be the same as those under alternative A, with those holding commercial fishing permits restricted from night driving from 10:00 p.m. until 5:00 a.m. (as opposed to 6:00 a.m. for recreational users) from May 1 to September 15. As with recreational users, commercial fishing permit holders can get a permit for night driving from September 16 to November 15. Presence of commercial fishing operations would have a long-term negligible adverse impact to piping plovers, with long-term minor to moderate beneficial impacts occurring due to night-driving restrictions.

*Permit/Carrying Capacity Requirements.* As described above under the night-driving restrictions and education/outreach sections, alternative B would require a night-driving permit from September 16 to November 15. As stated in these sections, the night-driving permit applies after the piping plover breeding season is over and would have no impact on the species protection offered from these elements. There would be no impacts related to carrying capacity, as it would not be a requirement under alternative B.

*Pet/Other Recreational Activity Restrictions.* Alternative B would have the same restrictions on camping, beach fires, and pets as alternative A, although no ORV use would be allowed from 10:00 p.m. to 6:00 a.m. between May 1 and September 15. As with alternative A, there would be the potential for non-compliance with pet regulations, although the presence of law enforcement and other Seashore staff would help ensure compliance with the pet leash requirement. Education and outreach efforts of Seashore staff would help minimize adverse impacts and would result in long-term minor to moderate adverse impacts, due to the potential for non-compliance.

*Overall Impacts from ORV and Other Recreational Use.* Overall, impacts to piping plover from ORV and other recreational use would be long-term moderate adverse. While some buffers would be increased in an attempt to separate recreational uses from piping plover, access up to these buffers would be provided at all Seashore beaches and could result in intentional or unintentional non-compliance (i.e., when signs are washed out), which would impact the species. Adverse impacts would also occur due to limited prenesting protection outside of the points and spits, and the potential for protective buffers to be reduced during critical life stages of plover chicks.

**Cumulative Impacts.** The past, present, and future actions discussed under the cumulative impact scenario for alternative A would be expected to be the same under alternative B. The overall cumulative impacts of these past, current, and future actions, would be long-term negligible to minor, depending on the intensity and duration of unpredictable factors such as storm events, with long-term moderate beneficial impacts from actions such as increased interpretive programs as part of the long-range interpretive plan and predator management within the Seashore. Many of these actions do not directly impact piping plover habitat in the area, as most of this habitat is located within the Seashore and is impacted by NPS management actions more than any of the aforementioned past, present, and future actions. These impacts, combined with the impacts of alternative B, would be long-term moderate adverse, as actions within the Seashore would act as a driver for overall cumulative impacts.

**Conclusion.** Overall impacts under alternative B from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term minor to moderate beneficial. Buffers for piping plover would be larger, and would provide more protection compared to those under alternative A, resulting in less of an adverse impact. The benefits from the prenesting closures, along with the benefits from increased surveying and monitoring efforts, would result in long-term minor to moderate beneficial impacts to piping plover. Minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures early in the breeding season, monitoring activities, education and outreach efforts, and establishment of prescribed buffers would provide long-term minor to moderate beneficial impacts to the species. Overall, impacts from alternative B to piping plover from ORV and other recreational use would be long-term moderate adverse. While some buffers would be increased and more constant to keep recreational uses separated from the species, access up to these buffers would be provided throughout the Seashore and could result in intentional or unintentional non-compliance, which would adversely impact the species. Adverse impacts would also occur due to the substantial amount of beach mileage open to ORV use year-round, limited prenesting protection outside of the points and spits, and the potential for protective buffers to be reduced during critical life stages of plover chicks.

Cumulative impacts to piping plover under alternative B would be long-term moderate adverse.

**Determination of Effect.** Under the ESA the actions taken under alternative B may affect / are likely to adversely affect piping plover due to the minor adverse effects from monitoring and surveying and from the moderately adverse impacts from ORV and other recreational use, especially with the high level of non-compliance that could result from buffers that adjust often and unpredictably. Further, the partial night-driving restrictions could contribute to long-term minor to moderate benefits to piping plovers, but could still result in long-term minor adverse impacts during the time when night driving is permitted (until 10:00 p.m. May 1 – September 15 during the piping plover breeding season) under alternative B as plovers are known to forage the shoreline during all hours (Cohen et al. 2008). These impacts would result in a finding of may affect/ are likely to adversely affect piping plovers under the ESA because the action would result in direct or indirect impacts to the species that are not discountable, insignificant, or beneficial. And while there may be beneficial impacts from monitoring, surveying and management of recreation, the actions under alternative B would also likely result in minor adverse impacts from human presence during monitoring activities.

Under the ESA, the actions taken under alternative B may affect / are likely to adversely affect designated critical habitat for wintering piping plover due to the level of recreational access provided within these critical habitat areas and the impact of that access on the value of the habitat. There would be long-term, minor beneficial effects from closing suitable interior habitats at spits and at Cape Point to all recreational users, as these interior habitats are considered one of the PCEs that comprise the designated critical habitat for wintering piping plover. However, year-round recreational use would continue to occur on the majority of the intertidal sand beaches and spits, which are also PCEs of designated critical habitat. The

level of recreational use (through the designation of the majority of the Seashore an ORV route or area year-round) could result in vehicular and pedestrian disturbance to foraging plovers and a reduction of invertebrate prey due to disturbance or destruction of the wrack from vehicles driving in and around the wrack. There would be some benefit to the critical habitat from the implementation of seasonal night-driving restrictions although these restrictions would only apply between May 1 and November 15, which would not cover the majority of time when the wintering population of piping plover is present at the Seashore. Similarly, the protection of ocean backshore (also a PCE) under alternative B would not be required during the peak wintering period for piping plover and would not be implemented in areas of narrow beach width. Although this alternative would not result in a direct loss of critical habitat, the impacts of recreational use would result in a reduction in the value of the designated critical habitat for wintering plovers.

Implementation of alternative B would result in a finding of may affect / is likely to adversely affect designated critical habitat for wintering piping plover under the ESA because the action would result in direct or indirect impacts to the critical habitat for the species that are not discountable, insignificant, or beneficial. And while there would be beneficial impacts from the protection of suitable interior habitat, there would be adverse effects on the value of the primary constituent elements of critical habitat, due to the majority of spits, intertidal sand beaches, and ocean backshore being open to recreational use during wintering.

### **Impacts of Alternative C: Seasonal Management**

#### **Resources Management Activities**

*Establishment of Prenesting Closures.* Prenesting surveying activities for piping plovers under alternative C would include the survey and evaluation of all potential breeding habitats by Seashore staff by March 1 of each year with piping plover prenesting closures recommendations based on that evaluation.

Alternative C would establish SMAs, which are defined as areas of suitable habitat that have had concentrated and recurring use by multiple individuals and/or multiple species of protected shorebirds during the breeding or nonbreeding season (details are provided in “Table 10, Species Management Strategies for Action Alternatives” in chapter 2). Under alternative C, all designated breeding SMAs would be posted as prenesting closures using symbolic fencing by March 15 each year. The SMAs would be designated for two different MLs, ML1 or ML2. Under ML1, ORV or pedestrian access would not be allowed while prenesting closures are in effect. Under ML2, once prenesting closures are implemented, a narrow pedestrian access corridor would be established. Under alternative C, Bodie Island Spit, Cape Point, and South Point would be established as SMAs and managed under ML2. The remaining SMAs (and areas outside of SMAs) would be managed under ML1 measures. The prenesting closures, as well as the establishment of SMAs, would have long-term moderate beneficial impacts as closures would be in place to protect migrant piping plovers and birds establishing territories early in the breeding season.

*Surveying and Monitoring.* From March 15 through July 15, areas within any prenesting closures would be monitored three times per week and areas outside of any prenesting closures would be monitored two times per week, which would be increased to three times per week if birds are detected during monitoring. Seashore staff would look for piping plover nests by conducting “walk throughs” every three days. Once piping plover nests are found they would be observed daily from a distance that does not disturb the birds, based on professional judgment. Nests would be approached once per week to visually inspect the nest and check on the exclosure. Alternative C would include surveying all suitable breeding habitat three times a week to detect adults with an associated scrape area or nest foraging outside of an existing closure, which would allow for potential closures for foraging in the areas near known breeding sites. If breeding adult piping plover are observed foraging outside of an existing closure, the site would be surveyed daily to look for signs of courtship and/or nesting building. If piping plover are observed



foraging outside of a closure on two consecutive surveys, a buffer would be either established or expanded using flexible increments based on observed bird behavior to include the entire length of the foraging site. These foraging area closures would be removed if no piping plover foraging is observed for a two-week period during the breeding season, or when any associated breeding activity has concluded. Under alternative C, piping plover nests and/or chicks would be surveyed and those with broods under ML1 management would be observed at least once a day, and broods under ML2 management would be observed daily for at least one hour in the morning and one hour in the afternoon. Monitor(s) would be present during all periods of ORV or pedestrian access. Observations under ML1 and ML2 management would end once chicks have fledged (chicks are considered fledged at 35 days of age or are observed in sustained flight of at least 49 feet [15 meters]). Surveying and monitoring as described above would increase knowledge on how and when piping plover use the Seashore and thereby enabling the NPS to implement adaptive management initiatives, providing a beneficial impact. However, as with all the alternatives, surveying and monitoring would bring people and/or essential vehicles into direct short-term contact with piping plovers and their habitat, and these activities themselves are known risk factors, especially during the more sensitive life stages of early prenesting and territory establishment. Under alternative C, many precautions would be taken by staff to minimize impacts from monitoring such as using high powered scopes and thereby reducing impacts from intrusion by monitors. The impact of the monitoring when these precautions are taken into consideration would be minor. Although there would be adverse impacts such as disturbance to piping plover at various life stages, the protection that would result from surveying would result in long-term moderate beneficial impacts, as these actions would improve the sustainability of the species at the Seashore.

*Buffer/Closure Establishment.* Under alternative C, during the breeding season, ML1 measures would be implemented at South Beach, Hatteras Inlet Spit, and North Ocracoke Spit, and ML2 measures would be implemented at Bodie Island Spit, Cape Point, and South Point. Both ML1 and ML2 would provide 75-meter buffers around any piping plover nests, nest scrapes, and around any piping plover exhibiting breeding behavior. ML2 differs from ML1 in that it establishes a narrow pedestrian access corridor. Upon the first observation of breeding activity, the standard buffers would apply, which depending upon the circumstance could close the access corridor. NPS would retain the discretion to expand nest buffers under ML1 and ML2, depending on staffing and bird behavior. In unprotected areas, a buffer would be established immediately when a nest with egg(s) is found. Prior to hatching, vehicles may pass by such areas within designated ORV access corridors that have been established along the outside edge of nesting habitat, provided that buffers adequate to prevent human disturbance are maintained. When nests or chicks occur in the immediate vicinity of paved roads, parking areas, campgrounds, buildings, and other facilities, NPS would retain the discretion to provide resource protection to the maximum extent possible while still allowing those facilities to remain operational. NPS would not reduce buffers to accommodate ORV ramp access under alternative C. Under alternative C, buffers would remain in place for two weeks after a nest is lost to determine if birds would re-nest. Outside of prenesting areas, piping plover buffers would be removed if no breeding activity is seen in the area for two weeks, or two weeks after all chicks have fledged, whichever comes later. For unfledged piping plover chicks, ML1 would provide a 1,000-meter buffer for ORVs and pedestrians, and ML2 would provide a 1,000-meter buffer for ORVs and a 300-meter pedestrian buffer. This buffer would move with the chicks and would extend from the oceanside low water line to the soundside low water line or to the farthest extent of dune habitat if no soundside intertidal habitat exists.

Piping plovers would likely experience long-term moderate benefits from the size of the resource closures under ML1 and ML2 and the fact that buffers would adjust in response to chick mobility, as these actions would be expected to improve the sustainability of the species at the Seashore.

Under alternative C, broods under ML1 would be observed once per day and broods under ML2 would be observed for a minimum of one hour in the morning and one hour in the afternoon, whereas under

alternative A broods would be observed continually during daylight hours during the first week and thereafter if the buffer size is 600 meters or less, or daily if the buffer is increased. Under alternative B, a 1,000-meter buffer would be established for the first two weeks after hatching and the brood would be observed for a minimum of one hour in the morning and one hour in the afternoon. If the buffer is reduced to 300 meters after the first two weeks then the brood would be monitored from dawn to dusk until fledging.

In addition to the establishment of prenesting areas, alternative C provides for protection of piping plover nests outside of the SMAs through the use of buffer distances recommended, in part, under the Piping Plover Recovery Plan (USFWS 1996a). Deviation from these recommendations and establishment of a 75-meter buffer around known nests is based on studies that show a greater susceptibility to disturbance in similar environments and Seashore staff observation (see “Elements Common to All Action Alternatives,” in chapter 2). Although the species would be offered protection by these buffers, short-term adverse impacts could result to piping plover if adjustments to a buffer are not made in a timely manner or if nests or acts of deliberate disturbance are missed by NPS staff outside of the SMAs. Therefore, the buffers under alternative C would be expected to have long-term moderate beneficial effects on the species because the benefits would outweigh the adverse effects.

Management conducted during prenesting and nesting life stages would bring people and/or essential vehicles into direct long-term contact with piping plover and their habitat, and these activities themselves are known risk factors, especially during the sensitive, early life stages of prenesting and territory establishment. However, management also results in providing appropriate protection to piping plover during these early stages of the annual nesting cycle that would otherwise expose piping plover to disturbances from a variety of activities that might do them far more harm and/or result in nest abandonment or abandonment of the area by the individual or pair. Hence, management provides long-term minor to moderate beneficial impacts to piping plover.

A systematic review of data, annual reports, and other information would be conducted by Seashore staff every 5 years, after a major hurricane, or if necessitated by a significant change in protected species status (e.g., listing or de-listing), in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives. Periodic review could result in changes to the management actions in order to improve effectiveness. When desired future conditions for resources are met or exceeded, periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remain stable. Where progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may provide for additional management including appropriate restrictions on recreational use. Periodic review could result in changes to the management actions in order to improve effectiveness, which would have long-term moderate beneficial impacts.

*Management of Wintering/Nonbreeding Populations.* During the nonbreeding season, Seashore staff would monitor presence, abundance, and behavior of migrating and wintering shorebirds in all SMAs from July through May using the SECN protocol. These surveys would result in moderate beneficial impacts to plovers by providing Seashore managers with information on the types and location of habitats used by nonbreeding piping plovers, seasonality of plover use of the Seashore, tidal influences on habitat use, and potential threats the habitat may contain. Surveying would increase knowledge on how and when piping plovers use the Seashore and enable adaptive management initiatives.

During the nonbreeding season under alternative C, SMAs would be established at the points and spits based on an annual habitat assessment. In addition, year-round VFAs along the ocean shoreline outside of the villages would be managed as Nonbreeding Shorebird SMAs with recreational activity restrictions such that if staff determines that any single recreational activity or collection of activities is negatively

impacting nonbreeding piping plover use of a specific location, NPS may implement additional restrictions on activities. Regarding timing, under alternative C, all SMAs are closed to ORVs from March 15 through October 14, and a pedestrian access corridor is established at Bodie Island Spit, Cape Point, and South Point on March 15 (subject to ML2 actions when breeding activity is observed).

As with management that takes place during prenesting incubation and brood rearing life stages, post-breeding management conducted during the nonbreeding life stages would bring people and/or essential vehicles into direct long-term contact with piping plover and their habitat, and these activities themselves are known to result in disturbance to foraging and resting plovers. However, management also results in providing some protection to piping plover during nonbreeding life history stages that might otherwise expose piping plover to far more disturbances. Although migrant plover can and do utilize the entire shoreline, a large portion of the preferred stopover sites (i.e., Bodie Island Spit and South Point) remain closed to ORVs throughout the period when migrants are observed in the spring and fall and throughout the winter for the small population that overwinters at the Seashore. Hence, nonbreeding management protocols under alternative C provide long-term moderate beneficial impacts to nonbreeding piping plover.

*Education and Outreach.* Under alternative C, education and outreach activities would be the same as those described under alternative A, with the addition of educational requirements as part of a permit program. This additional education would result in long-term minor to moderate benefits to species as the public is provided with more information regarding this issue.

*Overall Impacts of Resources Management Activities.* Overall impacts under alternative C from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate beneficial. As with alternative B, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species.

### **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under alternative C, areas of high resource sensitivity (SMAs) and high visitor use would generally be designated as VFAs during the breeding season and peak visitation period (March 15 to October 14). ORV routes would be designated outside of these locations and would be open to ORV use during the same period. Some areas would be open to ORV use during the off-season (October 15 to March 14), while some areas would remain vehicle free year-round to provide opportunities for visitors to experience the Seashore without the presence of vehicles. The establishment of SMAs and other VFAs would serve to reduce pressure on the species from recreational uses, as compared to alternatives A and B. As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative C would allow for beach driving in the wrack on ORV routes during the day outside of SMAs, but would maintain nighttime closures and limit driving during the day where SMAs are established reducing disturbance in these areas. Overall impacts to invertebrates would be long-term and negligible to minor (as discussed later in this chapter), and would reduce the food source available to birds at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

Approximately 27 miles of shoreline would be designated for ORV use year-round, approximately 27 miles would be seasonally designated for ORV use from October 15 through March 14, and approximately 13 miles would be designated as vehicle free year-round. The speed limit would be 15 mph unless otherwise posted, and permits would be required for all ORVs. Three SMAs that are seasonally

designated as vehicle free from March 15 to October 14 would be managed under ML2 procedures and would maintain an open pedestrian access corridor along the shoreline to the inlet or point, subject to resource closures.

The seasonal restriction on ORVs and pedestrians in SMAs, the level of monitoring provided, and the size of the buffers under alternative C would reduce the potential of disturbance and nest abandonment from direct short-term contact with people and/or essential vehicles compared to alternatives A and B. In addition, the preclusion of ORV access in the SMAs for the entire breeding season would reduce the level of recreational use in sensitive resource areas. Although these measures should limit adverse impacts to piping plover, compliance with closures may not be absolute, since alternative C still includes pedestrian access to Bodie Island Spit, Cape Point, and South Point during the breeding season, and the areas closed are not expansive or contiguous. Therefore, recreational uses could result in short-term moderate adverse impacts if non-compliance occurs.

Establishment of SMAs and prescribed buffers and exclusion of ORVs from these areas during the breeding season would reduce pressure on the species from recreational uses at the Seashore. Under this alternative, recreational activities would still occur in the vicinity of the species and would still have the potential to impact them, with minor to moderate adverse impacts to piping plover from recreational use, and minor to moderate benefits from the protection offered.

*Night-Driving Restrictions.* Under alternative C, operation of all nonessential ORV traffic would be prohibited from all areas (other than the soundside) between 7:00 p.m. and 7:00 a.m. from May 1 to November 15. From November 16 to April 30, ORV use would be allowed 24 hours per day in designated ORV routes for vehicles holding valid ORV permits. Furthermore, NPS retains the discretion to limit night driving to certain areas or routes, based on resource protection considerations. Because plovers are known to be active at night (Staine and Burger 1994; Majka and Shaffer 2008), and plover chick and fledgling response to vehicles can increase their vulnerability to ORVs (USFWS 1996a, 2009a), the high level of protection at night from May 1 to November 15 under alternative C would result in long-term moderate beneficial impacts because it would reduce the potential for disturbance to plovers that could result in mortality.

*Commercial Fishing.* Commercial fishing vehicle access would be the same as under alternative A and would be managed by the terms and conditions in the commercial fishing special use permit, which includes restriction from entering resource closures. Commercial fisherman would not be required to obtain an ORV permit, but would be regulated under their existing use permit. Under alternative C, commercial fishing vehicles would be authorized to enter VFAs, but would not be allowed to enter resource closures or lifeguarded beaches. Night-driving restrictions, which are applicable to all ORV use, could be modified by up to +/- 2 hours for commercial fishing purposes. Presence of commercial fishing operations would have a long-term negligible adverse impact, with long-term minor to moderate benefits from night-driving restrictions.

*Permit/Carrying Capacity.* As described above under the night-driving restrictions and education/outreach sections, alternative C would require a permit for ORV use, including night driving. As stated in these sections, as a result of the educational information provided by the permit, there would be long-term minor to moderate benefits to piping plover as ORV users would be more aware of the regulations in place to protect this species, which would likely result in a higher level of compliance with buffer, closures, and other restrictions. ORV carrying capacity established under alternative C would not directly impact piping plover, as ORV use would not be allowed in resource protection areas.

*Pets/Other Recreational Activity Restrictions.* Pets would be prohibited within all SMAs from March 15 to October 14 and within all nonbreeding shorebird SMAs that are otherwise open to recreational use;

however, compliance would be needed to ensure that this reduces the risks of impacts. In addition, an educational permit would be required for any beach fire year-round, which would inform visitors about species protection issues related to this recreational activity. Camping restrictions would be the same as those under alternative A, with additional requirements for removing unattended beach equipment prior to nightfall. These restrictions would result in long-term minor to moderate benefits to species at the Seashore, further reducing pressure to piping plover from recreational activity.

*Overall Impacts from ORV and Other Recreational Use.* Overall, impacts to piping plover from ORV and other recreational use would be long-term minor adverse. The establishment of the SMAs, which proactively reduce or preclude recreational use early in the breeding season; ORV permit requirements; seasonal night-driving restrictions; and pet and other recreational activity restrictions would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact piping plovers, and the fact that alternative C would still include some level of pedestrian access to three SMAs during a portion of the breeding season, impacts to piping plover would be long-term minor adverse.

**Cumulative Impacts.** The same past, present, and future actions discussed under the cumulative impact scenario for alternative A would occur under alternative C. The overall cumulative impact of these past, current, and future actions would be long-term negligible to minor, depending on the intensity and duration of unpredictable factors such as storm events, with long-term moderate beneficial impacts from actions such as increased interpretive programs as part of the long-range interpretive plan and predator management within the Seashore. Many of these actions do not directly impact piping plover habitat in the area, as most of this habitat is located within the Seashore and is affected by NPS management actions more than any of the aforementioned past, present, and future actions. These impacts, combined with the long-term minor adverse, as well as minor to moderate beneficial impacts of alternative C, would be long-term minor adverse impacts, as actions within the Seashore would act as a driver for overall cumulative impact.

**Conclusion.** Overall impacts under alternative C from resources management activities would be long-term moderate beneficial. As with alternative B, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures within the SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species. Overall impacts under alternative C from ORV and other recreational use would be long-term minor adverse. The establishment of the SMAs, which proactively reduce or preclude recreational use early in the breeding season; prohibition of ORV use in SMAs between March 15 and October 14; ORV permit requirements; seasonal night-driving restrictions; and restrictions on pets and other recreational activities would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts to piping plovers would be long-term minor adverse.

Cumulative impacts under alternative C would be long-term minor adverse.

**Determination of Effect.** Under the ESA, the actions taken under alternative C may affect / are likely to adversely affect piping plover due to the minor adverse effects from monitoring and surveying and the minor adverse effects of ORV and other recreational use. Establishment of these SMAs and prenesting closures early in the breeding season would have long-term moderate benefits to piping plover. ORV use and pedestrian access would result in long-term minor adverse impacts as the SMAs and larger buffers would reduce pressure from recreational uses on piping plovers. However, recreational uses would still occur in the vicinity of plovers during breeding season. Restricting ORV use at night from May 1 to November 15 would offer a higher level of protection than alternatives A and B and would have long-term moderate benefits to foraging plovers. These impacts would result in a finding of may affect / are

likely to adversely affect piping plovers under the ESA because the action would result in direct or indirect impacts to the species that are not discountable, insignificant, or beneficial. And while there may be beneficial impacts from monitoring, surveying, and management of recreation, the actions under alternative C would also likely result in some adverse effects.

Under the ESA, the actions taken under alternative C may affect / are not likely to adversely affect designated critical habitat for wintering piping plover due to the establishment of SMAs which would result in the closure of approximately 13 miles of shoreline to ORV use year round, which would provide relatively less-disturbed foraging, resting, and roosting areas for migrating and wintering shorebirds. These closures would protect the primary constituent elements of intertidal sand beaches and backshores in these areas. Year-round VFAs along the ocean shoreline would be managed as Nonbreeding Shorebird SMAs with recreational activity restrictions, such that if staff determines that any single recreational activity or collection of activities is negatively impacting nonbreeding piping plover use of a specific location, NPS may implement additional restrictions on activities. Nonbreeding Shorebird SMAs would also be established at the points and spits based on an annual habitat assessment, which would provide protection for interior wintering plover habitat. There would be some benefit to the critical habitat from the implementation of seasonal night-driving restrictions although these restrictions would only apply between May 1 and November 15, which would not cover the majority of time when the wintering population of piping plover is present at the Seashore.

Although there would be construction of ORV access ramps, parking areas, and interdunal roads, none of these improvements would impact any of the primary constituent elements of designated critical habitat for wintering piping plover.

Implementation of alternative C would result in a finding of may affect / is not likely to adversely affect designated critical habitat for wintering piping plover under the ESA because the action would result in impacts to the critical habitat for the species that are discountable, insignificant, or beneficial. Actions under alternative C would result in greater protection of the primary constituent elements of suitable interior habitat, spits, intertidal sand beaches, and ocean backshore, primarily as a result of the establishment of Nonbreeding Shorebird SMAs and approximately 13 miles of year-round VFAs.

## **Impacts of Alternative D: Increased Predictability and Simplified Management**

### **Resources Management Activities**

*Establishment of Prenesting Closures.* Prenesting surveying activities for piping plovers under alternative D would be carried out as described under alternative C, which would include the survey and evaluation of all potential breeding habitats by Seashore staff by March 1 of each year with piping plover prenesting closures recommendations based on that evaluation. Under alternative D, all designated breeding SMAs would be posted as prenesting closures using symbolic fencing by March 15 of each year. All SMAs under alternative D would be managed under ML1 procedures, which would prohibit recreational access while the closures are in place, and would provide long-term major benefits to the species.

*Surveying and Monitoring.* Surveys and monitoring during prenesting, nesting, and chick rearing life stages would be largely similar to alternative C. However, under alternative D, ML1 procedures would be implemented in all SMAs during the breeding season, resulting in a reduction in the frequency of monitoring required compared to alternatives that either do not designate any SMAs or those that employ ML2 procedures and therefore require more frequent monitoring. Under the ML1 procedures in alternative D, all SMAs containing piping plover habitat would be closed to public access throughout the breeding season.

Because the frequency of monitoring would be reduced under alternative D, the impacts from surveying and monitoring, such as disturbance to piping plover at various life stages would also be reduced. Monitoring and surveying would result in minor to moderate, beneficial impacts to piping plover by providing Seashore managers with information on habitats used by breeding and nonbreeding piping plovers and the locations of those habitats, as well as potential threats they may contain. Surveying and monitoring would increase knowledge on how and when piping plover use the Seashore and thereby enabling the NPS to implement adaptive management initiatives, providing a beneficial impact. However, as with all the alternatives, surveying and monitoring would bring people and/or essential vehicles into direct short-term contact with piping plovers and their habitat, and these activities themselves are known risk factors, especially during the more sensitive life stages of early prenesting and territory establishment. Under alternative D, many precautions would be taken by staff to minimize impacts from monitoring such as using high powered scopes and thereby reducing impacts from intrusion by monitors. The impact of the monitoring when these precautions are taken into consideration would be minor. Although there would be adverse impacts such as disturbance to piping plover at various life stages, the protection that would result from surveying would result in long-term moderate beneficial impacts.

*Buffer/Closure Establishment.* Under alternative D, ML1 procedures would be implemented during the breeding season at all SMAs including Bodie Island Spit, Cape Point, and South Point, which would preclude all public access throughout the breeding season and all ORV use year-round. ML1 procedures measures designate 75-meter buffers around any piping plover nests and scrapes. ML1 procedures provide 1,000-meter buffers for both ORVs and pedestrians around unfledged chicks, as opposed to ML2 procedures in other action alternatives that reduce this to 300-meters for pedestrians. Because buffers under ML1 procedures are larger, there would be less monitoring required resulting in fewer changes in closure fencing by Seashore staff. Piping plovers would likely experience long-term moderate to major benefits from the size and duration of the closures and from the fact that buffers would adjust in response to chick mobility under ML1 procedures.

In addition to the closure of all SMAs to public access during the breeding season, alternative D provides for the protection of piping plover nests through the use of buffer distances recommended, in part, under the Piping Plover Recovery Plan (USFWS 1996a) as described under alternative C. If piping plover breeding activity occurs outside of the SMAs, adverse impacts could result if implementation of or adjustments to a buffer are not made in a timely manner. This outcome may be more likely under the reduced monitoring associated with alternative D and ML1 procedures, or if nests or acts of deliberate disturbance are not detected by Seashore staff.

Under alternative D designated SMAs would be subject to periodic review, as described under alternative C, resulting in long-term moderate beneficial impacts. Overall, the benefit of the preclusion of all public access in SMAs during the breeding season would outweigh the disturbance inherent with species management, and result in long-term moderate to major beneficial impacts from species closures and buffers.

*Management of Wintering/Nonbreeding Populations.* Management of wintering/nonbreeding populations under alternative D would be the same as those under alternative C, resulting in long-term moderate beneficial impacts.

*Education and Outreach.* Under alternative D, impacts as a result of education and outreach, including education from a permit system, would be the same as those under alternative C and would result in long-term minor to moderate beneficial impacts.

*Overall Impacts of Resources Management Activities.* Overall impacts to piping plover from resources management activities (primarily resulting from the effects of surveying and field activities) under

alternative D would be long-term moderate to major beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring, but on the whole the implementation of SMAs that prohibit ORV use year-round and only allow pedestrian access outside of the breeding season, establishment of prenesting closures early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate to major beneficial impacts to the species.

### **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Alternative D is designed to provide visitors to the Seashore with the maximum amount of predictability regarding routes available for ORV use and VFAs for pedestrian use, which means establishing year-round ORV route and VFA designations. Under this alternative, year-round VFAs would include the area in front of villages and lifeguarded beaches, as well as all SMAs, which include the points and spits. Approximately 27 miles of shoreline would be designated for ORV use and approximately 40 miles would be designated as vehicle free year-round. VFAs would be open to pedestrian access, except for the SMAs during breeding season and potentially other locations outside the SMAs if breeding activity occurs. There would be no seasonally designated ORV routes. In designated ORV areas, the speed limit would be 15 mph unless otherwise posted, and permits would be required for all ORVs. Other uses would still be allowed in these VFAs outside of any identified resource closures/SMAs. As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative D would allow for beach driving in the wrack on ORV routes during the day, but would maintain nighttime closures and daytime closures where SMAs are established reducing disturbance in these areas. Compared to other alternatives, this alternative would also limit daytime ORV use in more areas of the Seashore. Overall impact to invertebrates would be long-term and negligible (as discussed later in this chapter), and would reduce the food source available to birds at the Seashore, but to a lesser degree than if night driving or greater access during the day was permitted, resulting in long-term negligible impacts.

Restricted access within large contiguous areas, including all points and spits, under alternative D would provide long-term moderate to major beneficial impacts to the piping plover (as described above under buffer/closure establishment), with greater benefits associated with fewer occurrences of non-compliance that would be expected from restrictions that would essentially eliminate a conduit or access way for ORVs and pedestrians in these sensitive areas. Disturbance from direct short-term contact with people and/or ORVs should be greatly reduced compared to alternatives A, B, and C, because of the amount of Seashore that is designated as vehicle free year-round, including all points and spits, which are the primary breeding and foraging areas for piping plover. Closures to pedestrians in all SMAs during the breeding season would also reduce the potential for disturbance to breeding plovers. As with all alternatives, compliance with closures would be an enforcement issue for the NPS, although with the size/length of the VFAs, non-compliance would be much less likely. It is recognized that compliance would still be less than absolute, with a potential for short-term adverse impacts, but overall alternative D would provide substantial benefits to the species. Adverse impacts from ORV and pedestrian access would be expected to be long-term minor adverse.

*Night-Driving Restrictions.* Under alternative D, night-driving restrictions would be the same as under alternative C and would result in long-term moderate beneficial impacts as it would further reduce the potential for disturbance to night-foraging plover that could result in mortality, although foraging of piping plover outside of the SMAs is unlikely.



*Commercial Fishing.* Commercial fishing activities under alternative D would be the same as alternative C and would result in long-term negligible adverse impacts, with long-term minor to moderate benefits from night-driving restrictions.

*Permit/Carrying Capacity Requirements.* As described above under the night-driving restrictions and education/outreach sections, alternative D would require a permit for ORV use, including night driving. As stated in these sections, as a result of the educational information provided by the permit, there would be long-term minor to moderate benefits to piping plover as ORV users would be more aware of the regulations in place to protect these species, which would likely result in a higher level of compliance with buffer, closures, and other restrictions. There would be no impacts related to carrying capacity, as it would not be a requirement under alternative D, other than one-deep vehicle stacking restrictions.

*Pets/Other Recreational Activity Restrictions.* Pets would be prohibited within all SMAs year-round. Camping would not be permitted at the Seashore, and beach fires would be regulated with a non-fee educational permit, as described under alternative C. Prohibition of pets within the SMAs year-round and additional education from a beach fire permit would be expected to have long-term minor to moderate beneficial impacts to the species, greater than those under alternative C, provided the level of non-compliance is kept low.

*Overall Impacts from ORV and Other Recreational Use.* Overall impacts under alternative D from ORV and other recreational use would be long-term minor adverse. The establishment of SMAs that are closed to ORVs year-round and managed under ML1 procedures during the breeding season would proactively preclude recreational use early in the breeding season from large areas of the Seashore, which would reduce the potential for disturbance to plovers during critical life stages. This protection, combined with ORV permit requirements, seasonal night-driving restrictions, and pet and other recreational activities restrictions would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor adverse.

**Cumulative Impacts.** The same past, present, and future actions discussed under the cumulative impact scenario for alternative A would occur under alternative D. The overall cumulative impact of these past, current, and future actions, would be long-term negligible to minor, depending on the intensity and duration of unpredictable factors such as storm events, with long-term moderate beneficial impacts from actions such as increased interpretive programs as part of the long-range interpretive plan and predator management within the Seashore. Many of these actions do not directly impact piping plover habitat in the area, as most of this habitat is located within the Seashore and is impacted by NPS management actions more than any of the aforementioned past, present, and future actions. These impacts, combined with the long-term minor adverse, as well as minor to major beneficial impacts of alternative D, would be long-term minor adverse impacts, as actions within the Seashore would act as a driver for overall cumulative impacts.

**Conclusion.** Overall impacts to piping plover from resources management activities (primarily resulting from the effects of surveying and field activities) under alternative D would be long-term moderate to major beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring, but on the whole the implementation of SMAs that prohibit ORV use year-round and only allow pedestrian access outside of the breeding season, establishment of prenesting closures early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate to major beneficial impacts to the species. Overall impacts under alternative D from ORV and other recreational use would be long-term minor adverse. The establishment of SMAs that are closed to ORVs year-round and managed under ML1 procedures during the breeding season would proactively preclude recreational use early in the breeding season from large areas of the Seashore,

which would reduce the potential for disturbance to plovers during critical life states. This protection, combined with ORV permit requirements, seasonal night-driving restrictions, and pet and other recreational activities restrictions would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor adverse.

Cumulative impacts would be long-term minor adverse.

**Determination of Effect.** Under the ESA, the actions taken under alternative D may affect / are likely to adversely affect piping plover due to the minor adverse effects from monitoring and surveying and the minor adverse impacts from ORV and other recreational use. Establishment of SMAs with year-round ORV closures and prenesting closures early in the breeding season would have long-term moderate to major benefits to piping plover. ORV use and pedestrian access would result in long-term minor adverse impacts as the SMAs and larger buffers would reduce pressure from recreational uses on plovers. However, recreational uses would still occur in the vicinity of plovers during breeding season. Restricting ORV use at night from May 1 to November 15 would offer a higher level of protection than alternatives A and B and would have long-term moderate benefits to foraging plovers. These impacts would result in a finding of may affect/ are likely to adversely affect piping plovers under ESA because the action would result in direct or indirect impacts to the species that are not discountable, insignificant, or beneficial. And while there may be beneficial impacts from monitoring, surveying, and management of recreation, the actions under alternative D would also likely cause some adverse effects.

Under the ESA, the actions taken under alternative D may affect / are not likely to adversely affect designated critical habitat for wintering piping plover due to the establishment of SMAs which would result in the closure of approximately 40 miles of shoreline to ORV use year round, including ocean beaches along all of the points and spits. These closures would provide less-disturbed foraging, resting, and roosting areas for migrating and wintering shorebirds and would protect the primary constituent elements of intertidal sand beaches, backshores, and spits. These year-round VFAs along the ocean shoreline would be managed as Nonbreeding Shorebird SMAs with recreational activity restrictions, such that if staff determines that any single recreational activity or collection of activities is negatively impacting nonbreeding piping plover use of a specific location, NPS may implement additional restrictions on activities. Nonbreeding Shorebird SMAs would also be established at the points and spits based on an annual habitat assessment, which would provide protection for interior wintering plover habitat. There would be some benefit to the critical habitat from the implementation of seasonal night-driving restrictions although these restrictions would only apply between May 1 and November 15, which would not cover the majority of time when the wintering population of piping plover is present at the Seashore.

Although there would be construction of ORV access ramps, parking areas, and interdunal roads, none of these improvements would impact any of the primary constituent elements of designated critical habitat for wintering piping plover.

Implementation of alternative D would result in a finding of may affect / is not likely to adversely affect designated critical habitat for wintering piping plover under the ESA because the action would result in impacts to the critical habitat for the species that are discountable, insignificant, or beneficial. Actions under alternative D would result in greater protection of the primary constituent elements of suitable interior habitat, spits, intertidal sand beaches, and ocean backshore, primarily as a result of the establishment of Nonbreeding Shorebird SMAs and 40 miles of year-round VFAs.

## Impacts of Alternative E: Variable Access and Maximum Management

### Resources Management Activities

*Establishment of Prenesting Closures.* Prenesting surveying activities for piping plovers under alternative E would be carried out as described under alternative C, which would include the survey and evaluation of all potential breeding habitats by Seashore staff by March 1 of each year with piping plover prenesting closures recommendations based on that evaluation. Under alternative E, all designated breeding SMAs would be posted as prenesting closures using symbolic fencing by March 15 of each year. However, under alternative E, Bodie Island Spit, Cape Point, and South Point would be managed under ML2 procedures, which would include the establishment of an ORV pass-through zone at the start of the breeding season, which would be subject to resource closures if necessary. Establishment of these SMAs and prenesting closures early in the breeding season would have long-term moderate benefits to piping plover.

*Surveying and Monitoring.* Surveys and monitoring during prenesting, nesting, and chick rearing life stages would be the same as alternative C. Protected species buffers would follow ML1 procedures at most areas of the Seashore, with the exception of Bodie Island Spit, Cape Point, and South Point, where ML2 procedures would apply. Because surveying and monitoring protocols would be the same as alternative C, these protocols would result in long-term moderate beneficial impacts to piping plovers by providing Seashore managers with information on the types and location of habitats used by nonbreeding piping plovers, seasonality of plover use of the Seashore, tidal influences on habitat use, and potential threats the habitat may contain. Surveying would increase knowledge on how and when piping plovers use the Seashore and enable adaptive management initiatives and contribute to better management.

As with all the alternatives, surveying and monitoring would bring people and/or essential vehicles into direct short-term contact with piping plovers and their habitat, and these activities themselves are known risk factors, especially during the more sensitive life stages of early prenesting and territory establishment. Under alternative E, like alternative C, many precautions would be taken by staff to minimize impacts from monitoring, such as using high powered scopes, thereby reducing impacts from intrusion by monitors. The impact of the monitoring when these precautions are considered would be minor. Although there would be adverse impacts such as disturbance to piping plover at various life stages, the protection that would result from surveying would result in long-term moderate beneficial impacts.

*Buffer Closure/Establishment.* Under alternative E, SMAs would be established and the level of species management designated either ML1 or ML2. ML1 procedures would not allow ORV or pedestrian access when prenesting closures are in effect. Bodie Island Spit, Cape Point, and South Point would be managed under ML2 procedures and would include a narrow ORV access corridor at the start of the breeding season that would be subject to resource closures if necessary. ML1 procedures require 75-meter buffers around any piping plover nests or scrapes. ML1 procedures provide 1,000-meter buffers for both ORVs and pedestrians around unfledged chicks, as opposed to ML2 procedures, which reduce this distance to 300 meters for pedestrians. Because buffers under ML1 procedures are larger, there would be less monitoring required, resulting in fewer changes in closure fencing by Seashore staff. Piping plovers would likely experience moderate long-term benefits from the size and duration of the closures and from the fact that buffers would adjust in response to chick mobility.

Like alternative C, in addition to prenesting areas and the general reduction in recreational pressure provided by the SMAs, alternative E would provide for protection of piping plover nests outside of the SMAs through the use of buffer distances described under alternative C. Although the species would be offered protection by these buffers, short-term adverse impacts could result to piping plover if

adjustments to a buffer are not made in a timely manner or if nests or acts of deliberate disturbance are missed by Seashore staff outside of the SMAs areas. Therefore, the buffers under alternative E would be expected to have long-term moderate beneficial effects on the species because the benefits outweigh the adverse effects of surveys and monitoring. Alternative E would also include periodic review (as described under alternative C), which would provide additional benefits to the species, as management actions could be altered to provide improved protection for plovers.

*Management of Wintering/Nonbreeding Populations.* Under alternative E, as described under alternatives C and D, SMAs would be established for migrating/wintering shorebirds at various locations throughout the Seashore. Closures would be established no later than when breeding season closures are removed at the same location(s), resulting in long-term moderate beneficial impacts from this protection.

Nonbreeding resource closures would be established at the spits and Cape Point based on habitat used by wintering piping plovers in more than one of the past five years, the presence of birds at the beginning of the migratory season, and suitable habitat types based on the results of the annual habitat assessment. In addition to nonbreeding resource closures, designated VFAs along the ocean shoreline would provide areas of reduced ORV disturbance for foraging, resting, and roosting areas for migrating and wintering shorebirds.

*Education and Outreach.* Under alternative E, impacts as a result of education and outreach, including education from a permit system, would be the same as those under alternative C and would result in long-term minor to moderate beneficial impacts to piping plover.

*Overall Impacts of Resources Management Activities.* Overall impacts under alternative E from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species.

### **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under alternative E, approximately 32 miles of shoreline would be designated for ORV use year-round, approximately 20 miles would be designated for seasonal ORV use from September 1 through March 14, and approximately 16 miles would be designated as vehicle free year-round. The speed limit would be 15 mph unless otherwise posted, and permits would be required for all ORVs. In the SMAs, under ML2 procedures, adjacent to the prenesting area, NPS would provide an ORV corridor with a pass-through zone at the start of the breeding season (March 15). When breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor until breeding activity has concluded. As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative E would allow for beach driving in the wrack on ORV routes during the day outside of SMAs, but would maintain nighttime closures and limit driving during the day where SMAs are established reducing disturbance in these areas. Overall impacts to invertebrates would be long-term and minor (as discussed later in this chapter), and would reduce the food source available to birds at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

The designation of SMAs and other restrictions under alternative E would reduce the potential of disturbance and nest abandonment from direct short-term contact with people and/or essential vehicles compared to alternatives A and B, but would have greater impacts than alternative C due to the existence

of an ORV pass-through at three SMAs, which would create a conduit to the points and spits for ORVs. Alternative E would also reduce the duration of ORV closures in SMAs managed under ML1 procedures by allowing ORV use starting September 1 instead of October 14 (alternative C). Impacts would also be greater under alternative E than alternative D, which has all SMAs closed to ORV and pedestrian use during the breeding season. Although these measures should limit adverse impacts to piping plover, compliance with closures may not be absolute, since alternative E still includes access to some points and spits, which could result in short-term moderate adverse impacts if non-compliance occurs.

Although the SMAs would be beneficial to the species, continued recreational use in this area would still result in potential long-term minor to moderate adverse impacts to the species, which would be greater than those impacts under alternative C because of the increased level of access provided under alternative E and the shorter duration of SMA closures.

*Night-Driving Restrictions.* Under alternative E, night-driving restrictions would be similar to those in alternative B and would result in long-term minor to moderate beneficial impacts because it would reduce the potential for disturbance to night-foraging birds that could result in mortality. However, ORV use would still be allowed until 10:00 p.m. from May 1 through November 15, which would result in ORVs on the beach after dark and could still result in some level of adverse impact.

*Commercial Fishing.* Management of commercial fishing under alternative E would be the same as alternative C resulting in long-term negligible adverse impacts from the presence of commercial fishing vehicles, with long-term minor to moderate benefits from night-driving restrictions.

*Permit/Carrying Capacity.* As described above under the night-driving restrictions and education/outreach sections, alternative E would require a permit for ORV use, including night-driving. As stated in these sections, as a result of the educational information provided by the permit, there would be long-term minor to moderate benefits to piping plover as ORV users would be more aware of the regulations in place to protect these species, which would likely result in a higher level of compliance with buffer, closures, and other restrictions. There would be no impacts to piping plover related to carrying capacity, for reasons described under alternative C.

*Pets/Other Recreational Activity Restrictions.* Pets would be prohibited within all SMAs from March 15 to August 31. As with alternative C, an educational permit would be required for any beach fire year-round, which would inform visitors about species protection issues related to this recreational activity.

Camping restrictions would be the same as alternative C; however, park-and-stay permits for overnight beach use would be issued at selected spits and points that are not closed for resource protection. The provision for park-and-stay overnight at some spits and points during portions of the breeding season when resource closures do not preclude access would increase the potential for human disturbance to nesting birds adjacent to those locations.

Pet, camping, and beach fire restrictions would result in long-term minor to moderate benefits to species at the Seashore, further reducing pressure to piping plover from recreational activity, with the potential for long-term minor to moderate adverse impacts from the park-and-stay option, which would occur outside of resource closures.

*Overall Impacts from ORV and Other Recreational Use.* Overall impacts under alternative E from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of the SMAs which proactively reduce or preclude recreational use early in the breeding season, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. Although there would be benefits from seasonal night-driving restrictions, they would

not be as great as other action alternatives because driving after dark (until 10:00 p.m.) would still be occurring, even during seasonal restrictions. The potential for adverse impacts would exist from the park-and-stay option under this alternative. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor to moderate adverse.

**Cumulative Impacts.** The same past, present, and future actions discussed under the cumulative impact scenario for alternative A would occur under alternative E. The overall cumulative impact of these past, current, and future actions, would be long-term negligible to minor, depending on the intensity and duration of unpredictable factors such as storm events, with long-term moderate beneficial impacts from actions such as increased interpretive programs as part of the long-range interpretive plan and predator management within the Seashore. Many of these actions do not directly impact piping plover habitat in the area, as most of this habitat is located within the Seashore and is impacted by NPS management actions more than any of the aforementioned past, present, and future actions. These impacts, combined with the long-term minor to moderate adverse, as well as minor to moderate beneficial impacts of alternative E, would be long-term minor to moderate adverse impacts, as actions within the Seashore would act as a driver for overall cumulative impact.

**Conclusion.** Overall impacts under alternative E from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species.

Overall impacts under alternative E from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of the SMAs which proactively reduce or preclude recreational use early in the breeding season, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. Although there would be benefits from seasonal night-driving restrictions, they would not be as great as other action alternatives because driving after dark (until 10:00 p.m.) would still be occurring, even during seasonal restrictions. The potential for adverse impacts would exist from the park-and-stay option under this alternative. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor to moderate adverse.

Cumulative impacts under alternative E would be long-term minor to moderate adverse.

**Determination of Effect.** Under the ESA, the actions taken under alternative E may affect / are likely to adversely affect piping plover due to the minor adverse effects from monitoring and surveying and the minor to moderate adverse effects from ORV and pedestrian access. Areas managed under ML2 procedures would accommodate a narrow ORV access corridor at the start of the breeding season. However, under alternative E, most SMAs would be closed to ORV use from March 15 through August 31, except Bodie Island Spit, Cape Point, and South Point which would include an ORV pass-through zone, subject to resource closures. Establishment of these SMAs and prenesting closures early in the breeding season would have long-term moderate benefits to piping plover. However, recreational uses would still occur in the vicinity of plovers during breeding season. All recreational ORV traffic would be prohibited from 10:00 p.m. until 6:00 a.m. from May 1 to September 15. From September 16 to November 15, night-driving permits would be available for authorized nonessential driving between the hours of 10:00 p.m. and 6:00 a.m. These restrictions to night driving would provide long-term minor to moderate benefits to piping plovers but could still result in long-term minor adverse impacts during the time when night driving is allowed by permit. These impacts would result in a finding of may affect/ are likely to adversely affect piping plovers under ESA because the action would result in direct or indirect

impacts to the species that are not discountable, insignificant, or beneficial. And while there may be beneficial impacts from monitoring, surveying, and management of recreation, the actions under alternative E would also likely cause some adverse effects.

Under the ESA, the actions taken under alternative E may affect / are not likely to adversely affect designated critical habitat for wintering piping plover due to the establishment of SMAs which would result in the closure of approximately 16 miles of shoreline to ORV use year round. These closures would provide less-disturbed foraging, resting, and roosting areas for migrating and wintering shorebirds and would protect the primary constituent elements of intertidal sand beaches and ocean backshores. These year-round VFAs along the ocean shoreline would be managed as Nonbreeding Shorebird SMAs with recreational activity restrictions, such that if staff determines that any single recreational activity or collection of activities is negatively impacting nonbreeding piping plover use of a specific location, NPS may implement additional restrictions on activities. Nonbreeding Shorebird SMAs would also be established at the points and spits based on an annual habitat assessment, which would provide protection for interior wintering plover habitat. There would be some benefit to the critical habitat from the implementation of seasonal night-driving restrictions although these restrictions would only apply between May 1 and November 15, which would not cover the majority of time when the wintering population of piping plover is present at the Seashore.

Although there would be construction of ORV access ramps, parking areas, and interdunal roads, none of these improvements would impact any of the primary constituent elements of designated critical habitat for wintering piping plover.

Implementation of alternative E would result in a finding of may affect / is not likely to adversely affect designated critical habitat for wintering piping plover under the ESA because the action would result in impacts to the critical habitat for the species that are discountable, insignificant, or beneficial. Actions under alternative E would result in greater protection of the primary constituent elements of suitable interior habitat, spits, intertidal sand beaches, and ocean backshore, primarily as a result of the establishment of Nonbreeding Shorebird SMAs and approximately 16 miles of year-round VFAs.

## **Impacts of Alternative F: NPS Preferred Alternative**

### **Resources Management Activities**

*Establishment of Prenesting Closures.* Prenesting surveying activities for piping plovers under alternative F would be carried out as described under alternative C, which would include the survey and evaluation of all potential breeding habitats by Seashore staff by March 1 of each year with piping plover prenesting closures recommendations based on that evaluation. Under alternative F, areas of suitable habitat that have had individual piping plover nests in more than one of the past five years and new habitat that is particularly suitable for nesting (such as the habitat at new inlets or overwash areas) would be posted as prenesting closures using symbolic fencing by March 15 of each year. Establishment of these prenesting closures early in the breeding season would have long-term moderate benefits to piping plover.

*Surveying and Monitoring.* Surveys and monitoring during prenesting, nesting, and chick-rearing life stages would be similar to alternatives C and E, except surveys of scrapes/nests would be modified to allow monitoring to occur from a distance if the observations would result in disturbance to other nesting species in the area. Surveying and monitoring during all life stages, as described under alternatives C and E, would bring people and/or essential vehicles into direct short-term contact with piping plovers and their habitat, and these activities themselves are known risk factors, especially during the more sensitive life stages of early prenesting and territory establishment. However, many precautions would be taken by staff to minimize impacts, for example, using scopes to watch the birds from a distance, and remaining

outside closures to the extent possible. Overall, pre-breeding surveying, post-breeding monitoring, and management actions proposed under alternative F would have a long-term moderate beneficial impact, providing the Seashore with additional data and information that would enable the implementation of adaptive management initiatives and contribute to better management.

*Buffer/Closure Establishment.* Prenesting closures would be established by March 15, as described above. ORV corridors would be provided at Cape Point and South Point seaward of the prenesting closure, with the corridor being reduced from 50 meters (164 feet) to 35 meters (115 feet) during the breeding season. Allowing an ORV corridor would allow more access in prenesting closures than under alternatives C, D, and E, as SMAs would not allow for access in these areas. As with alternative C, these prenesting closures would be removed by July 31 if no birds are present, or two weeks after all chicks have fledged, whichever comes later. Alternative F also provides for seasonal ORV closures of Bodie Island Spit and of the new interdunal road from the eastern portion of Spur Road west toward the inlet on Hatteras Island, which would provide protection from ORV use to piping plovers nesting in those areas, although pedestrian use would still be permitted. Several areas that are designated as SMAs under alternatives C, D, and E would be designated as VFAs under alternative F including the following segments of the Seashore:

- Ramp 1 to 0.5 miles south of Coquina Beach (year-round)
- 0.2 mile south of ramp 4 to southeast corner of Bodie Island spit (vehicle free March 15 to September 14)
- Southeast corner of Bodie Island spit along inlet shoreline to southwest edge of Bait Pond (near bridge) (year-round)
- Rodanthe boundary to 0.1 mile south of Rodanthe pier (year-round)
- 0.1 mile south of Rodanthe Pier–Waves–Salvo to ramp 23 (vehicle free April 1 to October 31)
- Ramp 23 to 1.5 miles south of ramp 23 (year-round)
- Ramp 27 to ramp 30 (year-round)
- Ramp 32.5 to ramp 34 (year-round)
- Ramp 34 to ramp 38 (vehicle free April 1 to October 31)
- Ramp 38 to 1.5 miles south of ramp 38 (i.e., Haulover) (year-round)
- 0.3 mile west of the hook (Cape Point) to 1.7 miles west of ramp 45 (year-round)
- Frisco Village Beach (east village boundary to west boundary) (vehicle free April 1 to October 31)
- Sandy Bay / Frisco day use area (west Frisco boundary to east Hatteras Village boundary) (year-round)
- Hatteras Village Beach (east boundary to ramp 55) (vehicle free April 1 to October 31)
- Bone Road to Hatteras Inlet, along inlet shoreline to Spur Road (year-round)
- (New) interdunal road from eastern portion of Spur Road west toward inlet (vehicle free March 15 to September 14)
- Hatteras Inlet to (new) ramp 59.5 (year-round)
- (New) ramp 63 to 1.0 mile northeast of ramp 67 (year-round)



- 0.5 mile northeast of ramp 68 to ramp 68 (Ocracoke Campground area) (vehicle free April 1 to October 31)
- Ramp 68 to 0.4 miles northeast of ramp 70 (includes Ocracoke Day Use area) (year-round)

Pedestrian use would be permitted in these areas, and all of these areas would be subject to resource closures for breeding, nesting, and fledging activities, as detailed in table 10-1. In addition, when scrape(s), nest(s), or chick(s) occur in the immediate vicinity of paved roads, parking lots, campground, buildings, and other facilities, such as within villages or at NPS developed sites, the NPS would retain the discretion to provide resource protection to the extent possible, while still allowing those facilities to remain operational. Regardless of the nature of the adjacent facilities, in all cases, as a minimum, the NPS would provide signs, fencing, and reduced buffers to protect nest(s) and chick(s) once they occur. The NPS would not reduce buffers to accommodate an ORV corridor or ORV ramp access. This management would provide the Seashore flexibility in species management in these areas but may have long-term minor adverse impacts to piping plover, as this species would not be expected to use habitat in these areas, but if they did could experience disturbance.

Piping plovers would likely experience long-term moderate benefits from the size of the resource closures under alternative F, including establishment of prenesting closures, and the fact that buffers would adjust in response to chick mobility, as these action would be expected to improve the sustainability of the species at the Seashore.

*Management of Wintering/Nonbreeding Populations.* Management of wintering/nonbreeding populations of piping plover under alternative F would be similar to the measures described under alternative C, except nonbreeding shorebird SMAs would not be established. Under alternative F the VFAs, shown on the maps in chapter 2, would provide for additional areas for nonbreeding species. These areas are relatively less disturbed to allow for foraging, resting and roosting. Also, an annual habitat assessment would be conducted at the points and spits after all birds have fledged from the area. Prior to removing the prenesting closures, resource closures would be established in the most sensitive portions of nonbreeding shorebird habitat in these areas, based on habitat used by winter piping plovers in more than one (i.e., two or more) of the past five years. People and pets would be prohibited within these closures. The establishment of VFAs that provide areas without ORV disturbance (although people would still be permitted in these areas) would result in long-term moderate beneficial impacts to nonbreeding piping plover that would be greater than those under alternatives A or B.

*Education and Outreach.* Under alternative F, education and outreach activities would be the same as those described under alternative A, with the addition of educational requirements as part of a permit program. A new voluntary resource education program would also be implemented that would be focused toward pedestrian beach users. This additional education would result in long-term minor to moderate benefits to species as the public is provided with more information regarding piping plover management issues.

*Overall Impacts from Resources Management Activities.* Overall impacts under alternative F from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate and beneficial for piping plovers. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures early in the breeding season, VFAs and areas seasonally closed to ORV use, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species. Long-term moderate benefits to nonbreeding populations would be greater under alternative F than under alternatives C or E because of the addition of VFAs combined with the nonbreeding closures.

**ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under alternative F, Seashore visitors would be provided with a degree of predictability regarding areas available for ORV use, as well as VFAs, based largely on the seasonal resource and visitor use characteristics of various areas in the Seashore. Under alternative F, approximately 28 miles of shoreline would be designated for ORV use year-round, approximately 13 miles would be seasonally designated for ORV use from November 1 to March 31 (with two areas from September 15 to March 14), and approximately 26 miles would be designated as vehicle free year-round. The speed limit would be 15 mph unless otherwise posted, and permits would be required for all ORVs, except for authorized commercial vehicles as described below. Where ORV use is permitted and there are prenesting closures, an ORV corridor would be established seaward of the prenesting closure that would be 35 meters (115 feet) rather than the 50-meter (164-foot) corridor during the nonbreeding season. subject to resource closures. All buffers, including prenesting closures, would not be reduced to accommodate an ORV corridor or ORV access ramp.

Establishment of various VFAs, both year-round and seasonally, as well as the standardized monitoring and buffers in areas where ORV are permitted would reduce pressure from recreational activities on piping plover. Under alternative F, this reduction in pressure would be similar to alternative E and greater than alternatives A and B, but less than C and D, which close larger and more contiguous areas of habitat for longer periods of time. As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative F would allow for beach driving in the wrack during the day outside of VFAs, but would maintain nighttime closures and limit driving during the day where VFAs are established reducing disturbance in these areas seasonally and year-round. Overall impacts to invertebrates would be long-term and minor (as discussed later in this chapter), and would reduce the food source available to birds at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

Like alternative E, alternative F would reduce the potential for disturbance and nest abandonment from direct short-term contact with people and/or essential vehicles compared to alternatives A and B, but would have greater impacts than alternative C due to the existence of an ORV corridor at Cape Point and South Point under alternative F. Although the establishment of prenesting closures, designation of year-round and seasonal VFAs and the other restrictions under alternative F should limit adverse impacts to piping plover, compliance with closures may not be absolute, since alternative F still includes pedestrian access to Bodie Island Spit and a conduit (ORV corridor) to Cape Point and South Point during the breeding season (all subject to resource closures). Therefore, recreational uses could result in short-term minor to moderate adverse impacts to piping plovers if non-compliance occurs. Since recreational activities would still occur, under alternative F impacts from ORV and pedestrian access to piping plover would be long-term minor to moderate adverse and would be greater than alternative C due to increased access.

*Night-Driving Restrictions.* Under alternative F, all nonessential ORV traffic would be prohibited from all areas (other than soundside access areas), from 9:00 p.m. until 7:00 a.m. from May 1 to November 15. From November 16 to April 30, ORV use would be allowed 24 hours per day in designated ORV routes for vehicles with a valid ORV permit. Furthermore, the NPS would retain the discretion to limit night driving to certain areas or routes, based on resource protection considerations. Because plovers are known to be active at night (Staine and Burger 1994; Majka and Shaffer 2008), and plover chick and fledgling response to vehicles can increase their vulnerability to ORVs (USFWS 1996a, 2009a), the high level of protection at night from May 1 to November 15 under alternative F would result in long-term moderate beneficial impacts because it would reduce the potential for disturbance to plovers that could result in mortality.

*Authorized Commercial Vehicles.* Authorized commercial vehicles, including commercial use authorization holders and commercial fishermen, would not require a separate ORV permit. Commercial fishermen would be able to enter all areas except resource closures and lifeguarded beaches. The superintendent may allow commercial fishing vehicles to enter the beach at 5:00 a.m. when night driving restrictions are in place for the general public, per the conditions outlined in table 8. Similar to alternative C, alternative F would have long-term negligible adverse impacts from the presence of commercial fishing operations and long-term minor to moderate benefits from night-driving restrictions.

*Permits/Carrying Capacity.* As described above under the night-driving restrictions and education/outreach sections, alternative F would require a permit for ORV use, including night driving. As stated in these sections, as a result of the educational information provided by the permit, there would be long-term minor to moderate benefits to piping plover as ORV users would be more aware of the regulations in place to protect these species, which would likely result in a higher level of compliance with buffer, closures, and other restrictions. There would be no impacts related to carrying capacity, as described under alternative C.

*Pets/Other Recreational Activity Restrictions.* Pets would be permitted in the Seashore, except ORV corridors at Cape Point and South Point and in pedestrian shoreline access areas front of (i.e., seaward of) prenesting areas in accordance with 36 CFR 2.15, which applies to all units of the national park system and prohibits pet owners from “failing to crate, cage, restrain on a leash which shall not exceed 6 feet in length, or otherwise physically confine a pet at all times.” These measures would reduce the likelihood of pet disturbance in piping plover breeding areas; however, compliance is needed to ensure that this reduces the risk of impacts. Camping and beach fire restrictions would be the same as those under alternative C, with the exception that beach fires would be restricted from 10:00 p.m. to 6:00 a.m. year-round and from May 1 to November 15 (the sea turtle nesting season) would only be permitted in front of Coquina Beach, Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras Village, and Ocracoke Day Use Area. These additional restrictions would result in long-term moderate beneficial impacts to piping plover at the Seashore as recreational pressures are further reduced.

*Overall Impacts from ORV and Other Recreational Use.* Overall impacts under alternative F from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of prenesting closures and year-round and seasonal VFAs which proactively reduce or preclude recreational use early in the breeding season, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. As alternative F would provide for more flexible access to various areas of the Seashore, the potential for disturbance to piping plover is increased over alternatives C and D, resulting in long-term minor to moderate adverse impacts.

**Cumulative Impacts.** The same past, present, and future actions discussed under the cumulative impact scenario for alternative A would occur under alternative F. The overall cumulative impact of these past, current, and future actions, would be long-term negligible to minor, depending on the intensity and duration of unpredictable factors such as storm events, with long-term moderate beneficial impacts from actions such as increased interpretive programs as part of the long-range interpretive plan and predator management within the Seashore. Many of these actions do not directly impact piping plover habitat in the area, as most of this habitat is located within the Seashore and is impacted by NPS management actions more than any of the aforementioned past, present, and future actions. These impacts, combined with the long-term minor to moderate adverse, as well as minor to moderate beneficial impacts of alternative F, would be long-term minor to moderate adverse impacts, as actions within the Seashore would act as a driver for overall cumulative impact.

**Conclusion.** Overall impacts under alternative F from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate and beneficial

for piping plovers. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures early in the breeding season, year-round and seasonal VFAs, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species. Long-term moderate benefits to nonbreeding populations would be greater under alternative F than under alternatives C or E because of the addition of the year-round VFAs. Overall impacts under alternative F from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of the prenesting closures and year-round and seasonal VFAs which proactively reduce or preclude ORV use throughout the breeding season, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. As alternative F would provide for more flexible access to various areas of the Seashore, the potential for disturbance to piping plover is increased over alternatives C and D, resulting in long-term minor to moderate adverse impacts.

Cumulative impacts would be long-term minor to moderate adverse.

**Determination of Effect.** Under the ESA, the actions taken under alternative F may affect / are likely to adversely affect piping plover due to the minor adverse effects from monitoring and surveying and the minor to moderate impacts from ORV and other recreational use. Under alternative F, year-round and seasonal VFAs would provide protection for migrating piping plover and plover establishing territories early in the season. However, recreational uses would still occur in the vicinity of plovers during breeding season in areas such as Cape Point and South Point. Under alternative F, nonessential ORV traffic would be prohibited from all areas (other than the soundside access areas), from 9:00 p.m. to 7:00 a.m. from May 1 to November 15. From November 16 to April 30, ORV access would be allowed 24 hours per day in designated ORV routes for vehicles displaying a valid ORV permit. The NPS retains the discretion to limit night driving to certain areas or routes, based on resource protection considerations. These restrictions to night driving would provide long-term minor to moderate benefits to piping plovers but could still result in long-term minor adverse impacts during the time when night driving is allowed by permit. These impacts would result in a finding of may affect / are likely to adversely affect piping plovers under the ESA because the action would result in direct or indirect impacts to the species that are not discountable, insignificant, or beneficial. And while there may be beneficial impacts from surveys and monitoring, and management of recreation, the actions under alternative F would also likely cause some adverse effects.

Under the ESA, the actions taken under alternative F may affect / are not likely to adversely affect designated critical habitat for wintering piping plover due to the establishment of VFAs which would result in the closure of approximately 26 miles of shoreline to ORV use year round. These closures would provide less-disturbed foraging, resting, and roosting areas for migrating and wintering shorebirds and would protect the primary constituent elements of intertidal sand beaches and ocean backshores. These year-round VFAs along the ocean shoreline would be managed to allow for pedestrian use. Nonbreeding resource closures would also be established at the points and spits based on an annual habitat assessment, which would provide protection for wintering plover habitat. There would be some benefit to the critical habitat from the implementation of seasonal night-driving restrictions although these restrictions would only apply between May 1 and November 15, which would not cover the majority of time when the wintering population of piping plover is present at the Seashore.

Although there would be construction of ORV access ramps, parking areas, and interdunal roads, none of these improvements would impact any of the primary constituent elements of designated critical habitat for wintering piping plover.

Implementation of alternative F would result in a finding of may affect / is not likely to adversely affect designated critical habitat for wintering piping plover under the ESA because the action would result in

impacts to the critical habitat for the species that are discountable, insignificant, or beneficial. Actions under alternative F would result in greater protection of the primary constituent elements of suitable interior habitat, spits, intertidal sand beaches, and ocean backshore, primarily as a result of the establishment of nonbreeding resource closures, and approximately 26 miles of year-round VFAs.

**TABLE 52. SUMMARY OF IMPACTS TO PIPING PLOVER UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<b>Resources Management Activities</b>					
Establishment of Prenesting Closures					
Long-term minor to moderate adverse impacts would occur to piping plovers arriving before the April 1 prenesting closures due to the sensitivity of the species during this life stage, with long-term moderate benefits to those arriving after the prenesting closure is in place.	Long-term moderate benefits would occur as closures would be in place earlier to provide protection for migratory piping plovers and breeding plovers establishing territories.	Long-term moderate benefits would occur as closures would be in place to provide protection for migratory piping plovers and breeding plovers establishing territories early in the breeding season.	Long-term moderate benefits would occur as closures would be in place to provide protection for migratory piping plovers and breeding plovers establishing territories early in the breeding season.	Long-term moderate benefits would occur as closures would be in place to provide protection for migratory piping plovers and breeding plovers establishing territories early in the breeding season.	Long-term moderate benefits would occur as prenesting closures would be established by March 15 to provide protection for migratory piping plovers and breeding plovers establishing territories.
Surveying and Monitoring					
Best management practices would be implemented to reduce disturbance during surveying, resulting in long-term minor to moderate benefits to the species as surveying and monitoring would lead to the necessary management measures.	Intensive surveys and monitoring would be expected to have long-term moderate beneficial impacts, as any changes in species behavior would be detected and appropriate management measures implemented.	Surveys and monitoring would be expected to have long-term moderate beneficial impacts, as these actions would improve the sustainability of the species at the Seashore.	Surveys and monitoring would be expected to have long-term moderate beneficial impacts, as these actions would improve the sustainability of the species at the Seashore.	Surveys and monitoring would be expected to have long-term moderate beneficial impacts, as these actions would improve the sustainability of the species at the Seashore.	Surveys and monitoring would be expected to have long-term moderate beneficial impacts, as these actions would improve the sustainability of the species at the Seashore.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<b>Buffer/Closure Establishment</b>					
Piping plovers would likely experience minor long-term benefits from the size of resource closures and observation intensity would adjust in response to chick behavior. Long-term moderate adverse impacts may occur as frequent adjustment of the buffers may result in additional disturbance to piping plover, and buffers that are not adjusted in a timely manner could result in less than optimal protection for the species.	The larger and more responsive buffers under alternative B would be expected to have long-term minor to moderate beneficial effects to piping plover.	Establishment of SMAs and prescribed buffers, along with periodic review to ensure effective management would have long-term moderate beneficial impacts.	SMAs would be closed to public access during the breeding season and closed to ORVs year-round, resulting in long-term moderate to major beneficial impacts from species closures and buffers. Benefits would also occur from a system of periodic review that would evaluate the SMAs for effectiveness.	Establishment of SMAs and prescribed buffers, along with periodic review to ensure management is effective, would have long-term moderate beneficial impacts.	Establishment of prenesting closures and prescribed buffers along with periodic review to ensure management is effective, would have long-term moderate beneficial impacts. Establishment of VFAs would also provide additional relatively less disturbed areas for piping plover, although pedestrian access would still be permitted.
<b>Management of Wintering/Nonbreeding Populations</b>					
Suitable interior habitats at spits and at Cape Point would be closed year-round to all recreational users and would provide for resting and foraging for all species, resulting in long-term minor beneficial impacts as this would represent a improvement to habitat during key life stages of the species.	Closing suitable interior habitats year-round at spits and Cape Point, as well as implementation of SECN survey protocol, would have long-term moderate beneficial impacts for piping plover.	Annual habitat assessment and establishment of nonbreeding SMAs would result in long-term moderate beneficial impacts.	Annual habitat assessment and establishment of nonbreeding SMAs would result in long-term moderate beneficial impacts.	Annual habitat assessment and establishment of nonbreeding SMAs would result in long-term moderate beneficial impacts.	Annual habitat assessment and establishment of nonbreeding resource closures would result in long-term moderate beneficial impacts. Long-term moderate benefits to nonbreeding populations would be greater under alternative F than alternatives C or E because of the addition of VFAs that would be closed to ORV year round and provide relatively less disturbed habitat for foraging, resting, and roosting.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<b>Education and Outreach</b>					
Education and outreach efforts under alternative A would aim to reduce non-compliance and further protect the species, resulting in long-term minor beneficial impacts.	Public outreach as part of species management would have long-term minor beneficial impacts, with the expanded outreach having greater impacts than alternative A.	Additional education would result in long-term minor to moderate benefits to species as the public is provided with more information regarding this issue.	Additional education would result in long-term minor to moderate benefits to species as the public is provided with more information regarding this issue.	Additional education would result in long-term minor to moderate benefits to species as the public is provided with more information regarding this issue.	Additional education would result in long-term minor to moderate benefits to species as the public is provided with more information regarding this issue.
<b>Overall Impacts from Resources Management Activities</b>					
Overall, impacts to piping plover from resource management activities (primarily as a result of surveys and field activities) would be long-term minor to moderate adverse. Although the management of the species would provide a certain level of benefit, the manner in which buffers would be established, along with the need to adjust buffers frequently would have an adverse impact on the species.	Overall, impacts under alternative B from resource management activities (primarily resulting from the effects of surveying and field activities) would be long-term minor to moderate beneficial. Buffers for piping plover would be larger and provide more protection compared to buffers under alternative A. Minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures early in the breeding season, monitoring activities, education and outreach efforts, and establishment of prescribed buffers would provide long-term minor to moderate beneficial impacts to the species.	Overall impacts under alternative C from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate beneficial. As with alternative B, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species.	Overall impacts to piping plover from resources management activities (primarily resulting from the effects of surveying and field activities) under alternative D would be long-term moderate to major beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring, but on the whole the implementation of SMAs that prohibit ORV use year-round and only allow pedestrian access outside of the breeding season, establishment of prenesting closures early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate to major beneficial impacts to the species.	Overall impacts under alternative E from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate beneficial. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of SMAs early in the breeding season, monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species.	Overall impacts under alternative F from resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term moderate and beneficial for piping plovers. As with all species management activities, minor adverse impacts would occur from human presence during monitoring activities, but on the whole the establishment of prenesting closures monitoring activities, and establishment of prescribed buffers would provide long-term moderate beneficial impacts to the species. Long-term moderate benefits to nonbreeding populations would be greater under alternative F than under alternatives C or E because of the additional year-round VFAs.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<b>ORV And Other Recreational Use</b>					
ORV and Pedestrian Access					
A lack of compliance with closures, including non-compliance (either intentional or unintentional) due to variable buffer sizes, could result in short-term moderate to major adverse impacts at a particular location, and would result in long-term moderate to major adverse impacts if there is a chronic lack of compliance.	Increased monitoring at key piping plover breeding areas and larger buffers for piping plover chicks would offer more protection from ORV and pedestrian access. However, because the ocean and inlet shoreline and existing soundside routes would be designated as ORV routes year round, subject to resource closures, the potential for impacts to piping plover from recreational use would still exist, resulting in long-term moderate adverse impacts.	Establishment of SMAs and prescribed buffer areas and exclusion of ORVs from these areas during the breeding season would reduce pressure on the species from recreational uses at the Seashore. Under this alternative, recreational activities would still occur in the vicinity of the species and would still have the potential to impact them, with long-term minor to moderate adverse impacts to piping plover from recreational use, and minor to moderate benefits from the protection offered.	Due to the restrictions on recreational activities in SMAs (ORVs prohibited year-round; pedestrians prohibited during breeding season), adverse impacts from recreational use would be expected to be long-term minor adverse.	Although the large SMAs would be beneficial to the species, continued recreation use in this area would still result in potential long-term minor to moderate adverse impacts to the species, which would be greater than those impacts under alternative C because of the increased access from ORV pass-throughs and shorter duration of closures within SMAs.	The species would benefit from the proactive protection provided by prenesting closures, establishment of buffers, and from the year-round and seasonal VFAs. The VFAs would provide additional areas without ORV disturbance or disturbance from the increased numbers of pedestrians carried by ORVs into the more remote areas of the Seashore. Continued recreation use in this area would still result in potential long-term minor to moderate adverse impacts to the species.
Night-Driving Restrictions					
Allowing unrestricted night driving would result in long-term moderate adverse impacts, as plovers are known to forage along the shoreline at all times of the day.	Restrictions on night driving would be provide long-term minor to moderate benefits to piping plovers; however, could still result in long-term minor adverse impacts during the time when night driving is allowed (until 10:00 p.m. during much of the breeding season).	The high level of protection at night from May 1 to November 15 would result in long-term moderate beneficial impacts because it would reduce the potential for disturbance to plovers that could result in mortality.	The high level of protection at night from May 1 to November 15 would result in long-term moderate beneficial impacts because it would reduce the potential for disturbance to plovers that could result in mortality.	Night-driving restrictions under alternative E would result in long-term minor to moderate beneficial impacts because it would reduce the potential for disturbance to plovers that could result in mortality, but would still allow some level of night driving after dark (until 10:00 p.m. between May 1 and November 15).	Alternative F would result in long-term moderate beneficial impacts because it would reduce the potential for disturbance to plovers that could result in mortality.



Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<b>Commercial Fishing</b>					
There would be long-term negligible adverse impacts from commercial fishing.	Presence of commercial fishing operations would have a long-term negligible adverse impact, with long-term minor to moderate beneficial impacts from night-driving restrictions.	Presence of commercial fishing operations would have a long-term negligible adverse impact, with long-term minor to moderate benefits from night-driving restrictions.	Presence of commercial fishing operations would have a long-term negligible adverse impact, with long-term minor to moderate benefits from night-driving restrictions.	Presence of commercial fishing operations would have a long-term negligible adverse impact, with long-term minor to moderate benefits from night-driving restrictions.	Presence of commercial fishing operations would have a long-term negligible adverse impact, with long-term minor to moderate benefits from night-driving restrictions.
<b>Permit/Carrying Capacity Requirements</b>					
Lack of a permit system would have long-term moderate adverse impacts. Lack of a carrying capacity is not expected to impact piping plover.	There would be no impacts related to carrying capacity, as it would not be a requirement under this alternative.	ORV permit requirements would result in long-term minor to moderate benefits due to the species protection resulting from the educational component of the permit. There would be no impacts related to carrying capacity.	ORV permit requirements would result in long-term minor to moderate benefits due to species protection resulting from the educational component of the permit. There would be no impacts related to carrying capacity.	ORV permit requirements would result in long-term minor to moderate benefits due to species protection resulting from the educational component of the permit. There would be no impacts related to carrying capacity.	ORV permit requirements would result in long-term minor to moderate benefits due to species protection resulting from the educational component of the permit. There would be no impacts related to carrying capacity.
<b>Pet/Other Recreational Activity Restrictions</b>					
Long-term minor benefits from camping and nighttime beach fire restrictions. Long-term minor to moderate adverse impacts from presence of pets at the Seashore during breeding season.	Long-term minor benefits from camping and nighttime beach fire restrictions. Long-term minor to moderate adverse impacts from presence of pets at the Seashore during breeding season.	Restrictions on pets, camping, and beach fires and additional education from a beach fire permit, would be expected to have long-term minor to moderate benefits to species at the Seashore, further reducing pressure to piping plover from recreational activity.	Prohibition of pets within the SMAs year-round and additional education from a beach fire permit would be expected to have long-term minor to moderate beneficial impacts to the species, greater than those under alternative C, provided the level of non-compliance is kept low.	These restrictions would result in long-term minor to moderate benefits to species at the Seashore, further reducing pressure to piping plover from recreational activity, with the potential for long-term minor to moderate adverse impacts from the park-and-stay option.	Additional beach fire restrictions and prohibition of pets in resource closures and in front of prenesting areas would result in long-term moderate beneficial impacts to species at the Seashore as recreational pressures are further reduced.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Overall Impact from ORV and Other Recreational Use					
<p>Overall, impacts to piping plover from ORV and other recreational use would be long-term moderate to major adverse as much of the Seashore would be open to recreational use, with an increased potential that piping plover could be impacted due to disturbance from ORV use and other recreational activities. Lack of a permit system for education and law enforcement, no night-driving restrictions, and lack of compliance with pet leash requirements would contribute substantially to these adverse impacts.</p>	<p>Overall, impacts to piping plover from ORV and other recreational use would be long-term moderate adverse. While some buffers would be increased in an attempt to separate recreational uses from piping plover, access up to these buffers would be provided at all Seashore beaches and could result in intentional or unintentional non-compliance (i.e., when signs are washed out), which would impact the species. Adverse impacts would also occur due to limited prenesting protection outside of the points and spits, and the potential for protective buffers to be reduced during critical life stages of plover chicks.</p>	<p>Overall, impacts to piping plover from ORV and other recreational use would be long-term minor adverse. The establishment of the SMAs which proactively reduce or preclude recreational use early in the breeding season, ORV permit requirements, seasonal night-driving restrictions, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact piping plovers, and the fact that alternative C would still include some level of pedestrian access to three SMAs during a portion of the breeding season, impacts to piping plover would be long-term minor adverse.</p>	<p>Overall impacts from ORV and other recreational use would be long-term minor adverse. The establishment of SMAs that are closed to ORVs year-round and managed under ML1 procedures during the breeding season would proactively preclude recreational use early in the breeding season from large areas of the Seashore, which would reduce the potential for disturbance to plovers during critical life stages. This protection, combined with ORV permit requirements, seasonal night-driving restrictions, and pet and other recreational activities restrictions would all provide benefits in terms of species protection. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor adverse.</p>	<p>Overall impacts from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of the SMAs which proactively reduce or preclude recreational use early in the breeding season, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. Although there would be benefits from seasonal night-driving restrictions, they would not be as great as other action alternatives because driving after dark (until 10:00 p.m.) would still be occurring, even during seasonal restrictions. The potential for adverse impacts would exist from the park-and-stay option under this alternative. As there would still be some opportunity for recreational use to come in contact with and impact the species, impacts would be long-term minor to moderate adverse.</p>	<p>Overall impacts under alternative F from ORV and other recreational use would be long-term minor to moderate adverse. The establishment of prenesting closures, year-round and seasonal VFAs, ORV permit requirements, and pet and other recreational activity restrictions would all provide benefits in terms of species protection. As alternative F would provide for more flexible access to various areas of the Seashore, the potential for disturbance to piping plover is increased over alternatives C and D, resulting in long-term minor to moderate adverse impacts.</p>

## SEA TURTLES

### Species-specific Methodology and Assumptions

Potential impacts on federally listed sea turtle populations and their habitat within the Seashore were evaluated based on the species' known interactions with humans, domestic pets, recreational and nighttime activities, predators, artificial lighting, and ORVs, as well as past and present occurrence at the Seashore. Information about habitat and species occurrence within the Seashore and potential impacts on sea turtles from recreation and other activities was acquired from staff at Cape Hatteras National Seashore, the USFWS, the NCWRC, and available literature.

Although five threatened or endangered sea turtle species occur in the waters of North Carolina, only three species, the loggerhead, green, and leatherback, are known to nest at the Seashore. The other two species, Kemp's ridley and hawksbill, are only known to occur at the Seashore through occasional stranding, usually due to either prior death or incapacitation from hypothermia. Therefore, the analysis focuses only on the three species that nest at the Seashore. For these three species, the analysis focuses on effects to sea turtles from a variety of human recreation and other activities, as well as impacts incurred as a result of surveying and management activities. Except for the timing of nest laying activities, the nesting habits for loggerhead, green, and leatherback sea turtles at the Seashore are similar. Therefore, the analysis generally discusses the impacts on the sea turtles as a group. Impacts to a specific species are noted where they differ from impacts to the other sea turtle species. Sea turtle nesting habitat overlap protected bird species and seabeach amaranth habitat seaward of the primary dune line. Consequently, management of these species could also benefit nesting sea turtles and is included in the analysis. However, the extent to which the bird and seabeach amaranth closures are beneficial to the turtles depends on the location, size, and duration of the closures. In the analysis, it is assumed that compliance with closures and other regulations such as leash requirements, disposal of bait and fish carcasses, etc., would increase from current levels where alternatives increase the natural resource and law enforcement staff.

When examining the impacts of artificial light on sea turtles, the lighting zones (see "Visitor Use and Experience")—developed for the Seashore by the NPS Night Skies Team—were considered. In these zones, special consideration is given to areas with sensitive wildlife, and alternate guidance is provided to enhance the protection of nocturnal habitat. These special lighting zones represent the conditions that should be present at the Seashore, not necessarily actual current conditions, and create a buffer when two varying zones abut each other.

In general, direct and indirect impacts to sea turtles, their nests, eggs, and hatchlings would primarily occur during the sea turtle nesting and hatching seasons from May 1 to November 15 and during summer and fall storm events when post-hatchlings may wash ashore. Direct impacts to live stranded turtles may occur year-round.

The information contained in this analysis was obtained through best professional judgment of Seashore staff and experts in the field, and by reviewing applicable scientific literature.

## Sea Turtle Impact Thresholds

A summary of sea turtle impacts under all alternatives is provided in table 53 at the end of this section. The following thresholds for evaluating impacts to sea turtles were defined.

*Negligible:* There would be no observable or measurable impacts to sea turtles, their habitats, or the natural processes sustaining them. Impacts would be well within the natural range of variability.

*Minor Adverse:* Impacts to sea turtles, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Disturbance to some nesting females could be expected to occur, but would be infrequent. Complete or partial nest loss due to human activities would occur infrequently. Occurrences of disorientation/disruption of hatchling movement would occur infrequently (less than 10% of all hatchling emergence events). Direct hatchling mortality from human activities would be rare.

*Minor Beneficial:* Impacts on sea turtles, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Improvements to key characteristics of habitat and/or protection to key life history stages in the Seashore would sustain or slightly improve existing population levels, population structure, or other factors and maintain a sustainable population in the Seashore.

*Moderate Adverse:* Impacts to sea turtles their habitats or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Occasional disturbance to some nesting females could be expected, with negative impacts to reproduction affecting local population levels. Complete or partial nest loss due to human activities would occur occasionally. Occurrences of disorientation/disruption of hatchling movement would occur occasionally (more than 10% and less than 30% of all hatchling emergence events). Direct hatchling mortality from human activities would occasionally occur. However, sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

*Moderate Beneficial:* Impacts on sea turtles, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Changes to key characteristics of habitat in the Seashore and/or protection to key life history stages would minimize or prevent harassment or injury to individuals and improve the sustainability of the species in the Seashore.

*Major Adverse:* Impacts to sea turtles, their habitats, or the natural processes sustaining them would be detectable and would be expected to be outside the natural range of variability. Frequent disturbance to nesting females would be expected, with negative impacts to reproduction, or other factors resulting in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts could include in direct mortality to one or more nesting females. Complete or partial nest loss due to human activities would occur frequently. Occurrences of disorientation/disruption of hatchling movement would occur frequently (more than 30% of all hatchling emergence events). Direct hatchling mortality from human activities would frequently occur. Local population numbers, population structure, and other demographic factors might experience large declines.

*Major Beneficial:* Impacts on sea turtles, their habitats in the Seashore, or the natural processes sustaining them during key life history stages would be detectable and would be expected to be outside the natural range of variability. Changes to key characteristics of habitat in the Seashore and/or protection to key life history stages would substantially lessen mortality or loss of habitat and would result in notable increases in Seashore population levels.

*Duration:* Short-term effects would last up to two seasons.

Long-term effects would be continued beyond two seasons.

## Study Area

The study area for assessment of the various alternatives is the Seashore. Based on the fact that the loggerhead sea turtle is the primary nester within the Seashore (94% of all nests [NPS 2007e, 2008a; Baker pers. comm. 2009a]) and is the only sea turtle for which recovery criteria are designated for the state of North Carolina in its recovery plan (NMFS and USFWS 2008, 1992a, 1992b, 1991), the study area for the cumulative impacts analysis is the state of North Carolina.

## Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy

### Resources Management Activities

Under alternative A, Seashore staff would survey the entire Seashore daily for turtle crawls and nests from May 1 to September 15. Daily surveys would be conducted in the morning prior to the onset of heavy public ORV use. This period encompasses the nesting season for loggerhead sea turtles (mid-May to mid-August), the most prevalent nesters at the Seashore, and the vast majority of the nesting season for the green and leatherback sea turtles, which are infrequent nesters at the Seashore. Prior to May 1, the leatherback sea turtle is the only species likely to nest at the Seashore. Although turtle surveying would not occur prior to May 1, turtle crawls may be detected by bird monitors as evidenced by single leatherback nests being detected in April during two previous years (NPS 2001c, 2008a). Additionally, turtle crawls were often detected by bird monitors in May during years when daily turtle surveys did not begin until June 1 (Murray pers. comm. 2008).

From September 16 to November 15, Seashore staff would conduct periodic monitoring (e.g., every two to three days) for hatchlings emerging from previously undetected nests, especially in areas of high

visitation. Between 1998 and 2009, 4 nests have been found after August 31, three of which were found on September 15 or later. However, prior to 2007, morning nest surveys ended on August 31, so any nests laid after that time were unlikely to be located and protected. Since 2007, nest surveys have continued to September 15 (Baker pers. comm. 2009b). Although regular monitoring occurs, some nests on a rare occasion may be missed due to human error or from evidence of the nest being covered up by nighttime ORV use (NPS 2005c, 2004d). Nests that go undetected would not be subject to management by the Seashore staff and would result in long-term minor to moderate adverse impacts because the nests would be subject to multiple potential threats such as being run over by ORVs, depredation by foxes or other predators, and loss due to erosion or frequent flooding. Hatchlings emerging from unprotected nests would be at a greater risk from light pollution because there would be no light management measures enacted. If an undetected nest were located in an ORV or day use area, hatchlings would be subjected to impacts associated with tire tracks and footprints because these would not be raked smooth by Seashore staff. If tracks are not raked smooth, hatchlings can become easily trapped and disoriented in the ruts/footprints, leading to an increased risk of death by predation, being run over by subsequent ORV traffic, or exhaustion prior to reaching the ocean.

Seashore staff would use ATVs/UTVs and occasionally ORVs to survey for turtle crawls and nests. Throughout the Seashore, essential vehicle use would not exceed 10 mph and would avoid driving within turtle nest closures. The use of ATVs/UTVs and ORVs during turtle surveys would provide long-term moderate benefits by allowing Seashore staff to cover the entire length of the shoreline each morning in search of turtle crawls and nests prior to the onset of heavy public use during the daytime hours. Without the use of these vehicles, staff would not be able to cover the entire Seashore or bring the necessary supplies with them to install closures around located nests. NPS staff using vehicles would not leave tire ruts behind in nesting areas. Using ATVs/UTVs and ORVs during surveys would cause a slight risk of crushing a nest or hatchlings or disturbing nesting turtles, potentially causing long-term minor to moderate adverse impacts. However, these risks would be minimized by the fact that surveys would occur during the morning, while nesting and hatching typically occur at night, as well as the precautions taken by the experienced staff conducting the surveys. On the rare occasion when nesting or hatching activities occur during daylight hours, as happened in 2005 (Sayles pers. comm. 2005), abiding by the speed and closure limits would allow observers to see and avoid impacting the turtles and their nests.

Daily surveys for nests would provide long-term minor to moderate beneficial impacts. It would allow the timely detection of closure violations and repair of damage (e.g., broken signs or string) caused by ORVs or pedestrians and allow for an assessment of whether any damage to a nest occurred. Tracks left behind by ORVs and/or pedestrians that are detected would be raked smooth. Predator activity and hatching events would also be detected. In the case of predator activity, daily surveys would allow staff to protect those nests with predator exclosures.

During periods following severe storm events or when large quantities of seaweed are washed ashore, monitoring for post-hatchling washbacks would occur. This monitoring would provide long-term minor benefits to hatchlings washed ashore by helping prevent them from being run over by vehicles or disturbed by pedestrians or their pets and by protecting them from potential predation.

Under alternative A, the Seashore would install a 30-foot (9.1-meter) by 30-foot (9.1-meter) buffer around each turtle nest found. This buffer would continue to help protect turtle nests from being run over by ORVs or disturbed by pedestrians or pets. The buffers would also protect the nests from potential erosion impacts caused by multiple ORV passes. After approximately 50 to 55 days, the turtle closure would be expanded to the surf line, with varying widths based on the level and type of recreational use in the area. In VFAs with little or no pedestrian traffic, the total width would be 75 feet (22.9 meters); on village beaches or other areas with high levels of pedestrian and other non-ORV use, the total width would be 150 feet (45.7 meters); and in ORV traffic areas, the total width would be 350 feet (106.7

meters). Additionally, the closed area would be expanded by 30 feet (9.1 meters) to 50 feet (15.2 meters) on the landward side of the nest. By protecting all of the detected turtle nests in the Seashore during the incubation and hatching periods, these buffers would provide long-term moderate to major beneficial impacts to the sea turtles.

As nests near their hatching date, Seashore staff would continue to install U-shaped light-filter fencing around the nests, with the open face of the “U” oriented toward the water to block light pollution from the villages, beach fires, any vehicles operating on the beach after dark, or other sources of light pollution. Filter fencing requires high maintenance because it is often washed out by incoming tides, buried by winds, and/or completely uprooted by storm activity. If not properly maintained, hatchlings may become entangled in the fencing. However, since 2005 when filter fencing was first employed for all turtle nests, no occurrences of hatchlings becoming entangled in fencing have been recorded (NPS 2007e, 2008a, 2009c). Although it does not eliminate light impacts completely, the installation of filter fencing would provide long-term moderate to major beneficial impacts to sea turtles.

If it is determined that expanding the buffer around a nest prior to hatching would disrupt ORV access along the beach, the Seashore staff would immediately determine if an alternate route is available or if a reasonable bypass route could be established during the hatch window. The use of bypasses or alternate routes around sea turtle nests would protect the nests and hatchlings by diverting recreation-users away from the sensitive area and result in long-term minor beneficial impacts. Relocation of nests solely to resolve recreational access issues would not be considered.

In accordance with NCWRC guidelines, relocation for environmental reasons would be considered as a last resort since relocation carries the risk of either damaging the eggs or the embryonic development process. When a nest is found, under alternative A, staff would assess the need to relocate the nest away from areas prone to erosion or frequent flooding. If relocation is necessary, procedures for relocating nests provided in the NCWRC handbook (NCWRC 2006) would continue to be followed. Relocating nests would have both beneficial and adverse impacts. Historically, the single greatest impact on hatching success has been weather-related events, such as hurricanes or other storms, which can uncover nests through erosion, frequently flood and inundate nests, or bury nests under feet of sand (NPS 2009c, 2008a, 2007e, 2005c, 2004d, 2003e, 2002c, 2001c, 2000b). Relocating nests prone to these events to areas higher on the beach increases the likelihood that these nests would not be lost, resulting in long-term moderate to major beneficial impacts. However, relocation does have some negative impacts that would result in long-term minor to moderate adverse impacts. Six hours after deposition, the egg embryo becomes attached to the top of the eggshell. After this time, the embryo becomes very sensitive to movement and can be dislodged if the egg is rotated. This would result in the death of the embryo. In addition, relocating nests higher on the beach could alter the natural sex ratio of the nest by altering the incubation temperature. Temperatures warmer than 84.6°F produce more females, while colder temperatures produce more males. Because North Carolina is near the northern limit of loggerhead nesting, it is believed that North Carolina contributes more males to the population (Mrosofsky 1988). However, there are currently not enough temperature or sex ratio data to determine if sex ratios are being altered due to relocation efforts.

Sea turtles would continue to experience long-term minor benefits from periodic night patrols by law enforcement for the purpose of enforcing compliance with regulations and closures. Night patrol rangers have been known to place make-shift fencing around nests to protect them until turtle observers arrive in the morning (Meekins pers. comm. 2005). However, night patrols would be conducted using ORVs and could contribute to the number of false crawls that exist at the Seashore, resulting in long-term minor to moderate adverse impacts (see discussion of night driving and false crawls below under “ORV and Other Recreational Use”).

Under alternative A, the Seashore would use turtle-friendly lighting for all Seashore structures and would continue to encourage all concessionaires to install turtle-friendly lighting as well. These actions would provide long-term minor benefits to sea turtles by reducing the amount of light pollution on the beaches that could disorient emerging hatchlings or cause nesting females to abort their nesting attempts.

Under alternative A, the public would continue to receive information at the visitor centers about nesting sea turtles and the measures the Seashore is taking to protect the nests and hatchlings. The public would also continue to be notified about temporary closures that would limit ORV traffic, as well as when the closures are removed. Such public outreach is beneficial to the species because it educates the public about the specific needs of the species and alerts the public ahead of time to areas where they cannot drive due to potential impacts to the species. Therefore, public outreach under alternative A would have long-term minor beneficial impacts.

To help better understand the biology of sea turtles under alternative A, the Seashore would support research efforts studying the sex ratio of sea turtles at the Seashore. Depending upon the methodology used in conducting the research, there could be a slight risk of disturbing or injuring hatchlings or eggs. However, Seashore staff would take precautions to minimize disturbance, and information obtained from the research would be beneficial in making long-term decisions regarding nest relocation policies. Overall, sea turtle research would have long-term minor beneficial impacts.

Overall, resources management activities under alternative A would have long-term moderate benefits due to the protection provided to sea turtles.

### **ORV and Other Recreational Use**

Under alternative A, the Seashore would continue to provide sea turtles with protection from human disturbance, although there would be no restriction on night driving. Although all of the species management actions would provide some measure of protection to sea turtles, there would still be a risk of disturbance or injury to adult nesting females, hatchlings, and live stranded sea turtles due to ORV use and other activities (i.e., pedestrian use, pets). Sea turtles nest along all of the Seashore ocean beaches. Although the process of nest site selection is not well understood, and there is a lack of data describing the characteristics of nesting sites at the Seashore, 24-hour-per-day ORV use may affect the beach profile and substrate characteristics in a way that reduces suitability for nesting and hatching success (Cohen et al. 2010). Vehicle traffic on beaches contributes to erosion, especially during high tides or on narrow beaches, where driving is concentrated higher on the beach, which may make some areas unsuitable for nesting (NMFS and USFWS 2008). Vehicle driving also compacts the sand, making it more difficult for females to dig their nest cavities. Although the ORV corridor protects some of the beach from ORV use, the protected area is fairly narrow, and it is unknown if the protected areas are more suitable for nesting than the unprotected areas, or what percentage of historical nests are located within the protected area as compared to unprotected areas. Vehicles also leave ruts in the sand, and although these ruts would be raked smooth approximately 50 to 55 days into the incubation period when nest closures are expanded, closure violations do occur, leaving ruts, which can trap hatchlings attempting to reach the ocean (Hosier et al. 1981). Over the years, closure violations and vandalism of closures and nests has continued to occur (NPS 2009c, 2008a, 2007e, 2005c, 2004d, 2003e, 2002c, 2001c, 2000b), and with no increase in law enforcement or resource staffing levels under alternative A, the closure violations and vandalism would be expected to continue. Under alternative A, ORVs would have long-term minor to moderate adverse impacts because of these potential disturbances.

Recreational driving, commercial fishing vehicles, and beach fires would continue to be allowed at night within the Seashore under alternative A, resulting in long-term moderate to major adverse impacts. The presence of ORVs on the beach at night during the sea turtle nesting season could have adverse impacts



by disrupting the nesting process and causing nesting attempts to be aborted. Because visibility is reduced at night, there is also the potential for nesting, live stranded, or hatchling turtles to be hit by ORVs operating at night (NMFS and USFWS 1993; Cohen et al. 2010). Cape Hatteras and Cape Lookout national seashores are listed in the USFWS Loggerhead Recovery Plan as the only federal agencies within the nesting range allowing nighttime driving on beaches. Though actual vehicle counts are scant, patrol rangers noted substantial vehicle driving on the beaches at night in 2005 when there were no night-driving restrictions (Henson pers. comm. 2005). Night driving and heavy pedestrian use at night may also obscure turtle crawls prior to the morning turtle patrol, causing the Seashore staff to miss a turtle nest and therefore not protect it (NPS 2007e, 2004d, 2003e). Impacts to unprotected nests would be the same as discussed above under “Resources Management Activities,” resulting in long-term major adverse impacts.

False crawls (aborted turtle crawls that do not result in a nest, also often referred to as non-nesting crawls) can be detrimental to sea turtles and can be caused by, among other things, suboptimal sand conditions; encounters with roots, debris, or rocks while digging a nest; encounters with obstacles while crawling up a beach; disturbance from lights, noise, or other unusual activities; or other reasons that are not known. If too many false crawls occur for one individual, turtles can shed their eggs in the water and, thus, those eggs would be lost. Although turtles may attempt to nest again that same night or on subsequent nights, causing a turtle to abort a nesting attempt is considered an incidental take under Section 7 of the ESA, and it may cause the turtle to nest in another location that is less optimal.

Under normal, undisturbed conditions, there is generally a one to one ratio between the number of nests and the number of false crawls in a given area (Godfrey pers. comm. 2005a). Based on numbers contained in the 2000–2008 sea turtle annual reports provided by the Seashore, since 2000, an average of 49.1% of all turtle activity at the Seashore each year was false crawls, with individual years ranging from 35.5% to as high as 64.5%. Although it is not known how many false crawls have been caused directly by ORVs, specific incidents have been documented where it was known that an ORV caused the false crawl (NPS 2006e). However, it is important to note that many different factors can contribute to false crawls, and no definitive assessment exists of how the level of ORV use, or any other recreational use, may influence sea turtle nesting activity. For example, within areas open to ORV use on Hatteras Island during 2008, false crawls made up 47.5% of the total known nesting activity (19 false crawls versus 21 nests) (NPS 2009c).

The sea-finding mechanisms in emerging hatchlings are complex and involve cues from both brightness and shape. However, studies indicate that strong brightness stimuli can override competing cues (Witherington and Martin 1996). Hatchlings tend to orient toward the brightest direction over a broad horizontal direction, which on an undeveloped beach is often toward the open horizon of the ocean. However, light pollution, such as that from ORV headlights, beach fires, or lights from nearby residences or other developments, can cause emerging hatchlings to become disoriented (meander or circle) or misoriented (led in the wrong direction). Depending on the location of the artificial lights with respect to a hatching nest, hatchlings may move toward the artificial light in a direction that is away from or parallel to the ocean. This can result in the hatchlings never finding their way to the ocean. It can also cause the hatchlings to expend more energy than necessary to find the ocean, leading to exhaustion and an increased risk of predation or desiccation. Installing light filter fencing approximately 50 to 55 days into the incubation period decreases this impact somewhat by helping to shelter the emerging hatchlings from light emanating from ORV headlights, beach fires, or nearby development, but it does not eliminate the impact completely.

Beach fires are also associated with the presence of ORVs and nighttime use at the Seashore (Meekins pers. comm. 2005). As a result, both adult nesting turtles and hatchlings would be subject to long-term moderate to major adverse impacts associated with light pollution from beach fires. In 2006, a turtle crawl was discovered going into the coals of a beach fire (NPS 2007e), and in 2007, a nest was discovered two

feet from a beach fire. In this instance, visitors relayed to Seashore staff that they extinguished the fire when they saw an adult turtle crawling towards the fire (NPS 2008a). In 2008, hatchlings emerging from a nest crawled approximately 984 feet (300 meters) into a campfire to the south of the nest (NPS 2009c).

Overall, ORV and other recreational use under alternative A would result in long-term major adverse impacts to sea turtles due to the amount of Seashore available for ORV use and the lack of night-driving restrictions.

**Cumulative Impacts.** Other past, present, and future planned actions within and around the Seashore have the potential to impact the population of all three species of sea turtles that nest at the Seashore. Past storms such as hurricanes and other weather events during the turtle nesting and hatching season (April–November) have substantially impacted turtle nesting success within the Seashore and throughout the state of North Carolina and would continue to have long-term moderate to major adverse impacts. Storms, depending upon their intensity, can result in partial or complete nest loss due to flooding of nests, exposing nests due to erosion, or burying nests under feet of sand. Sea turtles have developed nesting strategies (e.g., laying lots of eggs and nesting several times during a season) to compensate for catastrophic natural events. Storms also have altered the beachscape in both positive and negative manners. In some areas, storms cause beach erosion, which has made those areas less optimal for nesting, while in other areas, storms have caused sand accretions that creates new nesting habitat. Weather events such as cold fronts can also cause sudden drops in ocean and soundside water temperatures that can cause hypothermia, which can kill sea turtles. Hurricanes can also indirectly affect sea turtles because of their impact on staff resources. Recovery efforts that detract staff from surveying/monitoring activities during sea turtle nesting and hatchling season can have long-term minor adverse impacts by causing nests to be missed due to inability to survey.

The dredging of the federally authorized navigation channel at Oregon Inlet and disposing of material on Pea Island has occurred in the past and would continue to occur on an annual basis in the future with long-term minor to moderate adverse impacts. Dredging is typically done by hydraulic pipeline dredge with work generally performed during the fall and winter months (USACE 2002). Maintenance of the navigation channels with pipeline dredges should not affect turtle species because pipeline dredges are not known to take sea turtles. Hopper dredging, which is known to take sea turtles, is currently performed under a Regional Biological Opinion (RBO) issued by the NMFS for hopper dredging in the southeastern United States. All provisions of this RBO, or any issued subsequently, are strictly followed. No sea turtles have ever been taken by hopper dredges at Oregon Inlet, and under the recommended plan, the use of a hopper dredge to construct and maintain the navigation channel would be extremely rare (USACE 2002). Nests laid in the area are currently relocated by Refuge personnel because of the severely eroded nature of some beach areas and the possibility of nest overwash by high tides. However, because encroachment into the nesting season during dredging and disposal events could occasionally occur, and because of the possibility of missing a sea turtle nest during the nest surveys or inadvertently breaking eggs during relocation, it has been determined that the recommended project may affect both the loggerhead and green sea turtles that nest on Pea Island (USACE 2002). Dredging occurs during the turtle nesting season, and occasionally a hopper dredge is used, which has been known to be responsible for incidental takes of sea turtles. Heavy construction equipment may also be used during the deposition of the dredged material, which is typically placed on Pea Island. Heavy equipment use could lead to increased erosion or soil compaction, making the habitat less suitable for nesting.

Berm construction under the CCC provided dune stabilization that changed the habitat available to sea turtles at the Seashore. These stabilization efforts provided for the establishment of NC-12 and subsequent development, removing this area from potential habitat. These stabilization efforts also altered the natural morphology and ecology of the dunes and beaches within the Seashore and have contributed to the narrowing of the beaches through erosion (Cohen et al. 2010). These past actions resulted in long-term

moderate adverse impacts to all sea turtle species at the Seashore. Similar to the original efforts of the CCC, the widening of NC-12 (on Bodie Island) and continued berm maintenance would continue to result in long-term moderate adverse impacts to sea turtles by continuing to contribute to the narrowing of the beaches through erosion.

Several of the local and NPS past, current, and future planning efforts can also affect sea turtle species. For example, new development that has occurred in Dare and Hyde counties under their land use plans had increased the residential housing and related services in the areas within the Seashore. This land development within the Seashore, as well as throughout the coastal portions of the counties, has reduced the amount and quality of habitat available to turtle species, resulting in adverse impacts. In addition to past actions, new development could result from the implementation of the County Land Use Development Plans for Dare and Hyde counties, including expected revisions to the Dare County Plan.

Although the details are lacking, additional development within the Seashore's boundaries that may result from implementing the land use plan may have long-term minor to moderate adverse impacts by increasing the amount of light pollution on the beaches causing adult turtles to abort nesting attempts and hatchlings to be disoriented when trying to make their way to the sea. Development might also increase the recreational use of the beaches and the impacts that recreation has on sea turtles.

The educational aspect of the Seashore's Long-range Interpretive Plan would provide long-term minor benefits to the sea turtles because it would help to educate visitors about the sea turtles that inhabit the Seashore and the protection measures that are put in place to help protect them. The Predator Management Plan would also provide long-term minor benefits to the sea turtles by helping to control mammalian predators, such as fox and raccoon, which prey upon sea turtle eggs and hatchlings. However, there could be a slight chance that predator trapping would result in disturbance to females or hatchlings, or result in nest or hatchling loss if trappers are not cognizant of nest locations, resulting in long-term minor to moderate adverse impacts.

The Cape Lookout National Park Interim Protected Species Management Plan/EA provides long-term moderate beneficial impacts to all three species of nesting sea turtles at the Seashore through the management policies that it employs. However, even with those management measures in place, adverse impacts would still occur to the species as recreational uses, including night driving, would still occur, but would be mitigated to an extent by the management measures being employed such as frequent surveys for nests. The outcome of the Cape Lookout National Seashore ORV Management Plan/EIS would also have direct long-term impacts on the nesting sea turtle populations within the Seashore, as well as within the state of North Carolina. Specifically, it would have an impact on the state's goal of achieving 2,000 loggerhead nests annually within the state per the Loggerhead Recovery Plan (NMFS and USFWS 2008). However, whether the impact of the ORV plan would be beneficial or adverse to sea turtles would depend upon the management decisions that are made and ultimately implemented.

During the replacement of the Herbert C. Bonner Bridge, construction noise and lighting may adversely impact nesting females, and dredging in Pamlico Sound could impact waterborne turtles, resulting in long-term minor to moderate adverse impacts. The presence of shading from the bridge and pilings driven into the substrate may also alter the optimal suitability of the beach surrounding the bridge for turtle nesting. However, the new bridge would also provide some long-term minor benefits by allowing barrier island processes to occur more naturally than with the present bridge. The new bridge would allow the natural formation of new habitats such as overwash fans, new inlets, and low sloping beaches that could provide suitable habitat for nesting turtles. The EIS for this project found that the proposed replacement of the Bonner Bridge, and subsequent phases of elevating portions of NC-12 onto bridges is not likely to jeopardize the continued existence of listed sea turtles (FHWA 2007).

The overall cumulative impact of these past, current, and future actions—added to the effects of actions under alternative A—would result in long-term moderate to major adverse cumulative impacts.

**Conclusion.** Through the protection of adult and hatchling sea turtles, surveys and management activities would provide long-term moderate beneficial impacts. Because alternative A lacks night-driving restrictions during sea turtle breeding season, adult turtles may be killed or caused to abort nesting attempts, nests may be run over or disturbed, and hatchlings may be run over or disoriented by light pollution from vehicles and associated activities, such as recreational and commercial fishing. Therefore, ORV and other recreational use occurring under alternative A would have long-term major adverse impacts.

Past, present, and future activities both inside the Seashore and within the state of North Carolina—when combined with the impacts of ORV use and level of resource management expected under this alternative would continue to result in long-term moderate to major adverse cumulative impacts.

### Impairment Determination

*Brief Description of the Condition of the Resource.* The Seashore staff has been consistently monitoring for sea turtle nests since 1987. The number of nests recorded at the Seashore from 2000 to 2010 has fluctuated greatly, with only 43 nests recorded in 2004 and 153 nests recorded in 2010, which was the highest number on record (NPS 2010a; Muiznieks pers. comm. 2010b). Of the three species that nest at the Seashore, the loggerhead turtle is by far the most numerous, comprising approximately 95% of the known nests between 2000 and 2010 (NPS 2005c, 2007e, 2008a; 2009c; 2010a; Baker pers. comm. 2009a; Muiznieks pers. comm. 2010c). Green turtles and leatherbacks breed primarily in the tropics, with only small numbers nesting at higher latitudes. Green turtles have nested regularly at Cape Hatteras, but in fewer numbers, comprising only about 5% of the nests between 2000 and 2010, while leatherback turtles have nested infrequently at the Seashore, comprising only about 1% of the nests (NPS 2005c, 2007e, 2008a; 2009c; 2010a; Baker pers. comm. 2009a; Muiznieks pers. comm. 2010b). The vast majority of sea turtle nests occur on Hatteras and Ocracoke islands, with turtles occasionally nesting on Bodie Island (NPS 2000b, 2001c, 2002c, 2003e, 2005c, 2006e, 2007e, 2008a, 2009c, 2010a). The three species of sea turtles found at the Seashore are federally listed as threatened or endangered.

*Sea turtles are necessary to fulfill the purposes for which the Seashore was established.* The Seashore's enabling legislation provides for the Seashore to be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic conditions prevailing in the area to be preserved. The three species of sea turtles found within the Seashore are federally listed as threatened or endangered and comprise the unique flora and fauna that the Seashore was established to preserve.

*Sea turtles are key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore.* The threatened and endangered species that exist within the Seashore are part of the Seashore's significance. The three species of sea turtles found in the Seashore are federally listed as threatened or endangered and preservation of these species are part of why the Seashore was established (preservation of the unique flora and fauna) which is key to the natural integrity of the Seashore.

*Sea turtles are implicitly but not explicitly identified as a significant resource in the Seashore's planning documents.* The Seashore's planning documents do not provide an explicit listing of "significant resources," i.e., a list stating which resources are significant and which are not. However, the planning documents repeatedly address the flora and fauna and physiographic conditions of the Seashore, particularly migratory birds and threatened and endangered species. Sea turtles are one of the predominant threatened and endangered species found at the Seashore. Therefore it seems reasonable to conclude that the Seashore's planning documents implicitly consider sea turtles "significant" because they

are an important part of the fauna the Seashore is mandated to preserve. The Seashore's 2007 Long-Range Interpretive Plan in its description of the Seashore's purpose calls out preserving and protecting the "park's natural resources" and "dynamic barrier islands that are shaped by ongoing natural processes" (Seashore's Long-Range Interpretive Plan (NPS 2007d)). The Seashore's 2006 – 2011 Strategic Plan lists preserving and protecting the "dynamic coastal barrier island system...flora and fauna that are found in a variety of habitats at the park," including "migratory birds and several threatened and endangered species" (2006 – 2011 Strategic Plan (NPS 2007b)). The Seashore's General Management Plan states: "The overall planning objective for the national seashore is to preserve the cultural resources and the flora, fauna, and natural physiographic condition, while providing for appropriate recreational use and public access to the Oceanside and soundside shores in a manner that will minimize visitor use conflict, enhance visitor safety, and preserve park resources" (NPS 1984). The primary resource management objective of the Seashore as expressed in the General Management Plan, is to preserve the dynamic physiography and the characteristic ecological communities of the Outer Banks, in all units of the Seashore except for the developed areas.

The Seashore's Strategic Plan states "The purpose of Cape Hatteras National Seashore is to preserve and protect significant segments of barrier island coastline for the benefit and enjoyment of the people and to provide for recreational visitor use consistent with that purpose." The Seashore's Strategic Plan describes the significance of the Seashore as follows:

This dynamic coastal barrier island system continually changes in response to natural forces of wind and wave. The flora and fauna that are found in a variety of habitats at the park include migratory birds and several threatened and endangered species.

In addition to these broader planning documents that provide management for the flora and fauna, migratory birds and threatened and endangered species as part of the resources of the Seashore, the Seashore's Interim Protected Species Management Strategy provides management measures specifically for sea turtles.

*Analysis.* Implementation of alternative A has the potential for impairment to sea turtles because it may result in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore and meet the long-term objectives of the Loggerhead Turtle recovery plan (NMFS and USFWS 2008). Implementation of alternative A would permit year-round unrestricted night driving on the beach and would designate the ocean and inlet shoreline and existing soundside routes as designated ORV routes. Complete or partial nest loss from causes related to human activities would be expected to occur frequently for the following reasons. An undetermined number of nests may not occur due to the level of human activity and disturbance on Seashore beaches at night when turtles typically come ashore to lay nests. Unrestricted nighttime or very early morning ORV use may cover evidence of the nest so that it is not found by the morning sea turtle patrol. Undetected nests are not managed by Seashore staff. Unmanaged nests are subject to being run over by ORVs, depredation, loss due to erosion or frequent flooding, and greater risks of hatchling disorientation or misorientation from light pollution. Hatchlings from unmanaged nests may become trapped and disoriented in tire ruts or footprints, leading to an increased risk of death by predation, being run over by subsequent ORV traffic, desiccation, or exhaustion before reaching the ocean. Disoriented/misoriented hatchlings may never reach the ocean. Detected nests are protected by a symbolically fenced closure until the hatch window, however, implementation of alternative A continues law enforcement and resource staffing at a level where closure violations and vandalism of nests would be expected to continue at the same level or at an increased level as visitation increases.

Seashore staff erect light filter fencing at managed nests during the hatch window, which lessens, but does not eliminate, impacts from vehicle headlights, lanterns, beach campfires and other sources of light

pollution that result in hatchling disorientation. There are no restrictions on use of lanterns or other auxiliary light sources on the beach at night. In addition to the direct effects of ORVs on the beach at night, unrestricted night driving also increases the potential for disturbance by people and pets carried to more distant locations by vehicles. Beach fires are also associated with the presence of ORVs and nighttime use at the Seashore. Hatchlings have been disoriented by and crawled into beach fires.

In addition to the impacts to nests and hatchlings, the presence of ORVs on the beach at night can disrupt the nesting process and cause nesting attempts to be aborted. Repeated aborted nesting attempts by the same individual can lead to the eggs being shed in the water. Sea turtles nest along all of the Seashore's ocean beaches. Although management under alternative A would provide some protection to detected sea turtle nests and hatchlings, there would continue to be risk of disturbance to adult nesting females, undetected nests, hatchlings, and live stranded sea turtles due to ORV use and associated pedestrian and pet use. Reduced visibility at night increases the potential for nesting, live stranded, or hatchling turtles to be hit by ORVs operating at night. Additionally 24-hour-per-day ORV use may affect the beach profile and substrate. Vehicle driving also compacts the sand, making it more difficult for females to dig their nest cavities. Cumulative impacts from combining the effects of alternative A with effects of other past, present, and future planned actions in and around the Seashore would likely result in adverse effects that are beyond the level of disturbance or harm that would occur naturally, and may include changes in population structure and declines in local population numbers. Therefore, implementation of alternative A has the potential to impair sea turtles.

**Determination of Effect.** Under alternative A, resources management activities would result in long-term moderate benefits due to the protection provided to sea turtles from daily surveys for nests during the sea turtle nesting season (May 1 – September 15) and installing closures around each nest found, expanding the closures and installing light filter fencing around the nests during the hatch window, relocating nests from areas prone to erosion or frequent flooding, conducting periodic night patrols to enforce compliance regulations, and installing turtle friendly lighting on the Seashore.

ORV and other recreational use would have long-term major adverse impacts on sea turtles due to the amount of Seashore available for ORV use and by allowing nighttime driving on the beach. ORV and other recreational use would have impacts on sea turtles by affecting the beach profile and substrate characteristics in ways that reduce suitability for nesting and hatching success, likely continued closure violations and vandalism, and impacts caused by night driving and beach fires. Under the ESA, these impacts would result in a finding of may affect / are likely to adversely affect sea turtles because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities, the actions under alternative A would also likely cause adverse effects.

## **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

### **Resources Management Activities**

Surveys for sea turtle nests/crawls and monitoring for evidence of hatching under alternative B and the impacts of these activities would be the same as under alternative A.

Other management activities and impacts under alternative B would be similar to alternative A with several exceptions included in this alternative that would enhance the protection of sea turtles and their habitat. As under alternative A, Seashore staff would continue to install a 30-foot (9.1-meter) by 30-foot (9.1-meter) buffer around each turtle nest found, and after approximately 50 to 55 days, when the nest is approaching its hatch window, the turtle closure would be expanded to the surf line with varying widths

based on the level and type of recreational use in the area. The widths would be the same as alternative A; however, under alternative B, full beach closures would be enacted after September 15 when a nest enters its “hatch window” (50 to 55 days). These full beach closures would be put into place to mitigate impacts to hatchlings from night driving. By protecting all of the detected turtle nests in the Seashore during the incubation and hatching periods, these buffers would provide long-term moderate to major beneficial impacts to the sea turtles.

In accordance with the consent decree, under alternative B, if a deliberate act of vandalism occurs to a resource closure, the buffers would be expanded by 164 feet (50 meters) for the first violation, 300 feet for a second violation, and 1,500 feet or more for a third violation. During 2009, two violations occurred to turtle closures that were deemed deliberate and resulted in the expansion of buffers by 164 feet (50-meters) (NPS 2009d). One violation occurred in an area open to ORVs, and the other was in an area open to pedestrians only. Expanding buffers in response to violations would be used as a deterrent to future deliberate acts of vandalism to protect turtle nests and hatchlings. Although some violations may still occur, as evidenced by the violations occurring in 2009, it is assumed that as a result of the impacts that expanded buffers would have on ORV and pedestrian use of the beaches, the number of violations in the future should decrease. Therefore, expanding buffers as a result of violation would have a long-term minor to moderate beneficial impact. These impacts would be the same prior to and after the June 2009 modifications to the consent decree.

If it is determined that expanding the buffer around a nest prior to hatching would disrupt ORV access along the beach, the Seashore staff would immediately assess if an alternate route is available or if a reasonable bypass route could be established at hatching time. The use of bypasses or alternate routes around sea turtle nests would protect the nests and hatchlings by diverting ORVs and pedestrians away from the sensitive area and result in long-term minor beneficial impacts. Relocation of nests solely to resolve recreational access issues would not be considered.

Overall, resource management activities under alternative B would have long-term moderate benefits due to the protection provided to sea turtles.

### **ORV and Other Recreational Use**

In general, management of ORV and other recreational use under alternative B would be the similar to alternative A, but would involve several changes that would result in additional protection of sea turtles and hatchlings.

ORV use on beaches can impact the beach profile and substrate characteristics in a way that may deteriorate the quality and quantity of suitable turtle nesting habitat. Under alternative B, in all locations open to ORV use that are not in front of villages, a 10-meter (30-foot) wide ORV-free zone would be created in the ocean backshore wherever there is sufficient beach width to allow an ORV corridor of at least 20 meters (60 foot) above the mean high tide line. This ORV-free corridor would protect some of the beach from ORV use and reduce impacts that may eventually alter the suitability of turtle nesting habitat. However, the area would be fairly narrow, and it is unknown if the areas to be protected are more suitable for turtle nesting than the unprotected areas, or what percentage of historical nests are located within the protected area as compared to unprotected area. Because of the relatively narrow section of beach being protected from ORV use impacts, the impacts would be long-term minor beneficial. Speed limits under alternative B would be 15 mph, unless otherwise posted, from May 15 through September 15; and 25 mph, unless otherwise posted, from September 15 to May 15. The 15 mph speed limit during the majority of the turtle nesting season is slower than the general 25 mph speed limit under alternative A (except where an ORV corridor is less than 100 feet wide when the speed limit under alternative A is 10 mph).

This slower speed limit would likely help ORV operators better see and potentially avoid turtles and hatchlings as they are driving, resulting in long-term negligible beneficial impacts.

Under alternative B, all potential sea turtle nesting habitat (ocean intertidal, ocean backshore, and dunes) would be closed to all nonessential ORV use, including commercial fishermen, from 10:00 p.m. until 6:00 a.m. (5:00 a.m. for commercial fishermen) from May 1 to September 15. For the period from September 16 through November 15, night driving would be allowed with a permit, although there would be no restriction on the number of permits issued. A permit could be revoked, however, for violation of applicable Seashore regulations or terms and conditions of the permit. Turtle nesting and hatching occurs mostly during nighttime hours. Only on rare occasions do these events take place during daylight hours (NPS 2005c). Therefore, prohibiting driving during the majority of the nighttime during the turtle nesting and hatching season would provide additional protection from ORV impacts, such as causing false crawls, disorienting or misorienting nesting turtles and hatchlings, running over hatchlings and/or nests, leaving behind tire ruts that can trap hatchlings, or running over turtle crawls and obscuring the tracks that help the Seashore staff identify and protect nests. While this would provide some long-term beneficial impacts to turtles, adverse impacts from night driving could still occur between the hours of sunset and 10:00 p.m.; therefore, overall, the impacts would be long-term minor to moderate adverse.

Although additional restrictions and regulations would help lessen some of the impacts from ORV and other recreational use, overall, the impacts would be long-term moderate adverse.

**Cumulative Impacts.** Cumulative impacts to sea turtles under alternative B would be very similar to those described for alternative A. Although alternative B would provide some additional protection, the adverse effects on sea turtles from other actions occurring in the region would still exist and would not be greatly offset by the additional protection afforded under alternative B. Therefore, the effects of these other actions—added to the effects of actions under alternative B—would result in long-term moderate adverse cumulative impacts.

**Conclusion.** Through early morning surveys and monitoring activities, the protection of nests and hatchling sea turtles, and restrictions on night driving during the sea turtle nesting season, alternative B would provide long-term moderate beneficial impacts. Because ORVs would be restricted between the hours of 10:00 p.m. and 6:00 a.m. during sea turtle breeding season, the chances are reduced that (1) adult turtles may be killed or caused to abort nesting attempts; (2) nests may be run over or disturbed; and (3) hatchlings may be killed or disoriented by light pollution from vehicles and associated recreational activities. ORV and other recreational use occurring under alternative B would have long-term moderate adverse impacts. Past, present, and future activities both inside the Seashore and within the state of North Carolina—when combined with the impacts of surveys and management activities, ORV use, and other recreational activities expected under this alternative—would continue to result in long-term moderate adverse cumulative impacts.

**Determination of Effect.** Under alternative B, resources management activities would result in long-term moderate benefits due to the protection provided to sea turtles from daily surveys for nests during the sea turtle nesting season (May 1 – September 15) and installation of closures around each nest found, expanding the closures and installing light filter fencing around the nests during the hatch window, relocating nests from areas prone to erosion or frequent flooding, and installing turtle friendly lighting on the Seashore.

ORV and other recreational use would have long-term moderate adverse impacts on sea turtles by affecting the beach profile and substrate characteristics in ways that reduce suitability for nesting and hatching success and likely continued closure violations and vandalism. While there would still be some impacts caused by night driving, these impacts would be lessened by prohibiting night driving between



the hours of 10:00 p.m. and 6:00 a.m. (5:00 a.m. for commercial fisherman) from May 1 to September 15 and requiring night-driving permits from September 16 through November 15. Under the ESA, these impacts would result in a finding of may affect / are likely to adversely affect sea turtles because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities and restrictions on nonessential ORV nighttime driving, the actions under alternative B would also likely cause adverse effects.

## **Impacts of Alternative C: Seasonal Management**

### **Resources Management Activities**

Under alternative C, the Seashore staff would begin surveying the entire park daily for turtle crawls and nests on May 1 and continue until September 15 or 2 weeks after the last sea turtle nest or crawl is found, whichever is later. Surveys would be conducted in the morning using ATVs/UTVs and possibly ORVs prior to the onset of heavy public ORV use. Similar to alternatives A and B, the daily monitoring period would encompass the nesting season for the loggerhead sea turtle (mid-May to mid-August), the most prevalent nester at the Seashore, and the vast majority of the green and leatherback sea turtles' nesting seasons. Prior to May 1, the leatherback is the only species likely to nest at the Seashore, and their nests are often detected by the Seashore staff conducting bird monitoring, which would begin March 15. If a leatherback turtle nest has been reported in the state of North Carolina prior to May 1, the Seashore would follow the direction of NCWRC regarding the start of turtle patrols. From the date that daily monitoring ends to November 15, periodic monitoring (e.g., every two to three days) for nesting and emerging hatchlings would continue.

Conducting daily and periodic surveys for turtle crawls and nests during these time frames would provide long-term minor to moderate beneficial impacts because similar to alternatives A and B, they would allow nests to be identified for protection; closure violation and damage caused by ORVs or pedestrians would be detected and repaired in a timely manner and an assessment made as to whether or not any damage was done directly to a nest; tracks left behind by ORVs and/or pedestrians that are detected would be raked smooth in expanded closures; predator activity would be detected and nests protected with predator exclosures as necessary; and during periods following severe storm events or when large quantities of seaweed are washed ashore, monitoring for post-hatchling washbacks would help protect them from being run over by vehicles, disturbance from pedestrians or their pets, and potential predation. Precautions would be taken by Seashore staff to avoid potential impacts to sea turtles as described under alternative A.

Under alternative C, turtle nest closures would be the same as for alternatives A and B with 30-foot (9.1-meter) by 30-foot (9.1-meter) closures around each turtle nest found. This closure would help protect nests from being run over by ORVs or disturbed by pedestrians and/or their pets, and against erosion impacts caused by multiple ORV passes. After approximately 50 to 55 days, the turtle closure would be expanded to the surf line, with varying widths based on the level and type of recreational use in the area. In VFAs with little or no pedestrian traffic, the total width would be 75 feet (22.9 meters); on village beaches or other areas with high levels of pedestrian and other non-ORV use, the total width would be 150 feet (45.7 meters); and in ORV traffic areas the total width would be 350 feet (106.7 meters). Additionally, the closed area on the landward side of the nest would be expanded from 30 feet (9.1 meters) to 50 feet (15.2 meters). A difference under alternative C from alternatives A and B is that if multiple nests are located near each other (within 150 feet [45.7 meters]) and have similar hatch dates (within 14 days of each other), the closures would encompass all nests and would not be removed until all nests within the closure have hatched. By protecting all of the detected turtle nests in the Seashore during the incubation and hatching periods, these buffers would provide long-term moderate to major beneficial impacts to the sea turtles.

Similar to alternatives A and B, when a nest is found under alternative C, Seashore staff would determine if the nest should be relocated out of areas that are prone to erosion or frequent flooding. If relocation is necessary, procedures for relocating nests provided in the NCWRC handbook (NCWRC 2006) would be followed. A difference under alternative C from alternatives A and B is that prior to the turtle nesting season, areas in the Seashore deemed unsuitable for turtle nests (i.e., high erosion areas) would be identified by April 15, with maps and descriptions of the areas analyzed by NCWRC. This process would expedite decisions about relocating nests, which would be beneficial in making sure that all morning survey activities are completed in a timely manner. As indicated under alternative A, relocating nests results in long-term moderate to major beneficial impacts by increasing the likelihood that the nests will hatch successfully instead of being lost to storm or erosion related events. However, similar to alternatives A and B, relocating nests does have some adverse impacts including possibly altering the natural sex ratio of the nest by altering the incubation temperature, killing the embryo by dislodging it during movement, or potentially decreasing the successful hatch rate of the nest by improperly constructing the nest pit. These negative impacts would result in long-term minor to moderate adverse impacts.

Similar to alternatives A and B, as nests near their hatching date, the Seashore staff would install U-shaped light filter fencing around the nests, with the open face of the “U” oriented toward the water, to block light pollution from the villages, beach fires, any vehicles operating on the beach after dark, or other sources of light pollution. Although it would not eliminate light impacts completely, installing filter fencing would provide long-term moderate to major beneficial impacts to sea turtles.

Under alternative C, by May 1, 2012, the Seashore would install turtle friendly lighting fixtures on all the Seashore structures visible from the ocean beach except where prevented by overriding lighting requirements, such as lighthouses and fishing piers operated by NPS concessionaires. These actions would provide long-term minor benefits to sea turtles by reducing the amount of light pollution on the beaches that could disorient emerging hatchlings or cause nesting females to abort their nesting attempts. The Seashore would also work with the USFWS, the NCWRC, and Dare County to encourage the development of a turtle friendly lighting educational program or a turtle friendly lighting ordinance for villages within the Seashore on Hatteras Island. If the Seashore is able to work with these agencies to enact a turtle friendly educational program or lighting ordinance in the villages, this would result in long-term moderate to major beneficial impacts because lighting on beaches from the villages may deter turtles from coming ashore and nesting on beaches of their first choice, forcing them to lay eggs at a less optimal site. In addition, hatchlings can become disoriented by the lights and move inland toward the villages and away from the beach, resulting in mortality (NPS 2008a, 2009c).

Besides management activities targeted toward turtles, management activities targeted toward birds and seabeach amaranth under alternative C at the Seashore would also protect turtles and their nesting habitat because their habitats overlap in areas seaward of the primary dune line. Under alternative C, through the establishment of SMAs for birds and seabeach amaranth, combined with other areas that would be closed to ORVs use such as the village beaches, would close approximately 40 miles of beach to ORV use from March 15 to October 14, which encompasses the turtle nesting season. Although some of these closed areas are not historically popular turtle nesting sites (e.g., Bodie Island Spit), other areas such as Cape Point are. Closing approximately 40 miles of beach to ORV use during this period would minimize potential impacts to sea turtles and would result in long-term moderate to major beneficial impacts. The extent of the benefits would depend on the location and size of the closures, which would be reevaluated and re-designated every five years or after major hurricanes.

Under alternative C, and similar to alternatives A and B, the public would continue to receive information at the visitor centers about nesting sea turtles and the measures the Seashore is taking to protect nests and hatchlings. The public would also be notified about temporary closures that would limit ORV traffic, as

well as when these closures reopen. Such public outreach is beneficial to sea turtles because it educates the public on the specific needs of the species and alerts the public ahead of time to areas where they can and cannot go due to potential impacts to species. Similar to alternatives A and B, this aspect of public education would have a long-term minor beneficial impact. In addition, under alternative C, ORV users would be required to obtain an annual ORV users permit valid for 12 months from the date of purchase. To obtain the permit, an ORV user would need to complete a short educational program and pass a basic knowledge test showing that the person understands the rules and regulations governing ORV use at the Seashore. The permit may be revoked for violation of applicable Seashore regulations or terms and conditions of the permit. This educational requirement, with the potential deterrent of losing driving privileges on the Seashore, would have an additional long-term minor to moderate beneficial impacts, with the extent of the impacts based on the ability to enforce the regulations and apprehend violators.

To help better understand the biology of sea turtles or improve resource protection within the Seashore, under alternative C, the Seashore may authorize qualified researchers associated with recognized academic or research institutions to conduct additional scientific research on turtle species. Depending upon the methodology used in conducting the research, there could be a slight risk of disturbing, injuring, killing, or destroying turtles, hatchlings, or eggs. However, the information obtained from the research would be beneficial to the long-term survivability of the individual sea turtle species and in making long-term decisions regarding their protection within the Seashore and in other areas. Research would provide long-term minor to moderate beneficial impacts to nesting sea turtles at the Seashore.

Overall, resource management activities under alternative C would have long-term moderate to major beneficial impacts due to the added protection provided to sea turtles.

### **ORV and Other Recreational Use**

Under alternative C, the overall impact on sea turtles due to ORV use would be substantially reduced when compared to the no-action alternatives by closing approximately 40 miles of beach to ORV use during the nesting season and by closing ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) to nonessential recreational ORV use from 7:00 p.m. to 7:00 a.m. between the dates of May 1 and November 15.

As described under alternative A, vehicle traffic on beaches contributes to erosion, which may eventually deteriorate the quality and quantity of nesting habitat, especially during high tides or on narrow beaches where driving is concentrated higher up on the beach. Vehicle traffic also compacts the sand, making it more difficult for females to dig their nest cavities, forcing them to expend more energy, or even causing them to abort the nesting attempt. Under alternative C, these impacts would be eliminated in some areas by closing approximately 13 miles of beach year-round (approximately 27 miles closed during the nesting season only), although not all of this area is necessarily optimal nesting habitat.

Vehicles also leave ruts in the sand and pedestrians leave footprints, and although these ruts and footprints would be raked smooth approximately 50 to 55 days into the incubation period when nests closures are expanded, closure violations do occur, leaving ruts and footprints that can trap hatchlings attempting to reach the ocean (Hosier et al. 1981; NPS 2007e, 2008a, 2009c). However, with increased education through an ORV permit program and the threat of having the permit revoked as a result of violating the Seashore's rules and regulations, it is assumed that the number of violations occurring under alternative C would decrease. While the existing level of impacts from ORVs would be expected to decrease under alternative C because there would still be adverse impacts, the above impacts from ORV use would have long-term minor to moderate adverse impacts.

As described under alternative A, turtle nesting and hatching occurs mostly during nighttime hours, and this activity can be impacted by ORVs through disorientation by light or direct mortality (NPS 2005c, 2008a). Prohibiting nonessential recreational ORV nighttime driving during turtle nesting season would virtually eliminate these potential impacts, creating long-term moderate to major beneficial impacts. However, some risk of long-term minor adverse impacts would still exist from the use of essential vehicles at night, as well as allowing night driving in area outside of existing resource closures by commercial fishermen who are actively engaged in authorized commercial fishing activities.

As described under alternative A, both nesting turtles and hatchlings are impacted by light pollution from beach fires, and many beach fires are associated with the presence of ORVs (Meekins pers. comm. 2005). Although beach fires would not be prohibited under alternative C, prohibiting ORV use during nighttime hours would likely greatly reduce the number of beach fires that occur at the Seashore, providing long-term minor to moderate beneficial impacts. Without nonessential ORV use at night, any beach fires would likely be limited to those areas in front of the villages to which people can more easily carry firewood. Even though the ability to have beach fires would require a non-fee educational permit, allowing these beach fires could impact (misorientation, disorientation, injury, and death) nesting turtles and hatchlings, resulting in long-term minor to moderate adverse impacts.

Under alternative C, portable lanterns, auxiliary lights, and powered fixed lights of any kind shining for more than 5 minutes at a time would be prohibited on the Seashore's ocean beaches. This would help eliminate point sources of light that provide additional light pollution on the beaches and minimize impacts to turtles and hatchlings, resulting in long-term minor to moderate beneficial impacts.

Restrictions placed on nonessential, recreational ORV use under alternative C would provide substantial long-term benefits to sea turtles, including seasonal night-driving restrictions that close the beach before dark (7:00 p.m.), some adverse impacts would still occur in areas where their use is allowed. Therefore, overall, ORV and other recreational use would have long-term minor adverse impacts.

**Cumulative Impacts.** Cumulative impacts to sea turtles under alternative C would be very similar to those described for alternative A. Although alternative C would provide additional protection that would be beneficial to the regional sea turtle population, the adverse effects on sea turtles from other actions occurring in the region would still exist. Therefore, the overall cumulative impact of these past, current, and futures actions—added to the effects of actions under alternative C—would result in long-term minor to moderate adverse cumulative impacts.

**Conclusion.** Through surveys and monitoring activities, the protection of nests and hatchling sea turtles, restrictions on night driving during the sea turtle nesting season, and limiting of ORVs to designated use areas, alternative C would provide long-term moderate to major beneficial impacts. Because ORV use would be restricted between the hours of 7:00 p.m. and 7:00 a.m. during sea turtle nesting season, the chances are reduced that (1) adult turtles may be killed or caused to abort nesting attempts; (2) nests may be run over or disturbed; and (3) hatchlings may be killed or disoriented by light pollution from vehicles and associated recreational activities. ORV and other recreational uses occurring under alternative C would have long-term minor adverse impacts.

Past, present, and future activities both inside the Seashore and within the state of North Carolina—when combined with the impacts of ORV use, surveys and management of species expected under this alternative—would continue to result in long-term minor to moderate adverse cumulative impacts.

**Determination of Effect.** Under alternative C, resources management activities would result in long-term moderate to major benefits due to the protection provided to sea turtles from daily surveying for nests during the sea turtle nesting season (May 1 – September 15) and installing closures around each nest found, expanding the closures and installing light filter fencing around the nests during the hatching window, relocating nests from areas prone to erosion or frequent flooding, installing turtle friendly lighting on the Seashore and working with the USFWS, NCWRC and Dare County to encourage the development of a turtle friendly lighting educational program or a turtle friendly lighting ordinance. Establishing SMAs for birds and seabeach amaranth, combined with other areas that would be closed to ORV use such as the village beaches, would close approximately 40 miles of beach to ORV use from March 15 through October 14. These closures would minimize the potential for impacts to nesting turtles, turtle nests, and turtle hatchlings in these areas.

ORV and other recreational use would have long-term minor adverse impacts on sea turtles by affecting the beach profile and substrate characteristics in ways that reduce suitability for nesting and hatching success and likely continued closure violations and vandalism. Prohibiting nonessential recreational ORV nighttime driving from 7:00 p.m. to 7:00 a.m. between the dates of May 1 and November 15 would virtually eliminate potential impacts to adult and hatchling turtles caused by night driving. Beach fires would still be allowed, and though they would likely only occur in front of the villages due to the night-driving restrictions, they would still cause adverse impacts to turtles through light pollution. Under the ESA, these impacts would result in a finding of may affect / are likely to adversely affect sea turtles because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities and the prohibition on nonessential recreational ORV nighttime driving during the turtle nesting season, the actions under alternative C would also likely cause adverse effects.

## **Impacts of Alternative D: Increased Predictability and Simplified Management**

### **Resources Management Activities**

Surveying activities for sea turtles under alternative D would be the same as under alternative C, resulting in long-term minor to moderate beneficial impacts.

Other management activities for sea turtles under alternative D would be the same as under alternative C with one exception that would enhance the protection of the sea turtle habitat. Under alternative D, SMAs for bird species and seabeach amaranth would be designated as VFAs year-round, instead of just seasonally from March 15 through October 14 as under alternative C, and would be managed under ML1 procedures during the breeding season. This, along with all village beaches being designated as vehicle free year-round, would protect approximately 40 miles of the Seashore beach habitat from ORVs year-round. Prohibiting ORV use in these areas for the additional time from October 15 through March 14 would protect this habitat from additional erosion and sand compaction impacts that could eventually deteriorate the quality and quantity of turtle nesting habitat in these areas, resulting in long-term moderate to major beneficial impacts. The extent of the impact would depend on the location and size of the SMAs, which would be reevaluated and re-designated every five years, or after major hurricanes.

Overall, similar to alternative C, management activities under alternative D would result in long-term moderate to major beneficial impacts.

### **ORV and Other Recreational Use**

Impacts under alternative D would be similar to those under alternative C, with the overall impact on sea turtles lessened due to the closure of approximately 40 miles of the Seashore beach to ORV use year-

round. As under alternative C, alternative D would close ORV routes in potential sea turtle nesting habitat to recreational ORV use from 7:00 p.m. to 7:00 a.m. between the dates of May 1 and November 15.

While restrictions placed on ORV use under alternative D would provide long-term moderate to major beneficial impacts, similar to alternative C, there would still be some level of adverse impact to sea turtles in areas where ORV use and beach fires are allowed; therefore, overall impacts from ORV and other recreational use would be long-term minor adverse.

**Cumulative Impacts.** Cumulative impacts to sea turtles under alternative D would be very similar to those described for alternative A. Although alternative D would provide additional protection that would be beneficial to the regional sea turtle population, the adverse effects on sea turtles from other actions occurring in the region would still exist. Therefore, the overall cumulative impact of these past, current, and futures actions—added to the effects of actions under alternative D—would result in long-term minor adverse cumulative impacts.

**Conclusion.** Through the protection of adult and hatchling sea turtles, surveys and management activities, limiting ORVs to designated use areas, and restricting night driving therein during the sea turtle nesting season, alternative D would provide long-term moderate to major beneficial impacts. Because beach driving would be prohibited in designated ORV use areas between 7:00 p.m. and 7:00 a.m. during the sea turtle nesting season, the chances are greatly reduced that (1) adult turtles may be killed or caused to abort nesting attempts; (2) nests may be run over or disturbed; and (3) hatchlings may be killed or disoriented by light pollution from vehicles and associated recreational activities. Year-round ORV closures in SMAs would reduce erosion and compaction of beaches in these areas, providing benefits to sea turtle habitat. ORV activities occurring under alternative D would have long-term minor adverse impacts.

Past, present, and future activities both inside the Seashore and within the state of North Carolina—when combined with the impacts of ORV use, surveys and management of species expected under this alternative would have long-term minor adverse cumulative impacts.

**Determination of Effect.** Under alternative D, resources management activities would result in long-term moderate to major benefits due to the protection provided to sea turtles from daily surveying for nests during the sea turtle nesting season (May 1 – September 15) and installation of closures around each nest found, expanding the closures and installing light filter fencing around the nests during the hatch window, relocating nests from areas prone to erosion or frequent flooding, installing turtle friendly lighting on the Seashore and working with the USFWS, the NCWRC and Dare County to encourage the development of a turtle friendly lighting educational program or a turtle friendly lighting ordinance. Establishing SMAs for birds and seabeach amaranth, combined with other areas such as the village beaches that would be designated as vehicle free, would close approximately 40 miles of Seashore beach to ORV use year-round. These closures would minimize potential impacts to nesting turtles, turtle nests, and turtle hatchlings in these areas.

ORV and other recreational use would have long-term minor adverse impacts on sea turtles by affecting the beach profile and substrate characteristics in ways that reduce suitability for nesting and hatching success and likely continued closure violations and vandalism. Prohibiting recreational ORV use from 7:00 p.m. to 7:00 a.m. between the dates of May 1 and November 15 would virtually eliminate potential impacts to adult and hatchling turtles caused by night driving. Beach fires would still be allowed, and though they would likely only occur in front of the villages due to the night-driving restrictions, they would still cause adverse impacts to turtles through light pollution. Under the ESA, these impacts would result in a finding of may affect / are likely to adversely affect to sea turtles because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities and the prohibition on

recreational night driving during the turtle nesting season, the actions under alternative D would also likely cause adverse effects.

## **Impacts of Alternative E: Variable Access and Maximum Management**

### **Resources Management Activities**

Surveying activities for sea turtles under alternative E would be the same as under alternatives C and D, resulting in long-term minor to moderate beneficial impacts.

Other management activities for sea turtles under alternative E would be the same as under alternatives C and D with the exception that SMAs would be closed to ORV use for 5.5 months from March 15 through August 31, and SMAs under ML2 procedures at Bodie Island Spit, Cape Point, and South Point would have ORV pass-through corridors, subject to resource closures. While not all closed areas are necessarily historically popular nesting sites, the SMAs, combined with other areas that would be closed to ORV use such as the village beaches, would protect approximately 36 miles of the Seashore from ORV use during the majority of the sea turtle nesting season and provide long-term moderate to major beneficial impacts. The extent of the impact would depend on the location and size of the closures, which would be reevaluated and redesigned every 5 years or after major hurricanes. The beneficial impacts in SMAs under ML2 procedures would be tempered slightly with pass-through corridors subject to potential deterioration of nesting habitat due to the compaction of sand and contributing factors to erosion that result from ORV use. While SMAs would reopen after August 31, this would have only negligible to minor adverse impacts directly on nesting sea turtles, because since 1998, there has been minimal nesting activity at the Seashore after August 31, with only two nests and no false crawls recorded (NPS 2006e, 2007e, 2008a, 2009c).

Management activities would provide long-term moderate to major beneficial impacts to sea turtles.

### **ORV and Other Recreational Use**

The majority of impacts under alternative E would be the same as those under alternatives C and D with the following exceptions, due to differences in night-driving restrictions and provisions for overnight ORV use via a park-and-stay option.

Under alternative E, designated ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to nonessential ORV use from 10:00 p.m. to 6:00 a.m. from May 1 through November 15. For the period from September 16 through November 15, ORV routes with no or a low density of turtle nests would reopen to ORV use between 10:00 p.m. and 6:00 a.m., subject to terms and conditions of a permit. Turtle nesting and hatching occurs mostly during nighttime hours. Only on rare occasions do these events take place during daylight hours (NPS 2005c). Therefore, prohibiting driving during the majority of the nighttime during the turtle nesting and hatching season would provide additional protection from ORV impacts such as causing false crawls, misorienting or disorienting nesting turtles and hatchlings, running over hatchlings and/or nests, leaving behind tire ruts that can trap hatchlings, or running over turtle crawls and obscuring the tracks that help Seashore staff identify and protect nests. Although this would provide some long-term beneficial impacts to turtles, adverse impacts from night driving could still occur between the hours of sunset and 10:00 p.m. Additionally, in those areas reopened to ORV use at night after September 15, hatchlings would be subjected to nighttime impacts from ORVs, but the potential for adverse impacts would be reduced by limiting it to areas where there are no nests or a very low density of nests. Therefore, while some beneficial impacts from limiting night driving would occur, night-driving impacts under alternative E would be long-term minor to

moderate adverse. These impacts would be less than alternatives A and B, but more than alternatives C and D.

In addition, allowing night driving until 10:00 p.m. would likely increase the number of beach fires that occur throughout the Seashore as compared to alternatives C and D because the ability to easily carry firewood would not be restricted to areas in front of the villages. Therefore, impacts from light pollution resulting from beach fires would be more widespread under alternative E, similar to alternatives A and B, resulting in long-term minor to moderate adverse impacts.

Under alternative E, a limited number of ORVs would be allowed to park-and-stay overnight with a permit at selected spits and points, if not otherwise closed to protect resources. Fifteen vehicles would be allowed to stay at each inlet spit, while 25 vehicles would be allowed to stay overnight at Cape Point and South Point. Limitations on night-driving and lighting restrictions (i.e., portable lanterns, auxiliary lights, and powered fixed lights of any kind shining for more than 5 minutes at a time would be prohibited, similar to all action alternatives) would help limit the amount of impacts created by these park-and-stay vehicles; however, they would still pose potential obstacles to turtles coming ashore to nest, possibly causing false crawls and turtles to expend more energy to find another nesting location that may be less optimal. This would result in long-term minor adverse impacts.

Under alternative E, a 10-meter (30-foot) wide ORV-free zone would be designated in the ocean backshore wherever there was sufficient beach width to allow an ORV corridor of at least 30 meters (90 feet) above the mean high tide line. This ORV-free zone would protect some turtle nesting habitat from ORV use; however, the area is fairly narrow, and it is unknown if the areas to be protected are more suitable for turtle nesting than the unprotected areas, or what percentage of historic nests are located within the protected area as compared to unprotected area. Because of the relative narrow portion of habitat protected, the impacts would be long-term minor beneficial.

While additional restrictions and regulations would help lessen some of the impacts from ORV use and other recreational activities, overall, the impacts would be long-term moderate adverse from allowing night driving until 10:00 p.m., and due to increased recreational access throughout the Seashore during the turtle nesting season, including a park-and-stay option for ORVs at selected points and spits.

**Cumulative Impacts.** Cumulative impacts to sea turtles under alternative E would be very similar to those described for alternative A. Although alternative E would provide additional protection that would be beneficial to the regional sea turtle population, the adverse effects on sea turtles from other actions occurring in the region would still exist. Therefore, the overall cumulative impact of these past, current, and futures actions—added to the effects of actions under alternative E—would result in long-term moderate adverse cumulative impacts.

**Conclusion.** Through the protection of adult and hatchling sea turtles, daily surveys and management activities, limiting ORVs to designated use areas and restricting night driving therein during the sea turtle nesting season, alternative E would provide long-term moderate to major beneficial impacts. Because ORVs would be restricted between the hours of 10:00 p.m. and 6:00 a.m. during the sea turtle nesting season, the chances are reduced that (1) adult turtles may be killed or caused to abort nesting attempts; (2) nests may be run over or disturbed; and (3) hatchlings may be killed or disoriented by light pollution from vehicles and associated recreational activities. However, the chances for impacts to turtles under alternative E would be greater than under alternatives C or D due to ORV and other recreational use allowed between sunset and 10:00 p.m. and over night under the park-and-stay provision. Therefore, the implementation of alternative E would result in long-term moderate adverse impacts to sea turtles.



Past, present, and future activities both inside the Seashore and within the state of North Carolina—when combined with the impacts of surveys and management activities, ORV use, and other recreational activities expected under this alternative—would continue to result in long-term moderate adverse cumulative impacts.

**Determination of Effect.** Under alternative E, resources management activities would result in long-term moderate to major benefits due to the protection provided to sea turtles from daily surveying for nests during the sea turtle nesting season (May 1 – September 15) and installing closures around each nest found, expanding the closures and installing light filter fencing around the nests during the hatching window, relocating nests from areas prone to erosion or frequent flooding, installing turtle friendly lighting on the Seashore and working with the USFWS, the NCWRC and Dare County to encourage the development of a turtle friendly lighting educational program or a turtle friendly lighting ordinance. The benefits of establishing SMAs for birds and seabeach amaranth closures and SMAs under ML2 procedures at Bodie Island Spit, Cape Point, and South Point, combined with other areas that would be closed to ORV use such as the village beaches, would close approximately 36 miles of Seashore beach to ORV use during the majority of the sea turtle nesting season. These closures would minimize potential impacts turtles, turtle nests, and turtle hatchlings in these areas; however, the benefits would be tempered somewhat by the fact that the SMAs would only be closed to ORV use from March 15 through August 31 which does not encompass the entire turtle nesting season and ORV pass-through corridors would be provided for the SMAs operating under ML2 procedures.

ORV and other recreational use would have long-term moderate adverse impacts resulting from some level of nighttime driving and due to increased recreational access throughout the Seashore, including a limited number of ORVs allowed overnight at selected points and spits. ORV and other recreational use would have adverse impacts on sea turtles by affecting the beach profile and substrate characteristics in ways that reduce suitability for nesting and hatching success and likely continued closure violations and vandalism. While there would still be some impacts caused by night driving, these impacts would be lessened by prohibiting night driving between the hours of 10:00 p.m. and 6:00 a.m. from May 1 to November 15. Opening select ORV routes with no or a low density of turtle nests from September 16 through November 15, subject to terms and conditions of a permit could impact turtles in those areas. Beach fires would still be allowed, and due to night driving being allowed until 10:00 p.m., beach fires would likely occur in areas throughout the Seashore besides just in front of the villages and therefore could still cause adverse impacts to adult and hatchling turtles through light pollution. Under the ESA, these impacts would result in a finding of may affect/are likely to adversely affect sea turtles because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities and restrictions on nonessential recreational ORV nighttime driving, the actions under alternative E would also likely cause adverse effects.

## **Impacts of Alternative F: NPS Preferred Alternative**

### **Resources Management Activities**

Surveying activities for sea turtles under alternative F would be the same as under alternatives C, D, and E, resulting in long-term minor to moderate beneficial impacts to sea turtles.

Other species management activities for sea turtles under alternative F would be similar to alternatives C, D, and E, with the exception that SMAs would not be designated for the protection of bird and seabeach amaranth species. Instead, areas of high resource sensitivity and high visitor use would generally be designated as VFAs year-round or as seasonal ORV routes, with restrictions based on seasonal resource and visitor use, and one set of standard buffers, similar to the ML2 buffers under other action alternatives,

would be used. Also under alternative F, ORV corridors provided at Cape Point and South Point would be reduced from 50 meters (164 feet) to 35 meters (115 feet) during the shorebird breeding season, subject to resource closures, while Bodie Island Spit would be vehicle free from March 15 through September 14. Areas designated as SMAs under alternatives C, D, and E that would be designated as vehicle free under alternative F include the following segments of the Seashore:

- Ramp 27 to ramp 30
- Ramp 32.5 to ramp 34
- Ramp 38 to 1.5 miles south of ramp 38 (i.e., Haulover)
- 0.3 miles west of the hook (Cape Point) to 1.7 miles west of ramp 45
- Bone Road to Hatteras Inlet, along inlet shoreline to Spur Road
- Hatteras Inlet to (new) ramp 59.5
- Ramp 68 to 0.4 miles northeast of ramp 70 (includes Ocracoke Day Use area).

While not all areas closed to ORV use have historically received concentrated turtle nesting activity, the VFAs (approximately 26 miles of seashore), combined with other areas seasonally closed to ORV use (approximately 13 miles of seashore) would protect approximately 39 miles of the Seashore during a portion of the sea turtle nesting season. However, as with alternative C, some of the seasonally closed areas could be re-opened to ORV use after about July 31 (while sea turtle nesting is still ongoing), reducing the overall beneficial impacts that these closures would provide to turtles to long-term minor to moderate. The extent of the impacts would depend on the location and size of the seasonal closures. During the closures, the beneficial impacts in the Cape Point and South Point areas under alternative F would also be tempered slightly because in these two areas an ORV corridor seaward of the prenesting closures would be subject to potential deterioration of turtle nesting habitat due to the compaction of sand and contributing factors to erosion that result from ORV use. For nest relocation, NPS staff would follow guidance from the NCWRC handbook and USFWS Loggerhead Sea Turtle Recovery Plan, which is to allow nests to incubate at their original location if there is any reasonable likelihood of survival. Relocation of a nest would be considered only as an option of last resort. When relocation is necessary, the nest would be moved toward the dunes immediately behind the original nest location (when possible). Narrow beaches or beaches without nearby dunes (i.e., points and spits) may necessitate relocations to adjacent areas above the high tide line that are free of vegetation.

Overall, resource management activities would provide long-term moderate to major beneficial impacts to sea turtles.

### **ORV and Other Recreational Use**

The majority of impacts under alternative F would be similar to those under alternative E, except that there would be no impacts from park-and-stay vehicles under alternative F since this activity would be prohibited. In addition, greater beneficial impacts would be realized under alternative F due to the decreased hours night time driving allowed, as restrictions would begin 1 hour earlier in the evening and end 1 hour later in the morning than under alternative E.

Under alternative F, designated ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to nonessential ORV use from 9:00 p.m. until 7:00 a.m., corresponding roughly with dusk during the peak nesting months of June and July (dusk occurs between 8:00 p.m. and 9:00 p.m. during the months of May and August) and extending beyond dawn in the morning. Under alternative F, select ORV routes with no turtle nests remaining would reopen for night

driving between September 16 and November 15, subject to terms and conditions of the ORV permit. Turtle nesting and hatching occurs mostly during nighttime hours. However, on rare occasions these events do take place during daylight hours (NPS 2005c). A review of 21 years of nesting data on Casey Key in Sarasota County, Florida showed that the majority of loggerhead nesting activities occur after dusk<sup>10</sup> and before dawn<sup>11</sup> with only 1.4 percent of nesting occurring around dusk and no recorded nesting activities occurring during dawn (Welsh and Tucker 2009). A study of Masonboro Island in North Carolina found that hatchling emergence occurred mostly between 8:00 p.m. and 1:00 a.m. with some activity before and after these times (Neville et al. 1988). Prohibiting nonessential recreational ORV nighttime driving between the hours of 9:00 p.m. and 7:00 a.m. would greatly reduce the potential impacts to nesting turtles and hatchlings throughout the Seashore, creating long-term moderate to major beneficial impacts. In addition, not opening beaches to ORV use until 7:00 a.m. would generally allow Seashore staff time to survey the beach for nests prior to the onset of ORV use, reducing the possibility that crawls would be obscured by ORV tracks causing nests to be missed and therefore not protected as has occurred in the past. However, some risk of long-term minor to moderate adverse impacts would still exist from using essential vehicles at night, allowing driving on the beach prior to 9:00 p.m., and allowing beach access to vehicles operated by commercial fisherman beginning at 5:00 a.m. for those fisherman who are actively engaged in authorized commercial fishing activities.

While the night driving restrictions under alternative F would result in significant beneficial impacts, the restrictions do not encompass the entire night time period when nesting and hatching events could occur, especially hatching events prior to 9:00 p.m.; therefore, night time driving impacts under alternative F would be long-term minor to moderate adverse. These impacts would be significantly less than alternatives A, B, and E, but only slightly more than alternatives C and D.

Beach fires would not be prohibited under alternative F, but they would be prohibited year-round between the hours of 10:00 p.m. and 6:00 a.m. and would be restricted to the areas in front of Coquina Beach, Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras Village, and the Ocracoke Day Use Area during the sea turtle nesting season. Even though the ability to have beach fires would require a non-fee educational permit, allowing these beach fires could cause impacts (misorientation, disorientation, injury, and death) to nesting turtles and hatchlings, resulting in long-term minor to moderate adverse impacts; however, these impacts would not potentially be Seashore wide and would be restricted to the few areas where they would be allowed.

Similar to alternative E, under alternative F, a 10-meter (30-foot) wide ORV-free zone would be designated in the ocean backshore wherever there was sufficient beach width to allow an ORV corridor of at least 30 meters (90 feet) above the mean high tide line. However, unlike alternative E, this ORV-free zone would be a year-round closure under alternative F. This ORV-free corridor would protect some turtle nesting habitat from ORV use; however, the area is fairly narrow and it is unknown if the areas to be protected are more suitable for turtle nesting than the unprotected areas, or what percentage of historical nests are located within the protected area as compared to unprotected areas. Because of the relative narrow portion of habitat protected, the impacts would be long-term minor beneficial.

Under alternative F, ORV owners would be required to complete a short education program in person at an NPS facility in order to obtain a permit for ORV use. Vehicle owners would need to sign for their permit to acknowledge that they understand the rules and that all drivers of the permitted vehicle will abide by the rules and regulations governing ORV use at the Seashore. A violation of the rules and

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<sup>10</sup> Dusk occurs after sunset and is the time at which the sun is 6 degrees below the horizon in the evening. At this time objects are distinguishable, but there is no longer enough light to perform any outdoor activities.

<sup>11</sup> Dawn is the time of morning at which the sun is 6 degrees below the horizon. At this time, there is enough light that objects are distinguishable and that outdoor activities can commence.

regulations by the owner or driver of the ORV could result in revocation of the vehicle permit, and the owner/permittee would not be allowed to obtain another permit for any vehicle for a specified period of time. This additional education would have long-term minor beneficial impacts.

While additional restrictions and regulations would help lessen some of the impacts from ORV and other recreational use, overall, the impacts would be long-term minor to moderate adverse, due to the earlier re-opening of prenesting closures (after shorebird breeding activity has concluded), resulting in increased recreational access throughout the Seashore during the sea turtle nesting season.

**Cumulative Impacts.** Cumulative impacts to sea turtles under alternative F would be very similar to those described for alternative A. Although alternative F would provide additional protection that would be beneficial to the regional sea turtle population, the adverse effects on sea turtles from other actions occurring in the region would still exist. Therefore, the overall cumulative impact of these past, current, and future actions—added to the effects of actions under alternative F—would result in long-term minor to moderate adverse cumulative impacts.

**Conclusion.** Through the protection of adult and hatchling sea turtles, surveys and management activities, limiting ORVs to designated use areas and restricting night driving therein during the sea turtle nesting season, alternative F would provide long-term moderate to major beneficial impacts. Because ORVs would be restricted between the hours of 9:00 p.m. to 7:00 a.m. the chances are greatly reduced that adult turtles (1) may be killed or caused to abort nesting attempts; (2) nests may be run over or disturbed; and (3) hatchlings may be killed or disoriented by light pollution from vehicles and associated recreational activities. ORV use and other recreational activities occurring under alternative F would have long-term minor to moderate adverse impacts.

Past, present, and future activities both inside the Seashore and within the state of North Carolina—when combined with the impacts of surveying and management activities, ORV use, and other recreational activities expected under this alternative—would continue to result in long-term minor to moderate adverse cumulative impacts.

**Determination of Effect.** Under alternative F, resources management activities would result in long-term moderate to major benefits due to the protection provided to sea turtles from daily surveys for nests during the sea turtle nesting season (May 1 – September 15) and installation of closures around each nest found, expanding the closures and installing light filter fencing around the nests during the hatch window, relocating nests from areas prone to erosion or frequent flooding, installing turtle friendly lighting on the Seashore and working with the USFWS, the NCWRC, and Dare County to encourage the development of a turtle friendly lighting educational program or a turtle friendly lighting ordinance. The benefits of establishing prenesting closures for birds combined with other areas that are closed to ORVs use either year-round or seasonally such as some of the village beaches and Bodie Island Spit, would close approximately 39 miles of Seashore beach to ORV use during the turtle nesting and hatching season. These closures would minimize potential impacts to nesting turtles, turtle nests and turtle hatchlings in these areas; however, the benefits would be tempered somewhat by the fact that the prenesting areas would only be closed to ORV use from March 15 through July 31, which does not encompass the entire turtle nesting season and ORV corridors would be provided seaward of the prenesting closures at Cape Point and South Point.

ORV and other recreational use would have long-term minor to moderate adverse impacts due to the earlier re-opening of prenesting closures (after shorebird breeding activity has concluded), resulting in increased recreational access throughout the Seashore during the sea turtle nesting season. ORV and other recreational use would have impacts on sea turtles by affecting the beach profile and substrate characteristics in ways that reduce suitability for nesting and hatching success and likely continued

closure violations and vandalism. Prohibiting recreational ORV use from 9:00 p.m. to 7:00 a.m., would greatly reduce potential impacts to adult and hatchling turtles caused by night driving. Opening select ORV routes from September 16 through November 15, subject to terms and conditions of a permit, only in areas where there are no turtle nests, would protect turtle hatchlings. Beach fires would still be allowed, but would be prohibited year-round between the hours of 10:00 p.m. and 6:00 a.m., and during the turtle nesting season would be restricted to areas in front of Coquina Beach and Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras Village, and the Ocracoke day use areas. While a permit would be required to have a beach fire, allowing beach fires would still cause adverse impacts to adult and hatchling turtles through light pollution. Under the ESA these impacts would result in a finding of may affect/are likely to adversely affect sea turtles because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant, or beneficial. Though there would be beneficial impacts from resources management activities and restrictions on nonessential recreational ORV nighttime driving, the actions under alternative F would also likely cause adverse effects.

**TABLE 53. SUMMARY OF IMPACTS TO SEA TURTLES UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<b>Resources Management Activities</b>					
Overall, resources management activities under alternative A would have long-term moderate benefits due to the protection provided to sea turtles.	Overall, resource management activities under alternative B would have long-term moderate benefits due to the protection provided to sea turtles.	Overall, resource management activities under alternative C would have long-term moderate to major beneficial impacts due to the added protection provided to sea turtles.	Overall, similar to alternative C, management activities under alternative D would result in long-term moderate to major beneficial impacts.	Management activities would provide long-term moderate to major beneficial impacts to sea turtles.	Overall, resource management activities would provide long-term moderate to major beneficial impacts to sea turtles.
<b>ORV And Other Recreational Use</b>					
Overall, ORV and other recreational use under alternative A would result in long-term major adverse impacts to sea turtles due to the amount of Seashore available for ORV use and the lack of night-driving restrictions.	Although additional restrictions and regulations would help lessen some of the impacts from ORV use and other recreational activities, overall, the impacts would be long-term moderate adverse.	Restrictions placed on nonessential, recreational ORV use under alternative C would provide substantial long-term benefits to sea turtles, including seasonal night-driving restrictions that close the beach before dark (7:00 p.m.), some adverse impacts would still occur in areas where their use is allowed. Therefore, overall, ORV and other recreational use would have long-term minor adverse impacts.	While restrictions placed on ORV use under alternative D would provide long-term moderate to major beneficial impacts, similar to alternative C, there would still be some level of adverse impact to sea turtles in areas where ORV use and beach fires are allowed; therefore, overall impacts from ORV and other recreational use would be long-term minor adverse.	While additional restrictions and regulations would help lessen some of the impacts from ORV use and other recreational activities, overall, the impacts would be long-term moderate adverse from allowing night driving until 10:00 p.m., and due to increased recreational access throughout the Seashore during the turtle nesting season, including a park-and-stay option for ORVs at selected points and spits.	While additional restrictions, such as prohibiting night driving from 9:00 p.m. to 7:00 a.m., and regulations would help lessen some of the impacts from ORV and other recreational use, overall, the impacts would be long-term minor to moderate adverse, due to not prohibiting night driving prior to 9:00 p.m. and the earlier re-opening of prenesting areas (after shorebird breeding activity has concluded), resulting in increased recreational access throughout the Seashore during the sea turtle nesting season.

## SEABEACH AMARANTH

### Species-Specific Methodology and Assumptions

Potential impacts to seabeach amaranth populations and habitat at the Seashore were evaluated based on the species life history, its past and present occurrence at the Seashore, as well as known effects on the species from activities relating to humans, pets, predators, and ORVs. Information about habitat and other existing data were acquired from staff at Cape Hatteras National Seashore, the USFWS, and available literature.

The analysis focuses on impacts to seabeach amaranth from a variety of human recreational and other activities, as well as impacts incurred as a result of surveying and management activities. Seabeach amaranth often grows in habitat areas used by other protected species within the Seashore such as plovers, oystercatchers, colonial waterbirds, and sea turtles. Therefore, any ORV-related closures established to protect the habitat or nests of these species would also benefit seabeach amaranth, although the extent of the benefit would depend upon the actual location, size, and duration of the closures. It is also assumed that increases in natural resource and law enforcement staffing at the Seashore would increase public compliance with closures and other Seashore regulations (e.g., leash laws) from that which currently exists.

Primary steps in assessing impacts to seabeach amaranth at the Seashore were to determine (1) occurrence and location of seabeach amaranth in areas likely to be affected by management actions described in the alternatives; (2) current and future use and distribution of ORV by alternative; (3) habitat impact or alteration caused by the alternatives; and (4) disturbance potential of the actions and the potential to directly or indirectly affect seabeach amaranth as a result of ORV use. The information contained in this analysis was obtained through best professional judgment of staff and experts in the field and by reviewing applicable scientific literature.

Seabeach amaranth is a fugitive annual, or a species adapted to inhabit newly disturbed habitats yearly, whose seeds are viable for long periods of time and can be dispersed long distances by wind and water, allowing it to occupy newly created habitat. Seeds may also just accumulate around the base of a plant when it dies, allowing it to continue to occupy currently available habitat. As an example of its fugitive nature, seabeach amaranth was extirpated in New York from Long Island's barrier beaches for 35 years prior to plants being discovered in 1990, 1991, and again in 1992 (LIBS 1992), though it is not known if this reoccurrence resulted from seed dispersal from other plant populations or exposure of local seed banks (USFWS 1996b). The plant was also found in New Jersey in 2000 after not being reported from the state since 1913; it was rediscovered in Delaware in 2000 after a 125-year absence; and in 1998, it was rediscovered in Maryland on Assateague Island after 31 years of not being reported, while on the Virginia side of Assateague Island it was rediscovered in 2001 (USFWS 2007d).

At the Seashore, seabeach amaranth populations have fluctuated greatly since surveys began in 1985; however, no plants have been found since 2005. In 2005, two plants were found—one located on Bodie Island Spit and one on Ocracoke Island. In 2004, only one plant was found; it was located on Bodie Island Spit. The area on Bodie Island Spit where the plants were located has been continuously protected through summer and winter resources management closures. At Cape Point, a portion of the area where seabeach amaranth was historically found has also been continuously protected through summer and winter resource closures. However, no plants have been found in these protected areas. Additionally, large portions of the plant's historical range at Hatteras Inlet where plants were found from 2001 to 2003 are no longer present due to continued erosion and retreat of the shoreline (NPS 2009e). While it is thought that the plant may possibly be extirpated from the Seashore (NPS 2009e), it should be noted that since plants are not evident every year, but may survive in the seed bank, populations of seabeach amaranth may still

be present even though plants are not visible for several years (USFWS 2007d). Despite the fact that seabeach amaranth has not been found in the Seashore since 2005, it is still necessary to protect potential habitat where plants might eventually occur, as well as unknown sites where seeds might be, in addition to protecting plants and currently occupied habitat (Jolls et al. 2004).

## Impact Thresholds

A summary of seabeach amaranth impacts under all alternatives is provided in table 54 at the end of this section.

The following thresholds for evaluating impacts to seabeach amaranth were defined.

- Negligible:* There would be no observable or measurable impacts to seabeach amaranth, its habitats, or the natural processes sustaining it. Impacts to the plant community would be well within natural fluctuations.
- Minor Adverse:* Impacts on seabeach amaranth would be measurable or perceptible, but would not be outside the natural range of variability and would be localized within a small area. Small changes to local population numbers, population structure, and other demographic factors might occur, but the natural function and character of the seabeach amaranth community would not be affected. Sufficient habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.
- Minor Beneficial:* Impacts on seabeach amaranth, its habitats, or the natural processes sustaining it would be detectable, but would not be outside the natural range of variability. Improvements to key characteristics of habitat and/or protection to key propagation stages in the Seashore would sustain or slightly improve existing population levels, population structure, or other factors and maintain a sustainable population in the Seashore.
- Moderate Adverse:* Impacts on seabeach amaranth, its habitats, or the natural processes sustaining it would be measurable or perceptible and could be outside the natural range of variability. A change would occur in the natural function and character of the seabeach amaranth community in terms of basic properties (e.g., abundance, distribution, quantity, and quality) but not to the extent that the basic properties of the community change. Sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.
- Moderate Beneficial:* Impacts on seabeach amaranth, its habitats, or the natural processes sustaining it would be detectable and could be outside the natural range of variability. Changes to key characteristics of habitat in the Seashore and/or protection to key propagation stages would minimize or prevent injury to individual plants and improve the sustainability of the species in the Seashore.

*Major Adverse:* Impacts on seabeach amaranth, its habitats, or the natural processes sustaining it would be measurable or perceptible and would be expected to be outside the natural range of variability. Frequent disturbance to individual plants would be expected, with negative impacts that would result in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts would occur during critical periods of propagation and result in direct mortality or loss of habitat. Local population numbers, population structure, and other demographic factors might experience large declines.

*Major Beneficial:* Impacts on seabeach amaranth, its habitats in the Seashore, or the natural processes sustaining it during key life history stages would be detectable and would be expected to be outside the natural range of variability. Changes to key characteristics of habitat in the Seashore and/or protection to key propagation stages would substantially lessen mortality or loss of habitat and would result in notable increases in Seashore population levels.

*Duration:* Short-term effects would be up to two reproductive seasons for seabeach amaranth. Long-term effects would be anything beyond two reproductive seasons for seabeach amaranth.

## Study Area

The study area for assessment of the various alternatives is the Seashore. The study area for the cumulative impacts analysis is the state of North Carolina.

## Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy

**Species Management Activities.** Under alternative A, during August, when plants are large enough to be easily detected, an annual survey would be conducted of all potential seabeach amaranth habitat to locate and document plants. When a seabeach amaranth plant is found outside of an existing closure (i.e., bird or turtle closure) staff would install a 30-foot (9.1-meter) by 30-foot (9.1-meter) closure around the plant(s) and mark it with signs to prevent trampling of the plants. The closures would not be removed until the plants have died in late autumn or early winter. Providing a closure of this size until the plant dies would provide long-term minor to moderate benefits by helping to protect plants from being run over by ORVs or trampled by people and from erosion caused by multiple passes of ORVs in high use areas.

Prior to the annual August survey, seabeach amaranth would be subject only to ancillary surveys by bird and turtle monitors while they conduct their primary duties. Seabeach amaranth seedlings are typically first visible beginning in June. With only ancillary observations being made during routine bird and turtle surveys, plants germinating outside of an established bird closure or other area where vehicles are prohibited would likely not be detected, resulting in long-term minor to moderate adverse impacts. Any plants that are not detected and subsequently protected may be destroyed by ORVs or other human activities, including Seashore staff using vehicles to conduct bird and turtle surveys. Any plants that are destroyed would not be detected and accounted for during the August survey.

Historically, most areas where seabeach amaranth has been found at the Seashore were either in established bird closures or other areas closed to vehicular traffic (NPS 2009e). The primary habitat of seabeach amaranth consists of overwash flats at accreting ends of islands and the sparsely vegetated zone



between the high tide line and the toe of the primary dune. Much of this habitat corresponds with that of piping plover, American oystercatcher, and other protected bird species at the Seashore. Therefore, when prenesting closures are installed beginning in March and then subsequently expanded to protect nesting birds and unfledged chicks, seabeach amaranth plants and those portions of its habitat that overlap with the closures would be protected during its growing season, resulting in long-term minor to moderate beneficial impacts. However, protection afforded to seabeach amaranth by closures for other protected species would vary annually and depend upon the location, size, and duration of the other species closures. Because seabeach amaranth must recruit annually and its seeds can be dispersed long distances via wind and water, closures for other species that overlap seabeach amaranth habitat and the 30-foot (9.1-meter) by 30-foot (9.1-meter) buffers installed around plants would not likely protect all areas in the Seashore where seeds exist and could potentially germinate in areas of ORV traffic. Unprotected seedlings or plants in areas open to ORV use would likely be crushed and go completely undocumented and seeds may be pulverized or buried. Because ATVs/UTVs and/or ORVs are used to conduct bird and turtle surveys and monitoring, there would also be a small probability of essential vehicle impacts on plants and seeds due to crushing and burial, respectively, causing long-term minor adverse impacts.

Under alternative A, bird and turtle closures would be surveyed for seabeach amaranth prior to reopening them to ORV traffic when the closures are no longer required to protect nesting birds and their chicks and turtle nests and hatchlings. If any plants are detected, buffers around the plants would be established while other areas of the closures where there are no plants would be reopened to ORV traffic. Areas identified as potential alternate/bypass ORV routes around bird and turtle closures would also be surveyed for seabeach amaranth, and buffers around plants would be established prior to using the routes. These actions would protect any plants and/or seeds that exist within these areas and result in long-term minor to moderate beneficial impacts.

Under alternative A, the Seashore would continue to place interpretive signs at all ORV entry points and at Seashore kiosks describing the effects and susceptibility of seabeach amaranth to pedestrian and ORV use. The Seashore would also continue to notify the public of all resource closures and openings. These actions would be beneficial for helping to protect seabeach amaranth. Therefore, outreach measures would have long-term minor beneficial impacts.

Overall, because of the protection of seabeach amaranth habitat and plants under alternative A, surveys conducted for amaranth plants and protection measures taken when plants are detected would have long-term minor to moderate beneficial impacts to amaranth habitat and plants when they occur.

**ORV and Other Recreational Use.** Under alternative A, ORV use would be restricted to a corridor 100 feet wide above the mean high tide line in breeding areas of protected bird species from April 1 to August 31. While this corridor would protect a small strip of potential seabeach amaranth habitat near the toe of the dunes, much of the corridor, especially located near and on the spits and Cape Point, would lie within primary seabeach amaranth habitat and would expose any seeds or germinating plants to direct and indirect impacts from ORVs. Stems of the plant are easily broken or crushed by foot traffic and tires; thus, even limited traffic can be detrimental during the growing season (USFWS 1993). Besides damaging plants, ORVs can also pulverize seeds and bury them to depths beyond which they can germinate. In areas of the Seashore where beach widths are greatly reduced, the 100-foot-wide corridor could encroach on the toe of the dunes, increasing the likelihood for impacting seeds and/or seedlings, resulting in long-term minor to moderate adverse impacts.

During the seabeach amaranth's dormant season (December to April), there are fewer closures for protected birds. Only those suitable interior habitats at the spits and at Cape Point used by nonbreeding and wintering piping plovers are closed year-round to ORV and pedestrian traffic. Therefore, more seabeach amaranth habitat would be open to impacts from ORV use. Although there are no plants that can

be damaged by ORVs during the plant's dormant period, ORV traffic can still have an adverse impact on seabeach amaranth by either pulverizing or burying the plant's seeds when driving over them (USFWS 1996b), resulting in long-term moderate adverse impacts.

While off-season ORV traffic can adversely affect seabeach amaranth through its impacts on seeds, it may also provide some benefits to the plant through the disturbance of perennial grasses and shrubs (USFWS 1996b). Seabeach amaranth is intolerant of competition from other plants. If left undisturbed, many areas within the Seashore would naturally progress through successional stages whereby perennial grasses and shrubs would become established, thus rendering the habitat unsuitable for seabeach amaranth. By using areas in late fall and winter that were previously closed to ORV traffic, ORV use helps prevent the establishment of perennial grasses and shrubs. Where this disturbance overlaps with potential seabeach amaranth habitat, it helps to maintain that habitat as potentially suitable for seabeach amaranth, resulting in long-term minor beneficial impacts.

Pedestrians would continue to be prohibited from seabeach amaranth closures under alternative A. Pedestrian use of beaches typically does not overlap heavily with the habitat of seabeach amaranth because joggers prefer wet sand and sunbathers prefer to be closer to the water. Pedestrian traffic during the plants' dormant season is much less than during its growing season and would not likely have any impacts on the species. Even during the growing season, pedestrian traffic would generally have little effect on seabeach amaranth populations because many beaches with daily use by thousands of sunbathers, joggers, and other recreation enthusiasts have substantial and apparently healthy populations of seabeach amaranth (USFWS 1996b). However, some undetected seedlings/plants could still be trampled by pedestrians and/or their pets, resulting in long-term minor to moderate adverse impacts.

Overall, ORV and other recreational use under alternative A would have long-term moderate adverse impacts as plants may go undetected, and would therefore be unprotected from this use.

**Cumulative Impacts.** Other past, present, and future planned actions within and around the Seashore have the potential to impact seabeach amaranth. Hurricanes and other weather events can have both long-term moderate to major adverse and beneficial impacts on seabeach amaranth within the Seashore and throughout the plant's range. Seabeach amaranth is extremely susceptible to overwash, and strong storms can cause overwash in areas even at the toe of the dunes. If a storm occurs early enough in the growing season, it can destroy plants before they set seed. Storms can also bury seeds so deep that they cannot germinate. However, storms can also uncover previously buried seed banks, bringing them back to a depth where they can then germinate. Storms also play a major role in dispersing seeds through both wind and water, and can reestablish populations in areas that had become devoid of plants. Storms can destroy habitat through erosion or create new habitat by creating overwash areas. Hurricanes can also indirectly affect seabeach amaranth because of their impact on staff resources. Hurricane recovery efforts that pull staff from resources management (and presumably surveying) activities would have long-term minor to moderate adverse impacts by causing plants to be missed and therefore go unprotected.

The dredging of the federally authorized navigation channel at Oregon Inlet has occurred in the past and major dredging events would continue to occur about every four years. The actual dredging does not directly impact seabeach amaranth; however, heavy construction equipment use at the deposition site, usually Pea Island (USACE 2002), could result in long-term minor adverse impacts by pulverizing or burying seeds or running over undetected seedlings or plants. Dredging of channels in and around barrier islands occurs throughout the seabeach amaranth's habitat in North Carolina and would have the same impact, depending upon the level of protection afforded the plant.

Berm construction under the CCC provided dune stabilization that changed the habitat available to seabeach amaranth at the Seashore. These stabilization efforts provided for the establishment of NC-12

and subsequent development, removing this area from potential habitat. These stabilization efforts also altered the natural morphology and ecology of the dunes and beaches within the Seashore and have contributed to the narrowing of the beaches through erosion and removal of newly created overwash habitat (Cohen et al. 2010). Stabilization of the dune system by planting vegetation is also detrimental to seabeach amaranth. These past actions resulted in long-term moderate adverse impacts to seabeach amaranth at the Seashore. Similar to the original efforts of the CCC, the widening of NC-12 (on Bodie Island) and continued berm maintenance would continue to result in long-term moderate adverse impacts to seabeach amaranth by continuing to contribute to the narrowing of the beaches through erosion.

Several of the local and NPS past, current, and future planning efforts can also affect the seabeach amaranth. For example, new development that has occurred in Dare and Hyde counties under their land use plans had increased the residential housing and related services in the areas within the Seashore. This land development within the Seashore, as well as throughout the counties, has reduced the amount of habitat available to seabeach amaranth, resulting in adverse impacts. In addition to past actions, new development could result from the implementation of the County Land Use Development Plans for Dare and Hyde counties, including expected revisions to the Dare County Plan. Though the details are lacking, if additional development results from implementing the land use plan, the amount of recreation on the area beaches would also likely increase, resulting in potential long-term minor to moderate adverse impacts. Other potential impacts from development are indeterminate at this time. The education aspect of the Seashore's Long-Range Interpretive Plan would provide long-term minor benefits to seabeach amaranth because it would help to educate visitors about the plant and the protection measures that are put in place at the Seashore to help protect it. Under the Predator Management Plan, there is a slight chance that trappers hunting fox and other mammalian predators would trample seabeach amaranth plants during their trapping efforts, resulting in long-term minor to moderate adverse impacts.

The Cape Lookout Interim Protected Species Management Plan/EA provides long-term moderate to major beneficial impacts to seabeach amaranth at the neighboring Seashore through the management policies that it employs. However, even with those management measures in place, adverse impacts would still occur to the species as recreational uses, including night driving, would still occur, but would be mitigated to an extent by the management measures being employed. The measures that are in place now under the interim plan increase protections, in part, by surveying for seabeach amaranth earlier in the season and by conducting surveys for the plant before shorebird and turtle closures are reopened, as noted in the Cape Lookout Interim Protected Species Management Plan/EA. The outcome of the current action to develop a Cape Lookout National Seashore ORV Management Plan/EIS could have long-term minor to moderate beneficial impacts on seabeach amaranth populations within Cape Hatteras National Seashore and throughout the rest of the plant's habitat in North Carolina. Populations of seabeach amaranth in the south are probably sources of long distance seed dispersal due to the fact that storms move northward along the U.S. Atlantic seacoast; thus, Cape Lookout National Seashore could be a potential seed source for suitable habitat in Cape Hatteras National Seashore and northward. However, whether the impacts of the long-term ORV plan would be beneficial or adverse depends upon the policies developed with regard to where within the Seashore ORVs would be allowed to go and during what time of year.

The replacement of the Herbert C. Bonner Bridge would result in both long-term minor to moderate adverse and beneficial impacts, with the EIS for this project noting that seabeach amaranth has not been found since 2004, and if suitable habitat were found, a survey for this species would be conducted. The area near the bridge is suitable habitat for seabeach amaranth as evidence by the presence of the only plant located within the Seashore in 2004. While construction activities could impact seabeach amaranth through direct disturbance of plants or the burying of seeds, surveying for plants prior to construction activities would help minimize this impact. However, the replacement of the bridge would allow the formation of ephemeral habitats to occur more naturally, including overwash fans, increasing the amount of habitat suitable for colonization by seabeach amaranth.

The overall impacts of these past, current, and future actions, in combination with the effects of alternative A, would result in long-term moderate adverse cumulative impacts to seabeach amaranth within the Cape Hatteras National Seashore and throughout the plant's habitat range in North Carolina.

**Conclusion.** Although there would be some level of impact during surveys and implementation of protection measures due to a risk of disturbing plants, use of experienced staff in areas of known occurrence or habitat would minimize this risk. Overall, species management activities would reduce potential impacts from ORV and other recreational use and would have minor to moderate beneficial impacts. Because ORV and other recreational use could result in plants being run over/trampled and seeds being pulverized or buried to a depth where they cannot germinate, alternative A would have long-term moderate adverse impacts.

Past, present, and future activities both inside the Seashore and within the plant's historic range in North Carolina, when combined with the impacts of ORVs, other recreational use, and resources management activities for this species, would result in long-term moderate adverse cumulative impacts.

**Determination of Effect.** Under alternative A, resources management activities would result in long-term minor to moderate benefits to seabeach amaranth if plants are detected in the Seashore. Benefits would be due to the protection provided by installing closures around plants that are detected, surveying for plants in August when they are visible, installing prenesting and other closures for nesting bird species that overlap seabeach amaranth habitat, and surveying bird and turtle closures for plants prior to reopening these closures to ORV and other recreation use.

ORV and other recreational use would have long-term moderate adverse impacts on seabeach amaranth as plants may go undetected and therefore unprotected from recreational use of the Seashore. While ORV use would be restricted to a corridor 100 feet wide above the mean high tide line in breeding areas of protected bird species from April 1 to August 31, much of the corridor, especially located near and on the spits and Cape Point would lie within primary seabeach amaranth habitat and would expose any seeds or germinating plants to impacts from ORV use and other recreation use. During seabeach amaranth's dormant season more areas of the Seashore are open to ORV use, and while there would be no plants to be impacted, seeds of the plant could be either pulverized or buried by ORVs driving over them. Under the ESA, these impacts would result in a finding of may affect / are likely to adversely affect seabeach amaranth because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities, the actions under alternative A would also likely cause adverse effects.

## **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

### **Species Management Activities**

Surveys conducted for seabeach amaranth plants and protection measures implemented when plants are detected under alternative B would be the same as under alternative A, resulting in long-term minor to moderate beneficial impacts to seabeach amaranth.

Management activities under alternative B would be the same as under alternative A except for the following management changes for bird species habitat that would also benefit seabeach amaranth. Under the consent decree issued in 2008, the Seashore would establish prenesting areas on Bodie Island Spit, Cape Point, South Beach, Hatteras Inlet Spit, North Ocracoke Spit, and South Point, and these areas would not be reduced to accommodate an ORV corridor. The prenesting areas would remain in place until the later of July 15 or two weeks after the last tern, black skimmer, American oystercatcher, piping

plover, or Wilson's plover chick within the area has fledged. In subsequent years, the Seashore would establish prenesting closures that incorporate to the maximum extent possible the areas delineated in 2008. Because these areas overlap seabeach amaranth habitat, they would protect potential habitat for seabeach amaranth where it could possibly re-establish itself in the Seashore, and if it does, to potentially continue to survive at in the Seashore. The total amount of potential habitat protected each year would be dependent on the dynamic nature of the Seashore and the amount of breeding habitat used by during the previous three years since that is what the prenesting closures are based on. These prenesting closures would provide long-term moderate beneficial impacts to seabeach amaranth and would be the same as before the June 2009 amendment to the consent decree.

Additional closures for unfledged chicks would not provide a substantial benefit to seabeach amaranth, because the additional areas to be closed would have already been open to ORV and pedestrian use, and they are readily adjusted to accommodate the movement of the chicks. Therefore, they would not provide a sufficient amount of time for seabeach amaranth seeds to germinate and exist without potential impacts from ORVs and/or pedestrians. However, because these areas would still be surveyed prior to reopening them, they would provide long-term minor beneficial impacts to seabeach amaranth.

Overall, surveys conducted for seabeach amaranth plants and the protection measures implemented when plants are detected would result in long-term minor to moderate beneficial impacts. Although plants are scarce and would be difficult to detect, they would be provided protection once detected.

#### **ORV and Other Recreational Use**

Under alternative B, the impacts from ORV and other recreational use would be the same as under alternative A, except with additional measures that would slightly reduce adverse impacts to seabeach amaranth. Under alternative B, in all locations open to ORV use that are not in front of villages, a 32.8-foot (10-meter) wide ORV-free zone would be created in the ocean backshore wherever there is sufficient beach width to allow an ORV corridor of at least 65.6 feet (20 meters) above the mean high tide line. This ORV-free corridor would protect some of the beach from ORV use and reduce impacts on seabeach amaranth plants and habitat. However, the area would be fairly narrow, and it is unknown if the areas to be protected are more suitable for seabeach amaranth than the unprotected areas. Also, under alternative B, shorebird breeding closures would be larger and longer-lasting, providing some additional protection to seabeach amaranth compared to alternative A.

Overall, ORV and other recreational use would result in long-term moderate adverse impacts. Slightly more protection would be provided for the species when compared to alternative A due to shorebird breeding closures being larger and lasting longer and the establishment of backshore closures. However, plants may still go undetected, and would therefore be unprotected from recreational disturbance.

**Cumulative Impacts.** Cumulative impacts to seabeach amaranth under alternative B would be the same as those described under alternative A. Although alternative B would provide some additional benefits to the plant, the adverse effects on seabeach amaranth from other actions occurring in North Carolina would still exist and would not be greatly offset by the additional protection afforded under alternative B. Therefore, the effects of these other actions, added to the effects of actions under alternative B would result in long-term moderate adverse cumulative impacts to seabeach amaranth in the Seashore and throughout the plant's habitat range in North Carolina.

**Conclusion.** Overall surveys conducted for seabeach amaranth plants and protection measures implemented when plants are detected would reduce potential impacts from ORV and other recreational use, resulting in long-term minor to moderate beneficial impacts. Because ORV and other recreational use

could result in plants being run over/trampled and seeds being pulverized or buried to a depth where they cannot germinate, alternative B would have long-term moderate adverse impacts.

Past, present, and future activities both inside the Seashore and within the plant's historical range in North Carolina, when combined with the impacts of ORVs, other recreational use, and resources management activities for this species, would result in long-term moderate adverse cumulative impacts.

**Determination of Effect.** Under alternative B, resources management activities would result in long-term minor to moderate benefits to seabeach amaranth if plants are detected on the Seashore. Benefits would be due to the protection provided by installing closures around plants that are detected, surveying for plants in August when they are visible, installing prenesting and other closures for nesting bird species that overlap seabeach amaranth habitat, and surveying bird and turtle closures for plants prior to reopening these closures to ORV and other recreational use.

ORV and other recreational use would have long-term moderate adverse impacts on seabeach amaranth as plants may go undetected and therefore would be unprotected from recreation use of the Seashore. While ORV use would be restricted to a corridor 100 feet wide above the mean high tide line in breeding areas of protected bird species from April 1 to August 31, much of the corridor, especially located near and on the spits and Cape Point would lie within primary seabeach amaranth habitat and would expose any seeds or germinating plants. Some additional seabeach amaranth habitat would be protected in all areas open to ORV use that are not in front of villages, a 32.8-foot (10-meter) wide ORV-free zone would be created in the ocean backshore wherever there is sufficient beach width to allow an ORV corridor of at least 65.6 feet (20 meters) above the mean high tide line. During seabeach amaranth's dormant season more areas of the Seashore are open to ORV use, and while there would be no plants to be impacted, seeds of the plant could be either pulverized or buried by ORVs driving over them. Under the ESA, these impacts would result in a finding of may affect / are likely to adversely affect seabeach amaranth because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities, the actions under alternative B would also likely cause adverse effects.

## **Impacts of Alternative C: Seasonal Management**

### **Species Management Activities**

Surveys conducted for seabeach amaranth plants and protection measures implemented when plants are detected under alternative C would be the same as under alternatives A and B, resulting in long-term minor to moderate beneficial impacts.

Management activities under alternative C would be the same as under alternative B, except for the following management changes that would provide additional protection of seabeach amaranth habitat.

Under alternative C, the NPS would identify suitable seabeach amaranth habitat at the spits and Cape Point where plants have been observed in more than one (i.e., two or more) of the past five years prior to June 1 and would delineate these areas with symbolic fencing by June 1 if such areas are not already protected within existing shorebird resource closure(s). The SMAs for protected species would be re-evaluated and re-designated every five years, or after major hurricanes. Though no areas would currently be protected because there have not been plants observed in two or more of the past five years, the establishment of these SMAs would protect any plants that do become established in the future and would provide long-term moderate beneficial impacts. These SMAs, however, would not be year-round closures and would be reopened to ORV and pedestrian use (as long as there are no overlapping bird or turtle

resource closures) by September 1 if no plants are present, or if plants are present, the closures would remain until the plant dies.

Additionally, SMAs for shorebirds would be established and closed to ORV use from March 15 to October 14. While there would currently be no seabeach amaranth SMAs established under alternative C for reasons stated above, the establishment of the shorebird SMAs and other year-round ORV closures would result in approximately 40 miles of beach that would be closed seasonally to ORV use. Closing this amount of beach to ORV use would minimize potential impacts to seabeach amaranth and its habitat and would result in long-term moderate beneficial impacts. Bodie Island Spit, Cape Point, and South Point would be managed under ML2 procedures and would have pedestrian access corridors, unless closed by shorebird breeding behavior buffers, which would result in some adverse impacts to seabeach amaranth, slightly reducing the overall benefits in these areas. Overall, the extent of the benefits from SMAs would depend on the location and size of the closures, which would be re-evaluated and re-designated every five years or after major hurricanes, but would be more than alternatives A and B.

In addition to public education on seabeach amaranth described under alternative A, additional information about the plant and the Seashore's rules and regulations would be provided via the ORV permit that users would need to obtain. With the threat of permit revocation if a user violates the Seashore's regulations or terms of the permit, it is assumed that greater compliance with closures would occur, resulting in additional long-term minor to moderate beneficial impacts, with the extent of the impacts based on the ability to enforce the regulations and apprehend violators.

Overall, because of the protection of seabeach amaranth habitat and plants under alternative C, resource management activities would have long-term moderate beneficial impacts to seabeach amaranth as the establishment of SMAs and increased protection for the species would occur compared to alternatives A and B.

### **ORV and Other Recreational Use**

Under alternative C, the impacts from ORV and other recreational use would be less than under alternative B due to the seasonal restrictions on ORV use at most locations where seabeach amaranth has historically been found. In addition, six new beach access ramps would be constructed. This would eliminate some potential seabeach amaranth habitat; however, the amount of habitat impacted is small when compared to the available habitat in the Seashore. Therefore, the new ramps would have long-term negligible to minor adverse impacts.

Overall, ORV and other recreational use would result in long-term minor to moderate adverse impacts. Because of the establishment of SMAs and protection of approximately 40 miles of beach from March 15 to October 14, the adverse impacts under alternative C would likely be less than those under alternative B, but exactly how much less would be dependent on the size, location, and duration of the SMA closures.

**Cumulative Impacts.** Cumulative impacts to seabeach amaranth under alternative C would be the same as those described under alternative A. Although alternative C would provide some additional benefits to the plant, the adverse effects on seabeach amaranth from other actions occurring in North Carolina would still exist and would not be greatly offset by the additional protection afforded under alternative C. Therefore, the effects of these other actions, added to the effects of actions under alternative C, would result in long-term minor to moderate adverse cumulative impacts.

**Conclusion.** Surveys conducted for seabeach amaranth plants and protection measures implemented when plants are detected would reduce potential impacts from ORV and other recreational use (i.e., pedestrian use and pets), resulting in long-term moderate beneficial impacts. Because the amount of beach

habitat seasonally protected from ORV and other recreational use under alternative C, the chance of plants being run over/trampled and seeds being pulverized or buried to a depth where they cannot germinate would be reduced, when compared to alternatives A and B. Alternative C would have long-term minor to moderate adverse impacts to seabeach amaranth.

Past, present, and future activities both inside the Seashore and within the plant's historical range in North Carolina, when combined with the impacts of ORVs, other recreational use, and resources management activities for this species, would result in long-term minor to moderate adverse cumulative impacts.

**Determination of Effect.** Under alternative C, resources management activities would result in long-term moderate benefits to seabeach amaranth if plants are detected on the Seashore. Benefits would be due to the protection provided by installing closures around plants that are detected, surveying for plants in August when they are visible, installing prenesting and other closures for nesting bird species that overlap seabeach amaranth habitat, and surveying bird and turtle closures for plants prior to reopening these closures to ORVs and other recreational uses. Additional protection would be provided by identifying suitable seabeach amaranth habitat prior to June 1 at the spits and points where plants have been observed in more than one of the past five years and protecting these areas (i.e., establish a seabeach amaranth SMA). The establishment of shorebird SMAs and other year-round ORV closures would close approximately 40 miles of Seashore beach to ORV use from March 15 to October 14, minimizing potential impacts to seabeach amaranth and its habitat in these areas.

ORV and other recreational use would have long-term minor to moderate adverse impacts on seabeach amaranth as plants may go undetected and would therefore remain unprotected from recreational disturbance. Seasonal restrictions on ORV use at most locations where seabeach amaranth has historically been found, due to seabeach amaranth and shorebird SMAs, would help protect the species from impacts in those areas during the plant's growing season. Constructing six new beach access ramps would eliminate some potential habitat for the species. During seabeach amaranth's dormant season, more areas of the Seashore are open to ORV use, and while there would be no plants to be impacted, seeds of the plant could be either pulverized or buried by ORVs driving over them. Under the ESA, these impacts would result in a finding of may affect / are likely to adversely affect seabeach amaranth because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant, or beneficial. Though there would be beneficial impacts from resources management activities, the actions under alternative C would also likely cause adverse effects.

## **Impacts of Alternative D: Increased Predictability and Simplified Management**

### **Resources Management Activities**

Surveys conducted for seabeach amaranth plants and protection measures implemented when plants are detected under alternative D would be the similar to alternatives A, B, and C, but establishment of year-round SMAs would provide additional benefits as more areas would be closed to ORVs year-round and the chance of finding plants would be greater. These additional protections would result in long-term moderate to major beneficial impacts to seabeach amaranth.

Other management activities under alternative D would be the same as those under alternative C, except for the following management changes that would provide additional protection of seabeach amaranth habitat.

Under alternative D, approximately 40 miles of beach would be protected by SMAs or other ORV closures, and these closures would be year-round. Therefore, this habitat would be protected from potential adverse impacts from ORV use. Although some habitat may eventually move through some



succession stages making it unsuitable for seabeach amaranth, given the dynamic nature of the Seashore, those areas would likely be small in area compared to the overall habitat being protected. Therefore, these year-round closures would result in long-term moderate to major beneficial impacts, with the extent of the benefits dependent on the location and size of the closures.

Overall, because of the increased level of protection of seabeach amaranth habitat and plants under alternative D, when compared to other alternatives, species management actions would have long-term moderate to major beneficial impacts.

### **ORV and Other Recreational Use**

Under alternative D, the impacts from ORV and other recreational use would be less than under alternative C since ORV use would be prohibited year-round in most areas where seabeach amaranth has historically been found. In addition, four new beach access ramps would be constructed and would eliminate some potential seabeach amaranth habitat; however, the amount of habitat impacted would be small when compared to the overall available habitat in the Seashore. Therefore, the new ramps would have long-term negligible to minor adverse impacts. Overall, ORV and other recreational use would result in long-term minor adverse impacts. Because there would be approximately 40 miles of beach designated as vehicle free year-round, the adverse impacts under alternative D would be greatly reduced compared to the other alternatives and would be long-term minor adverse.

**Cumulative Impacts.** Cumulative impacts to seabeach amaranth under alternative D would be the same as those described under alternative A. Although alternative D provides significant protection of seabeach amaranth plants and habitat, the adverse effects on seabeach amaranth from other actions occurring in North Carolina would still exist. While they would be offset somewhat by the protection afforded the plant and its habitat under alternative D, the effects, when added to those under alternative D, would result in long-term minor adverse cumulative impacts.

**Conclusion.** Overall surveys conducted for seabeach amaranth plants and protection measures implemented when plants are detected would reduce potential impacts from ORV and other recreational use, resulting in long-term moderate to major beneficial impacts. Because of the amount of beach habitat protected from ORVs year-round under alternative D, the chances are greatly reduced that ORV and other recreational activities could result in plants being run over/trampled and seeds being pulverized or buried to a depth where they cannot germinate. ORV and other recreational use under alternative D would result in long-term minor adverse impacts to seabeach amaranth.

Past, present, and future activities both inside the Seashore and within the plant's historical range in North Carolina, when combined with the impacts of ORVs, other recreational use, and resources management activities for this species, would result in long-term minor adverse cumulative impacts.

**Determination of Effect.** Under alternative D, resources management activities would result in long-term moderate to major benefits to seabeach amaranth if plants are detected in the Seashore. Benefits would be due to the protection provided by installing closures around plants that are detected, surveying for plants in August when they are visible, installing prenesting and other closures for nesting bird species that overlap seabeach amaranth habitat, and surveying bird and turtle closures for plants prior to reopening these closures to ORV and other recreational use. Additional protection would be provided by identifying suitable seabeach amaranth habitat prior to June 1 at the spits and Cape Point where plants have been observed in more than one of the past five years and protecting these areas (i.e., establish a seabeach amaranth SMA). SMAs, both seabeach amaranth and shorebird, would be closed to ORVs year-round under alternative D. Combined with other year-round ORV closures, these areas would protect

approximately 40 miles of Seashore beach virtually eliminating potential impacts to seabeach amaranth and its habitat in these areas.

ORV and other recreational use would have long-term minor adverse impacts on seabeach amaranth due to reduced recreational access throughout the Seashore. Year-round restrictions on ORV use at most locations where seabeach amaranth has historically been found, due to seabeach amaranth and shorebird SMAs, would help protect the species from impacts in those areas. Constructing four new beach access ramps would eliminate some potential habitat for the species. During seabeach amaranth's dormant season some areas of the Seashore remain open to ORV use, and while there would be no plants to be impacted, seeds of the plant could be either pulverized or buried by ORVs driving over them. Under the ESA, these impacts would result in a finding of may affect / are likely to adversely affect seabeach amaranth because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities, the actions under alternative D would also likely cause adverse effects.

### **Impacts of Alternative E: Variable Access and Maximum Management**

#### **Resources Management Activities**

Surveys conducted for seabeach amaranth plants and protection measures implemented when plants are detected under alternative E would be the same as under alternatives A, B, C, and D, resulting in long-term minor to moderate beneficial impacts.

Other management activities under alternative E would be the same as under alternative C, except for the following management changes that would slightly reduce the overall beneficial impacts.

Under alternative E, approximately 36 miles of beach would be protected by SMAs or other ORV closures during the breeding season. These areas would generally be closed to ORVs from March 15 to August 31, except Bodie Island Spit, Cape Point, and South Point, which would be managed under ML2 procedures and open year-round but limited to an access corridor with a pass-through zone March 15 to August 31. The access corridor may be closed depending on breeding shorebird buffers. These areas would reopen to ORV use only after the area had been thoroughly surveyed for seabeach amaranth plants in August, so any plants would not be impacted; however, suitable habitat that is reopened would be subject to impacts from ORVs and pedestrians as described under alternative A. The ORV pass-through access corridors would potentially allow some additional habitat to be impacted year-round, depending on shorebird breeding closures, but overall the closures would provide long-term moderate beneficial impacts as a result of SMA closures to ORV use from March 15 to August 31.

Overall, because of the protection provided to seabeach amaranth habitat and individual plants, alternative E would have long-term minor to moderate beneficial impacts, as three SMAs would be managed under ML2 procedures during the breeding season and more recreational access would be allowed than under action alternatives C and D.

#### **ORV and Other Recreational Use**

Under alternative E, the impacts from ORV and other recreational use would be similar to those under alternative C with the following exceptions. Under alternative E, in all locations open to ORV use that are not in front of villages, a 32.8-foot (10-meter) wide ORV-free zone would be created in the ocean backshore wherever there is sufficient beach width to allow an ORV corridor of at least 98.4 feet (30 meters) above the mean high tide line. This ORV-free corridor would protect some of the beach from ORV use and reduce impacts on seabeach amaranth plants and habitat. However, the area would be fairly

narrow and it is unknown if the areas to be protected are more suitable for seabeach amaranth than the unprotected areas. Therefore, the impacts would be long-term minor to moderate beneficial. The ORV pass-through access corridors in areas under ML2 management would allow some ORV impacts to seabeach amaranth habitat in those areas, depending on shorebird breeding closures, and would have long-term minor to moderate adverse impacts. In addition, seven new beach access ramps would be constructed throughout the Seashore. This would eliminate some potential seabeach amaranth habitat; however, the amount of habitat impacted would be small when compared to the overall available habitat on the Seashore. Therefore, the new ramps would have long-term negligible to minor adverse impacts and overall, ORV and other recreational use would have long-term minor to moderate adverse impacts to seabeach amaranth due to the increased level of recreational access allowed when compared to the other action alternatives.

**Cumulative Impacts.** Cumulative impacts to seabeach amaranth under alternative E would be the same as those described under alternative A. Although alternative E would provide some additional benefits to the plant, the adverse effects on seabeach amaranth from other actions occurring in North Carolina would still exist and would not be greatly offset by the additional protection afforded under alternative E. Therefore, the effects of these other actions, added to the effects of actions under alternative E, would result in long-term minor to moderate adverse cumulative impacts.

**Conclusion.** Overall surveys conducted for seabeach amaranth plants and protection measures implemented when plants are detected would reduce potential impacts from ORV use and other activities (i.e., pedestrian use and pets), resulting in long-term minor to moderate beneficial impacts. Because ORV and other recreational uses would be restricted in areas of known seabeach amaranth habitat, the chances would be reduced that plants could be run over/trampled and seeds being pulverized or buried to a depth where they cannot germinate. ORV and other recreational use under alternative E would result in long-term minor to moderate adverse impacts to seabeach amaranth.

Past, present, and future activities both on the Seashore and within the plant's historical range in North Carolina, when combined with the impacts of ORVs, other recreational use, and resources management activities for this species, would result in long-term minor to moderate cumulative adverse impacts.

**Determination of Effect.** Under alternative E, resources management activities would result in long-term minor to moderate benefits to seabeach amaranth if plants are detected on the Seashore. Benefits would be due to the protection provided by installing closures around plants that are detected, surveying for plants in August when they are visible, installing prenesting and other closures for nesting bird species that overlap seabeach amaranth habitat, and surveying bird and turtle closures for plants prior to reopening these closures to ORV and other recreational use. Approximately 36 miles of beach would be protected by SMAs or other ORV closures from March 15 to August 31. Bodie Island Spit, Cape Point, and South Point would be under ML2 procedures and potentially open year-round but limited to a corridor with a pass-through zone March 15 to August 31. These closures would protect seabeach amaranth and its habitat during these timeframes, but would allow ORV impacts to occur during the dormant season when these areas are reopened.

ORV and other recreational use would have long-term minor to moderate adverse impacts on seabeach amaranth as plants may go undetected and therefore unprotected from recreation use of the Seashore. Seasonal restrictions on ORV use at most locations where seabeach amaranth has historically been found, due to seabeach amaranth and shorebird SMAs, would help protect the species from impacts in those areas. Some additional seabeach amaranth habitat would be protected, for in all areas open to ORV use that are not in front of villages, a 32.8-foot (10-meter) wide ORV-free zone would be created in the ocean backshore wherever there is sufficient beach width to allow an ORV corridor of at least 98.4 feet (30 meters) above the mean high tide line. Constructing seven new beach access ramps could eliminate some

potential habitat for the species, but these areas are not known to be habitat for seabeach amaranth. During seabeach amaranth's dormant season more areas of the Seashore are open to ORV use, and while there would be no plants to be impacted, seeds of the plant could be either pulverized or buried by ORVs driving over them. Under the ESA, these impacts would result in a finding of may affect / are likely to adversely affect seabeach amaranth because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities, the actions under alternative E would also likely cause adverse effects.

## **Impacts of Alternative F: NPS Preferred Alternative**

### **Resources Management Activities**

Surveys conducted for seabeach amaranth plants and protection measures implemented when plants are detected under alternative F would be the same as under all other alternatives, resulting in long-term minor-to moderate beneficial impacts.

Protection measures under alternative F would be the same as under alternative E, except for the following management changes.

Under alternative F, SMAs would not be designated for shorebird resources. However, some areas designated as SMAs under alternatives C, D, and E would be designated as year-round VFAs under alternative F and would include the following segments of the Seashore:

- Ramp 27 to ramp 30
- Ramp 32.5 to ramp 34
- Ramp 38 to 1.5 miles south of ramp 38 (i.e., Haulover)
- 0.3 miles west of the hook (Cape Point) to 1.7 miles west of ramp 45
- Bone Road to Hatteras Inlet, along inlet shoreline to Spur Road
- Hatteras Inlet to (new) ramp 59.5
- Ramp 68 to 0.4 miles northeast of ramp 70 (includes Ocracoke Day Use area).

In total, under alternative F approximately 26 miles of shoreline would be designated as year-round VFAs, approximately 13 miles would be seasonally designated for ORV use from November 1 to March 31, and approximately 26 miles would be designated for ORV use year-round; providing a total of approximately 39 miles of shoreline that would be protected at least seasonally. While not all of the areas closed to ORV use would be habitat suitable for seabeach amaranth, the areas do include the historically important seabeach amaranth habitat located from approximately 0.3 miles west of Cape Point to 1.7 miles west of ramp 45 and Bodie Island spit.

Though SMAs would not be designated for shorebirds, prenesting closures would be established as detailed in table 10-1 and would be in place from March 15 to July 31 (or August 15 if black skimmers are present) then removed if no birds are present, or two weeks after all chicks have fledged, whichever comes later. Cape Point and South Point would have an ORV access corridor that may be closed depending on breeding shorebird buffers. Though these seasonal closures could potentially reopen to ORV use prior to the annual August survey for seabeach amaranth, they would be surveyed for seabeach amaranth prior to reopening them and any plants found would be protected with 30-foot (9.1-meter) by 30-foot (9.1-meter) closures, so any plants would not be impacted. Also, an annual habitat assessment

would be conducted at the points and spits after all birds have fledged from the area. Prior to removing the prenesting closures, resource closures would be established in the most sensitive portions of nonbreeding shorebird habitat in these areas, based on habitat used by wintering piping plovers in more than one (i.e., two or more) of the past five years. These resource closures would provide extended protection for seabeach amaranth habitat. However, habitat in other areas that is reopened and suitable for seabeach amaranth would be subject to impacts from ORVs and pedestrians as described under alternative A. The ORV corridor seaward of the prenesting closures at Cape Point and South Point would also potentially allow some additional habitat to be impacted year-round, depending on shorebird breeding closures. Therefore, these closures would provide long-term moderate beneficial impacts.

Under alternative F, SMAs would also not be designated for seabeach amaranth, though prior to June 1 each year the NPS would still identify suitable seabeach amaranth habitat at the spits and points where plants have been observed within the previous 5 years and delineate these areas with symbolic fencing if the areas are not already protected within existing shorebird resource closures(s). Though no areas would currently be protected because there have not been plants observed within the past 5 years, the establishment of these habitat closures would protect any plants that do become established in the future and would provide long-term moderate beneficial impacts. These closures, however, would not be year-round closures and would be reopened to ORV and pedestrian use (as long as there are no overlapping bird or turtle resource closures) by September 1 if no plants are present, or if plants are present, the closures would remain until the plant dies.

Overall, because of the protection provided to seabeach amaranth habitat and individual plants, alternative F would have long-term minor to moderate beneficial impacts.

#### **ORV and Other Recreational Use**

Under alternative F, the impacts from ORV and other recreational use would be the similar to those under alternative E. The construction of four new beach access ramps and the relocation of two existing ramps would eliminate some potential seabeach amaranth habitat; however, the amount of habitat impacted is small when compared to the overall available habitat on the Seashore. Therefore, the new ramps would have long-term negligible to minor adverse impacts, and, overall, ORV and other recreational use would result in long-term minor to moderate adverse impacts on seabeach habitat.

**Cumulative Impacts.** Cumulative impacts to seabeach amaranth under alternative F would be the same as those described under alternative A. Although alternative F would provide some additional benefits to the plant, the adverse effects on seabeach amaranth from other actions occurring in North Carolina would still exist and would not be greatly offset by the additional protection afforded under alternative F. Therefore, the effects of these other actions, added to the effects of actions under alternative F would result in long-term minor to moderate adverse cumulative impacts.

**Conclusion.** Overall, resources management activities would reduce potential impacts from ORV and other recreational use, resulting in long-term minor to moderate beneficial impacts. Because ORV and other recreational use could result in plants being run over/trampled and seeds being pulverized or buried to a depth where they cannot germinate, alternative F would have long-term minor to moderate adverse impacts.

Past, present, and future activities both on the Seashore and within the plant's historical range in North Carolina, when combined with the impacts of ORVs, other recreational use, and resources management activities for this species, would result in long-term minor to moderate adverse cumulative impacts.

**Determination of Effect.** Under alternative F, resources management activities would result in long-term minor to moderate benefits to seabeach amaranth if plants are detected in the Seashore. Benefits would be due to the protection provided by installing closures around plants that are detected, surveying for plants in August when they are visible, installing prenesting and other closures for nesting bird species that overlap seabeach amaranth habitat, and surveying bird and turtle closures for plants prior to reopening these closures to ORV and other recreation use. Approximately 39 miles of beach would be protected by seasonal and year-round VFAs, including Bodie Island Spit. Cape Point and South Point would have an ORV corridor seaward of the prenesting closures that may be closed depending on breeding shorebird buffers. These closures would protect seabeach amaranth and its habitat during these timeframes, but the seasonal closures would allow ORV impacts to occur during the seasons when these areas are reopened.

ORV and other recreational use would have long-term minor to moderate adverse impacts on seabeach amaranth as plants may go undetected and would therefore be unprotected from recreation use of the Seashore. Seasonal restrictions on ORV use at seabeach amaranth and shorebird prenesting closures would help protect the species from impacts in those areas. Some additional seabeach amaranth habitat would be protected, for in all areas open to ORV use that are not in front of villages, a 32.8-foot (10-meter) wide ORV-free zone would be created in the ocean backshore wherever there is sufficient beach width to allow an ORV corridor of at least 98.4 feet (30 meters) above the mean high tide line. Constructing four new beach access ramps and relocating two existing ramps would eliminate some potential habitat for the species. During seabeach amaranth’s dormant season more areas of the Seashore are open to ORV use, and while there would be no plants to be impacted, seeds of the plant could be either pulverized or buried by ORVs driving over them. Under the ESA, these impacts would result in a finding of may affect / likely to adversely affect for seabeach amaranth because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities, the actions under alternative F would also likely cause adverse effects.

**TABLE 54. SUMMARY OF IMPACTS TO SEABEACH AMARANTH UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Resources Management Activities					
Overall, because of the protection of seabeach amaranth habitat and plants under alternative A, resources management actions would have long-term minor to moderate beneficial impacts, if plants are detected.	Overall, because of the protection of seabeach amaranth habitat and plants under alternative B, resources management actions would have long-term minor to moderate beneficial impacts, if plants are detected.	Overall, because of the protection of seabeach amaranth habitat and plants under alternative C, resources management actions would have long-term moderate beneficial impacts to seabeach amaranth as the establishment of SMAs and increased protection for the species would occur compared to alternatives A and B.	Overall, because of the increased level of protection of seabeach amaranth habitat and plants under alternative D, when compared to other alternatives, resources management actions would have long-term moderate to major beneficial impacts.	Overall, because of the protection of seabeach amaranth habitat and plants under alternative E, resources management actions would have long-term minor to moderate beneficial impacts as ORV access to more areas would be allowed during the germination period, than under action alternatives C and D.	Overall, because of the protection of seabeach amaranth habitat and plants under alternative F, resources management actions would have long-term minor to moderate beneficial impacts as ORV access to more areas would be allowed during the germination period, than under action alternatives C and D.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
ORV And Other Recreational Use					
Overall, ORV and other recreational use under alternative A would have long-term moderate adverse impacts as plants may go undetected, and therefore unprotected from this use.	Overall, ORV and other recreational use would result in long-term moderate adverse impacts. Slightly more protection would be provided for the species when compared to alternative A, due to shorebird breeding closures being larger and lasting longer.	Overall, ORV and other recreational use would result in long-term minor to moderate adverse impacts. Because of the establishment of SMAs and protection of approximately 40 miles of beach, the adverse impacts under alternative C would likely be long-term minor to moderate adverse.	Overall ORV and other recreational use would result in long-term minor adverse impacts. Because the establishment of SMAs closed to ORVs year-round would protect approximately 40 miles of beach, the adverse impacts under alternative D would be greatly reduced compared to the other alternatives and result in long-term minor adverse impacts.	Overall, ORV and other recreational use would have long-term minor to moderate adverse impacts to seabeach amaranth due to the increased level of recreational access allowed when compared to the other action alternatives.	Overall, ORV and other recreational use would be similar to those under alternative E and result in long-term minor to moderate adverse impacts to seabeach amaranth.

## STATE-LISTED AND SPECIAL STATUS SPECIES

### GUIDING REGULATIONS AND POLICIES

The NPS *Management Policies 2006* state that NPS will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible. In addition, the NPS will inventory other native species that are of special management concern to parks (such as rare, declining, sensitive, or unique species and their habitats) and will manage them to maintain their natural distribution and abundance (NPS 2006c, sec. 4.4.2.3). As a result, the NPS is obligated to manage access to important habitat for such species. In addition, one of the Seashore's management goals is to provide protection for species that occur within the Seashore and that suffer population reductions or require special management. Therefore, an analysis of the potential impacts to state-listed species and certain Seashore sensitive species is included in this section.

### ASSUMPTIONS, METHODOLOGY, AND IMPACT THRESHOLDS

The following information was used to assess impacts on state-listed and special status species:

1. Species found in areas likely to be affected by management actions described in the alternatives.
2. Habitat loss or alteration caused by the alternatives.
3. Displacement and disturbance potential of the actions and the species' potential to be affected by the activities.

Specific methodologies that were implemented and assumptions that were made that pertained to the American oystercatcher, colonial waterbirds, Wilson's plover, and red knot are described under the relevant species impact analysis below.

Although the action alternatives involve the construction of ramps, parking areas, and interdunal roads, construction activities would occur outside of the bird breeding season, during daylight hours, and outside of any key breeding or foraging habitat. In the unlikely event that state-listed or special status species are found in a construction area, the area would be under a resource closure and no construction would occur. Therefore, impacts from construction were assumed to be negligible.

## Study Area

The study area for state-listed and special status species is defined as the Seashore for the analysis of the impacts of the alternatives and defined as the state of North Carolina for the analysis of cumulative impacts.

## Impact Thresholds

A summary of impacts to state-listed and special status species under all alternatives is provided in table 55 at the end of this section.

The following thresholds for evaluating impacts to state-listed and special status species were defined.

*Negligible:* There would be no observable or measurable impacts to state-listed/special status species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.

*Minor Adverse:* Impacts on state-listed/special status species, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Occasional responses by some individuals to disturbance could be expected, but without interference to feeding, reproduction, resting, or other factors affecting population levels. Small changes to local population numbers, population structure, and other demographic factors might occur. However, some impacts might occur during critical reproduction periods for a native species, but would not result in injury or mortality. Sufficient habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

*Moderate Adverse:* Impacts on state-listed/special status species, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses by some individuals to disturbance could be expected, with some negative impacts to feeding, reproduction, resting, or other factors affecting local population levels. Some impacts might occur during critical periods of reproduction or in key habitats in the Seashore and result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.



*Major Adverse:* Impacts on state-listed/special status species, their habitats, or the natural processes sustaining them would be detectable, would be expected to be outside the natural range of variability, and would be permanent. Frequent responses by some individuals to disturbance would be expected, with negative impacts to feeding, reproduction, or other factors resulting in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts would occur during critical periods of reproduction or in key habitats in the Seashore and result in direct mortality or loss of habitat. Local population numbers, population structure, and other demographic factors might experience large declines.

*Duration:* Short-term effects would be up to two breeding seasons for state-listed/special status species.

Long-term would be anything beyond two breeding seasons for state-listed/special status species.

### **Species-Specific Methodology and Assumptions**

Potential impacts on state-listed/special status species populations and habitat were evaluated based on available data on the species' past and present occurrence at the Seashore, as well as the species' association with humans, pets, predators, and ORVs. Information on habitat and other existing data were acquired from staff at the Seashore, the USFWS, and available literature. American oystercatchers, Wilson's plover, and the red knot are identified as a species of high concern by the U.S. Shorebird Conservation Plan. American oystercatchers are listed as a species of special concern in North Carolina. The colonial waterbird species addressed in this analysis are state-listed threatened and species of special concern and include the common tern, least tern, gull-billed tern, and black skimmer.

The analysis focuses on effects to state-listed and special status species from a variety of human recreational activities, as well as impacts incurred as a result of surveying and management activities.

The following assumptions were made regarding the analysis for all alternatives:

- An indirect impact from recreation use is the attraction of mammalian and bird predators to trash associated with recreation use (USFWS 1996a, 2009a). Predation continues to be a major factor affecting the reproductive success of piping plovers (Elliot-Smith and Haig 2004), as well as other shorebirds at the Seashore. The Seashore would enforce proper trash disposal and anti-wildlife feeding regulations to reduce the attraction of predators to the area under all alternatives. Nevertheless, as demonstrated by the Seashore's annual species reports, predation continues to be a threat to species success at the Seashore (see "Chapter 3: Affected Environment"). Recreational use that brings humans into areas where state-listed/sensitive species reside would continue to have indirect impacts by attracting mammalian predators, resulting in long-term moderate impacts under all alternatives as impacts could be detectable and outside the range of natural variability, but would not result in large declines in population as the Seashore takes steps to protect listed species from predation.

## **Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy**

### **Resources Management Activities**

*Establishment of Prenesting Closures.* Under alternative A, specific prenesting closures would not be established for American oystercatchers, colonial waterbirds, or Wilson's plover. For American oystercatchers and colonial waterbirds, closures would be established only when a territory is established or a nest is located. Although these species would be able to utilize prenesting closures for piping plover that are in effect April 1, no specific prenesting closures for these other species would be established. The April 1 prenesting closures for piping plover would occur at the start of, rather than before, the breeding season, and would not be available to early nesting American oystercatchers; however, these areas would be available for Wilson's plover, which nest around the same time as the piping plover. For terns and black skimmers that nest at the spits, Cape Point, and South Beach in May and June, these closures would provide protection if they nest inside the closure, but there would not be prenesting protection provided to these species at many other locations, including areas that have been utilized for nesting in the past three years. Because there are no specific prenesting closures for state-listed and special status species apart from the piping plover prenesting areas, there would be overall long-term moderate adverse impacts to these species, except for minor adverse impacts for Wilson's plover, which generally would nest within the prenesting areas established for piping plover. Because red knot do not breed at the Seashore, there would be no impacts from the establishment of prenesting closures.

*Surveying and Monitoring.* Under alternative A, Seashore staff would continue to survey recent American oystercatcher breeding areas two times per week from March 15 to June 15. Surveys for colonial waterbirds would also be two times per week from May 1 to June 15. Because surveys would be restricted to recent breeding areas, surveys may not detect American oystercatchers or colonial waterbirds that establish territories in new habitat or historic nest sites. American oystercatcher and colonial waterbird nests would be observed at least three times per week. American oystercatcher broods would be observed once daily, while colonial waterbird broods would be observed at one-day to two-day intervals. Wilson's plover nests and broods would be observed incidental to piping plover monitoring. For all state-listed/special status species, when broods are mobile, more frequent observations would be provided along with enforcement presence. Monitoring would end when all chicks have fledged.

Although surveying would provide substantial benefits to the species from data collected, surveying would bring people and/or essential vehicles into direct short-term contact with state-listed/special status species and their habitat, and these activities themselves are a known risk factor (McGowan 2004; Sabine 2005; Nol and Humphrey 1994; Simons and Schulte 2008; Corbat and Bergstrom 2000; Verhulst et al. 2001). Seashore staff would use best professional judgment and take precautions to minimize disturbance during surveying; however, all state-listed/special status species are highly vulnerable to disturbance and are known to abandon habitat when they are impacted by pedestrians, vehicles, pets, and even resource managers in or near their nesting habitat (Sabine 2005; Corbat and Bergstrom 2000). Surveying would include collection of data by Seashore staff, whose presence has the potential to lead to flushing responses, which in turn could have the potential to negatively impact feeding, reproduction, resting, or other factors. Therefore, under alternative A, species surveying could likely have long-term minor adverse impacts, from the introduction of human disturbance during these activities but overall surveying would provide long-term benefits to the species as it would allow the Seashore to better manage the species. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse.

*Buffer/Closure Establishment.* Management under alternative A would begin with surveying for breeding activity beginning on March 15 for American oystercatchers and May 1 for colonial waterbirds. Prenesting areas for piping plovers would be established at spits, Cape Point, and South Beach, based on an annual habitat survey. Other species would potentially use breeding habitat protected within the piping plover prenesting areas. During prenesting, a 33-meter (100-foot) wide ORV and pedestrian corridor would be established at the spits, Cape Point, and South Beach, and pedestrian access would be prohibited outside of ORV corridors including breeding areas beyond the symbolic fencing. The ORV/pedestrian corridor would be delineated with posts placed up to 33 meters (100 feet) above the high tide line. In areas of reduced corridor width (i.e., narrower than 33 meters [100 feet]), a speed limit of 10 mph would be posted. Prenesting areas would be removed if no bird activity is seen by July 15 or when the area has been abandoned for a 2-week period, whichever comes later.

Outside of the piping plover prenesting areas, closures/buffers would be activated if American oystercatchers, colonial waterbirds, or Wilson's plover establish a territory or nest(s) are located. Management of Wilson's plover would be incidental to piping plover management. Closures would be removed when areas have been abandoned for a two week period. If territorial or courting birds are observed outside of existing closures, based on bird behavior and suitable habitat, buffers would be expanded to accommodate the birds. An ORV/pedestrian corridor would be provided above the high tide line.

These closures provide buffers around courting American oystercatchers and colonial waterbirds, which would have a substantial beneficial effect if implemented in a timely manner. Yet, as stated previously, the management actions under alternative A would bring people, essential vehicles, and equipment into direct contact with state-listed/special status species and their habitat and would provide for closures only after territorial behavior or nests are observed. These activities, as with surveying, are known risk factors. American oystercatchers at the Seashore can begin courting and nesting as early as mid-February or early March and be particularly sensitive to disturbance at that time (Cohen et al. 2010). Hence, a March 15 start to management could mean that early nesting oystercatchers, especially those that establish territories outside of historic areas, would not be fully protected under alternative A.

Under alternative A, buffers/closures would be established for nesting American oystercatchers based on the adult's reaction to human disturbance. Closures would vary in size depending upon best professional judgment. When resource closures are created around nests, the ORV corridor would adjust whenever possible to allow ORV passage, and the width of ORV corridor would be reduced if necessary. For colonial waterbirds, a buffer/closure of 50 to 100 meters (164 feet to 328 feet) would be established around the nest or colony based on observed bird behavior, while maintaining the ORV/pedestrian corridor, if possible. If the buffer and the corridor overlap each other, then staff would reduce the corridor width if necessary. For both species, in areas in which the buffer zone would eliminate the ORV corridor, an alternate ORV route would be identified if available, or a bypass provided if possible. Observations and resultant management would be responsive to individuality in bird behavior when determining adequate size of closure zones around nests.

A 50- to 100-meter (150- to 300-foot) buffer zone would be established if unfledged chicks are observed, which would adjust in size as a function of chick mobility. However, observations of chick movements may not be sufficient to adjust buffers such that they ensure protecting chicks from ORV/pedestrian impact. For example, if observations are made during times of low chick mobility, buffers would adjust to 50 meters (164 feet) and result in leaving unprotected chicks that move greater than 50 meters (164 feet) at another time. An alternate ORV/pedestrian access route or bypass would be provided to open areas beyond the closure, if possible. The 33-meter (108-foot) wide ORV corridor would be reopened in recent or current nesting areas after chicks fledge. The 150-foot ORV corridor would re-established after August

31. Under alternative A, no additional buffers or closures would be provided to foraging adult state-listed/special status species.

Although establishment of buffers around nesting/fledging areas and posting of nests with symbolic fencing can provide a major deterrent to the entry of people, pets, and ORVs into their habitats, alternative A species management would continue to bring people, essential vehicles, and equipment into direct contact with the American oystercatcher and colonial waterbirds and their habitat, and these activities are known risk factors (Buckley and Buckley 1976; Erwin 1989, 1980; Cohen et al. 2010). Also since first-time breeders are even less tolerant to disturbance than are older, established breeders (Nol and Humphrey 1994), buffers for first-time breeders may not provide sufficient protection.

With the closures and buffers for nesting areas under alternative A that may not provide sufficient protection for species, management that begins after the species are known to arrive at the Seashore, lack of certain buffers such as adult foraging buffers, and the flexibility of moving the ORV corridor to enable access adjacent to nesting areas, impacts from closures/buffers under alternative A would be long-term moderate adverse, depending on the sensitivity of each species to disturbance.

*Wintering/Nonbreeding Management.* Nonbreeding surveys for American oystercatchers, Wilson's plover, and red knot would be conducted according to the NPS SECN survey protocol, with no nonbreeding surveys for colonial waterbirds. These surveying activities would have minor adverse impacts (due to human disturbance as discussed above) and long-term benefits related to the increase in knowledge about the species. Lack of nonbreeding surveys for colonial waterbirds would have long-term minor to moderate adverse impacts, as data would not be collected to assist in the determination of future management (nonbreeding) of these birds.

No nonbreeding closures would be established for state-listed/special status species, although these species could utilize the nonbreeding closures for piping plover that would include suitable interior habitats at spits and at Cape Point year-round. Being able to utilize other species closures would have some long-term benefits, as some protection is offered during this sensitive life stage. However, these closures would not be specific to the state-listed/special status species and would not include ocean beach habitat, resulting in long-term minor adverse impacts. Wilson's plover would benefit from nonbreeding closures for piping plover as they utilize similar nonbreeding habitat.

*Education/Public Outreach.* Under alternative A, the public would continue to receive information at the visitor centers about state-listed/sensitive species and their ecology and the measures the Seashore is taking to protect the species. The public would also continue to be notified about closures that would limit ORV or pedestrian traffic, as well as when these closures reopen. Such public outreach is beneficial to the species as it educates the public to the specific needs of the species and alerts the public ahead of time to areas where they cannot go due to potential impacts to the species. Therefore, public outreach as part of species management would have long-term beneficial impacts.

*Overall Impact of Resources Management Activities.* The overall impact of resources management activities (primarily resulting from the effects of surveying and field activities) for each species under alternative A would be as follows:

- American oystercatcher. Impacts would be long-term minor to moderate adverse as surveying and lack of specific prenesting closures for this species may miss early nesters. Piping plover prenesting closures, which could be utilized by this species as well, would not protect a number of American oystercatcher nest sites used in recent years. Also, buffer distances based on bird behavior may not provide adequate protection for the species.

- Colonial waterbirds. Impacts would be long-term minor to moderate adverse as no prenesting closures would be established for colonial waterbirds. Some species, such as terns and black skimmers may be able to utilize the prenesting closures established for piping plovers; however, those prenesting areas would not protect a number of colonial waterbird nest sites used in recent years. Also, buffer distances based on bird behavior may not provide adequate protection for the species.
- Wilson's plover. Impacts would be long-term minor adverse as the habitat for this species would be well surveyed during piping plover surveys and this species would be able to take advantage of management measures for piping plover as their breeding seasons and habitat requirements are similar. Also, buffer distances based on bird behavior may not provide adequate protection for the species. Some benefits may occur from incidental management of Wilson's plover during piping plover management activities, both during breeding and nonbreeding seasons.
- Red knot. Impacts to nonbreeding red knot would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures, although the ability of this species to use wintering closures for piping plover at inlets and Cape Point would result in some benefit, albeit minimal. As red knot are not present at the Seashore for breeding, any impacts to this species from surveying and field activities for other species would be long-term negligible adverse.

## ORV and Other Recreational Use

*ORV and Pedestrian Access.* Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps).. There would be no designated VFAs, although temporary closures would occur for resource protection and safety reasons, and seasonal closures would occur in front of the villages. Alternative A would provide for closures of piping plover prenesting areas, while maintaining access to the inlets and Cape Point. The prenesting closures, as well as closures based on observations of breeding behavior, foraging, and chick movements, may benefit other species. An ORV/pedestrian corridor would be provided above the high tide line. In areas of reduced corridor width (i.e., less than 33 meters [100 feet]), traffic signs and a 10 mph speed limit would be posted. The ORV corridor would be adjusted whenever possible to allow vehicle passage. If an ORV corridor is not feasible for safety reasons or insufficient area, an alternate ORV route would be identified if possible. If there is no alternate route available, Seashore staff would consider establishing a bypass route. Seashore staff would allow management to be responsive to individuality in bird behavior when determining adequate size of closure zones. If an alternate route or bypass is not feasible, an ORV closure would be initiated. This should limit adverse impacts to state-listed/special status species, but compliance with closures may not be absolute, resulting in short-term moderate to major adverse impacts if non-compliance occurs. Recreation use under the actions defined in alternative A would bring ORVs, essential vehicles (for safety, enforcement, etc.), pedestrian, pets, and other recreational activities in close proximity to state-listed/special status species and their habitat, and these activities are all known risk factors to these species. Oystercatchers need large, undisturbed beach areas for successful nesting and they are particularly sensitive to humans, vehicles, and unleashed pets in or near their nesting habitat (Simons and Schulte 2008; Stillman and Goss-Custard 2002). Although there would be buffers and substantial rerouting, it is likely that some American oystercatchers could be disturbed during the most critical periods of reproduction and within key American oystercatcher habitat, resulting in direct mortality, abandonment, or loss of habitat. This would be especially true if closure compliance is lacking and/or if the breach of the closure occurs in the earlier life stages. Direct mortality, abandonment, and loss of habitat have and would continue to lead to some annual and seasonal declines in the oystercatcher population at the Seashore, and impacts would be long-term moderate to major adverse. Colonial

waterbirds and Wilson's plovers would be affected especially during prenesting, territory establishment, courtship and nesting phases (Cohen et al. 2010; Corbat and Bergstrom 2000), although some Wilson's plover nesting habitat would be protected within the piping plover prenesting areas. Some of these impacts could occur during critical, early stages of reproduction and within key colonial waterbird and Wilson's plover habitat and result in abandonment of nest sites or loss of otherwise suitable habitat and could result in long-term moderate to major adverse impacts.

There would be no year-round or seasonal closures specifically to protect key red knot habitat. Recreational activities that occur in the months when red knots are present on Seashore beaches have the potential to impact resting and foraging red knots, as a result of vehicle use and associated noise and presence of people and pets. Of particular concern is when these disturbance factors result in red knots being forced to fly while they are foraging. Frequent escape flights means that time spent foraging is reduced and replaced by an increase in time spent flying, resulting in the chance that birds would not be able to add the body fat they need for their long-distance migration, resulting in long-term minor to moderate adverse impacts to red knots.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative A would allow for beach driving during the day outside of resource closures, with no restrictions on night driving. While the wrack within resource closures would be protected from driving, this level of access would result in long-term minor to moderate impacts to invertebrate populations (as discussed later in this chapter) as all areas outside the resource closures would be open to driving during the day and night, and therefore would reduce the food source to all of the state-listed and special status species at the Seashore that rely on this food source, resulting in long-term moderate impacts.

*Night-Driving Restrictions.* Under alternative A, there would be no limitations on night driving. American oystercatchers, Wilson's plover, and red knot are known to be active at night (Simons and Schulte 2008; Morrier and McNeil 1991; Niles et al. 2007) and would be subject to vehicular and pedestrian disturbance. This disturbance can impact their foraging behavior and has been shown to result in disorientation and even abandonment of oystercatcher chicks (Simons and Schulte 2008). Allowing night driving under alternative A would result in long-term moderate adverse impacts to birds that forage at night.

*Commercial Fishing.* Under alternative A, commercial fishing would be managed under the commercial fishing special use permit. As part of this permit, terms and conditions would be placed on the permit holder, including a prohibition on entering resource closures. All other closures (safety and seasonal) would be accessible by commercial fishing permit holders. As resource closures would be off limits to commercial fishermen, there would be long-term negligible adverse impacts to state-listed/special status species from this use.

*Permitting/Carrying Capacity Requirements.* Under alternative A, there would be no permitting or carrying capacity requirements for ORV use at the Seashore. A permitting system would provide the Seashore with a method for dealing with non-compliance, as well as providing education to ORV users regarding the importance of state-listed and special status species habitat at the Seashore. Lack of a permit system under alternative A would have long-term moderate adverse impacts. The lack of prenesting closures for these species (or other proactive protection of nesting habitat) would result in adverse impacts that would be exacerbated by the lack of a carrying capacity requirement. These conditions would result in long-term moderate adverse impacts to most state-listed/special status species that nest on Seashore beaches, as unrestricted numbers of ORVs would be allowed in recent breeding areas prior to the implementation of resource closures that would occur only after breeding activity is observed. For

American oystercatchers that regularly forage on the ocean shoreline and on the soundside outside of resource protection areas, there would be long-term moderate to major adverse impacts, as the lack of a carrying capacity would increase the possibility of greater concentrations of ORVs, thereby increasing the potential for disturbance to oystercatchers. For Wilson's plover, which typically would nest in piping plover prenesting areas, the lack of a carrying capacity would cause long-term minor adverse impacts.

*Pet/Other Recreational Activity Restrictions.* Alternative A would prohibit camping and restrict beach fires to the hours of 6:00 a.m. until midnight, and would allow pets at the Seashore year-round, in accordance with 36 CFR 2.13. The prohibition of camping and restriction of beach fires after midnight would have long-term benefits to state-listed/special status species, as disturbance from these activities would be reduced or eliminated. The presence of pets at the Seashore, including during breeding season, has the potential to impact state-listed/special status species as some visitors to the Seashore do not observe the requirement for pets to be restrained in some manner, and buffers for these species may not be adequate under alternative A. If there is little or limited compliance with pet restrictions in the areas of closures, a negative effect on the state-listed/special status species could result (USFWS 1996a). This would be mitigated by the prohibition of pets from the landward side of the posts delineating the ORV corridor at the spits and Cape Point, by the prohibition of pets within symbolic fencing around any bird closure area, and through education and outreach efforts via the Seashore field personnel and partnerships with local volunteers and organizations, but could still result in long-term minor adverse impacts, due to non-compliance and lack of appropriate buffers.

*Overall Impact of ORV and Other Recreational Use.* The overall impact of ORV and other recreational uses for each species under alternative A would be as follows:

- American oystercatcher. Impacts would be long-term moderate to major adverse as buffers that adjust frequently based on bird behavior are more subject to non-compliance. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets at the Seashore during breeding season would contribute to these adverse impacts.
- Colonial waterbirds. Impacts would be long-term moderate to major adverse as buffers may not be adequate to protect the species, and disturbance from recreational uses is more likely. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets in the vicinity of breeding birds would also contribute to adverse impacts.
- Wilson's plover. Impacts would be long-term moderate to major adverse as no specific management would be provided for this species, although they could utilize buffers and closures established for piping plover. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets at the Seashore during breeding season would contribute to these adverse impacts.
- Red knot. Impacts would be long-term moderate adverse as no specific management would be provided for this species especially during a key life stage of wintering. The lack of designated VFAs, a permitting system, or night-driving restrictions when red knots are at the Seashore, and allowing pets at the Seashore during the migrating/nonbreeding season would contribute to these adverse impacts. Impacts to red knots would be lower than other species as they would not be subject to impacts during their breeding cycle and their use of the Seashore corresponds to times of lower visitation.

**Cumulative Impacts.** The following cumulative assessment applies to all the state-listed / special status bird species addressed in this section of the plan/EIS, since so many of the cumulative effects applied similarly to all of these species. While these species may use the Seashore differently (nesting vs.

wintering) or arrive at the Seashore at different times, in general the below actions would occur year-round and have the potential to impact all of the state-listed/special status species to some degree. The cumulative impact of each alternative for each species references this section, but provides an assessment of all cumulative effects, including those of each individual alternative added to the impacts discussed below. The past, present, and future actions discussed under cumulative impact scenario could be expected to have a range of impact on all the state-listed / special status bird species addressed in this section of the plan/EIS.

Various dredging is occurring in the vicinity of the Seashore, such as the dredging of Oregon Inlet. These dredging activities fall under two categories: major dredging and maintenance activities. For the dredging of the federally authorized navigation channel at Oregon Inlet, major dredging occurs approximately every four to five years, with sand being deposited in areas outside the Seashore, such as on Pea Island. Major dredging of Oregon Inlet is typically avoided during the breeding season; however, maintenance dredging does occur and could result in short-term minor adverse impacts due to disturbance. When major dredging projects do occur, it is common for bird habitat at the southern end of Bodie Island Spit to slough off into the channel for a number of months after the dredging operation, which could cause short-term minor to moderate adverse effects to habitat.

Berm construction under the CCC provided dune stabilization that changed the habitat available to all shorebird species at the Seashore. These stabilization efforts provided for the establishment of NC-12 and subsequent development, removing this area from potential habitat. These past actions resulted in long-term moderate adverse impacts to all shorebird species at the Seashore. Similarly, continual maintenance of NC-12 and berm maintenance would have a short-term, minor to moderate, adverse impact to the extent that it takes place during breeding season and if maintenance results in encroachment on any nest buffers or resource closures. If encroachment occurs, it could result in habitat loss that would have short-term, minor to moderate, adverse impacts to sensitive species nesting and foraging. The degree to which this activity is negative is a function of the timing and location of the activity itself relative to bird nesting and to the degree to which the activity impacts habitat for state-listed and special status species.

Storms and other weather events during the breeding season (March – August) of locally sensitive bird species can result (depending upon storm intensity) in disturbance of nesting state-listed/special status birds or even in the washing away of nests or eggs. In addition to the timing of summer storms, storm severity is also an important variable. Powerful storms can surge high up and overwash large areas of breeding habitat including even up to the toe of the dune and beyond and result in loss of scrapes, nests, eggs, chicks and even breeding adults. Conversely, winter, late fall, and early spring storms are capable of being beneficial to state-listed / special status birds by depositing new materials and creating overwash areas and hence new nesting habitat for state-listed / special status birds or having long-term adverse impacts by eroding and removing otherwise suitable habitat. Hence, the type and level of impacts to nesting state-listed / special status birds depends on the timing and severity of storm events and whether they result in net habitat creation or destruction.

Hurricanes can also affect American oystercatchers, Wilson's plover, and colonial waterbirds because of the impact of major storms on staff resources. Storm recovery efforts that temporarily pull staff from resources management (including species monitoring or law enforcement) activities during the breeding season would have a short-term minor adverse impact. Conversely, hurricane recovery that takes place outside of the breeding season would have no or little effect. Because the hurricane season overlaps essentially the entire breeding season, the loss of staff services would have a short-term adverse impact on these birds.

Commercial fish harvesting would have a negligible impact on American oystercatchers, Wilson's plovers, and red knots because these birds do not feed on any commercially important fish. However,



American oystercatchers, Wilson's plovers, and red knots feed on some of the same prey items of fish species that may be harvested and, as such, harvest of fish may mean greater prey encounters for these bird species. In this case, commercial fishing would have a long-term negligible to minor adverse impact on American oystercatchers, Wilson's plovers, and red knots. Colonial waterbirds on the other hand, most likely feed on the young year classes of some of the fish targeted by commercial fishermen. In this case, the harvest of commercial fish would have a long-term minor adverse impact on colonial waterbirds.

Past, current, and future planning efforts can also affect locally sensitive bird species. For example, past development that has occurred in Dare and Hyde counties under their land use plans had increased the residential housing and related services in the areas within the Seashore. This land development within the Seashore, as well as throughout the counties, has reduced the amount of habitat available to species, resulting in adverse impacts. In addition to past actions, new development could result from the implementation of the County Land Use Development Plans for Dare and Hyde counties, including expected revisions to the Dare County Plan. The details of any plan revisions are not certain and the potential for impacts on these bird species is indeterminate at this time. If increased development within the Seashore's boundaries would result from the implementation of these plans, this may have minor adverse impacts on state-listed / special status species, because development might result in measurable increases in recreational beach use, with corresponding increases in recreational impacts to these species. If visitation on the Outer Banks increases greatly, this would also increase the likelihood of American oystercatcher vehicle strikes as the species flies across NC-12 from nesting sites on the ocean shoreline to forage in the Pamlico Sound. Therefore, an increase in visitation would likely result in an increased chance of conflicts between this species and ORV.

The education aspect of the Seashore's Long-Range Interpretive Plan would provide long-term benefits to state-listed / special status birds as it would help to educate visitors about the conservation needs of the birds that inhabit the Seashore and the protection measures that are put in place to help protect them.

The Seashore's Predator Management Plan would provide long-term substantial benefits by helping to control mammalian predators, such as fox and others, which prey upon bird adults, eggs, and young. Predator trapping might result in short-term minor disturbance to nests and young, or result in loss of nests or hatchlings if trappers are not cognizant of nest locations. However, overall predator management actions would be highly beneficial to state-listed or special status bird species.

The Cape Lookout Interim Protected Species Management Plan/EA provides beneficial impacts to all state-listed/special status birds at the Seashore through the management policies that it employs. However, even with those management measures in place, adverse impacts would still occur to the species as recreational uses, including night driving, would still occur, but would be mitigated to an extent by the management measures being employed. The measures that are in place now under the interim plan increase protections, in part, by increasing the frequency prenesting and nest surveys for state-listed and special status species and providing larger buffers for American oystercatcher chicks, as noted in the Cape Lookout Interim Protected Species Management Plan/EA. The outcome of the Cape Lookout National Seashore ORV Management Plan/EIS would also have direct long-term impacts on bird populations within the Seashore as well as within the state of North Carolina. However, whether the impact of the ORV plan would be beneficial or adverse to state-listed / special status birds would depend upon the management decisions that are made and ultimately implemented.

The replacement of the Herbert C. Bonner Bridge may have minor adverse impacts on state-listed / special status birds. Construction noise and lighting may adversely impact courting, nesting, and foraging of state-listed / special status birds. The presence of shading from the bridge and pilings driven into the substrate may also alter the optimal suitability of the beach surrounding the bridge for both nesting and foraging state-listed/special status birds in the vicinity of the impact. However, the new bridge would also

provide some benefits by allowing barrier island processes to occur more naturally than with the bridge it replaces. To the extent that the new bridge would allow the natural formation of new habitats such as overwash fans, new inlets, and low sloping beaches it might provide additional suitable habitat for state-listed / special status birds. In this case, the impact of the Herbert C. Bonner Bridge would be long-term with benefits to American oystercatchers, Wilson's plovers, and red knots in the vicinity of the bridge.

The overall combined impacts of these past, current, and future actions would be long-term minor to moderate adverse. These impacts, combined with the moderate to major long-term adverse impacts under alternative A, would result in long-term moderate to major adverse cumulative impacts.

**Conclusion.** The overall impact for each species under alternative A would be as follows:

- American oystercatcher. Impacts of resources management activities (primarily resulting from the effects surveying and field activities) would be long-term minor to moderate adverse as any surveying and lack of specific prenesting closures for this species may miss early nesters. Also, buffer distances based on bird behavior may not provide adequate protection for the species. Impacts from ORV and other recreational use would be long-term moderate to major adverse as buffers that adjust frequently based on bird behavior are more subject to non-compliance. The lack of designated VFAs, a permitting system, carrying capacity, or night-driving restrictions, and allowing pets in the vicinity of breeding birds would contribute to adverse impacts.
- Colonial waterbirds. Impacts of resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term minor to moderate adverse as surveying and lack of specific prenesting closures for colonial waterbirds may miss early nesters. Also, buffer distances (150–300 feet) may not provide adequate protection, especially if buffer distances are based on observed bird behavior and the birds are not being continuously observed/monitored. Impacts of ORV and other recreational use would be long-term moderate to major adverse as buffers may not be adequate to protect the species, and disturbance from recreational uses is more likely. The lack of designated VFAs, a permitting system, carrying capacity, or night-driving restrictions, and allowing pets in the vicinity of breeding birds would also contribute to adverse impacts.
- Wilson's plover. Impacts of resources management activities (primarily resulting from the effects of surveying and field activities) would be long-term minor adverse as the habitat for this species would be well surveyed during piping plover surveys and this species would be able to take advantage of management measures taken for piping plover as their breeding seasons and habitat requirements are similar. Also, buffer distances based on bird behavior may not provide adequate protection for the species. Some benefits may occur from incidental management of Wilson's plover during piping plover management activities, both during breeding and nonbreeding seasons. Impacts of ORV and other recreational use would be long-term moderate to major adverse as no specific management would be provided for this species, although they could utilize buffers and closures established for piping plover. The lack of designated VFAs, a permitting system, carrying capacity requirements, or night-driving restrictions, and allowing pets in the vicinity of breeding birds would also contribute to adverse impacts.
- Red knot. Impacts to nonbreeding red knots would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species especially during a key life stage of wintering. The lack of designated VFAs, a permitting

system, no night-driving restrictions during the time period when red knot are present at the Seashore, and allowing ORVs, people, and pets at the Seashore during the nonbreeding season in the vicinity of this species would contribute to adverse impacts. Impacts to red knots would be lower than with other species as they would not be subject to impacts during their breeding cycle and their use of the Seashore corresponds to times of lower visitation.

Cumulative impacts under alternative A would be long-term moderate to major adverse.

### **Impairment Determination**

*Brief Description of the Condition of the Resource.* Colonial waterbirds at the Seashore include gull-billed terns, common terns, least terns, and black skimmers. While the common tern, gull-billed tern and black skimmers are not federally listed species, they have been identified as special status species due to the following designations: the gull-billed tern is listed on the USFWS 2008 Birds of Conservation Concern (USFWS 2008b) and is listed as threatened by the State of North Carolina; the common tern is listed on the USFWS 1995 list of Non-game Birds of Management Concern (USFWS 1995) and the 2008 Birds of Conservation Concern (USFWS 2008b), as well as being a North Carolina Species of Special Concern (NCWRC 2008b); and the black skimmer is listed on the USFWS 2008 Birds of Conservation Concern (USFWS 2008b), as well as being a North Carolina Species of Special Concern (NCWRC 2008b). During the period from 1977 to 2007, the number of gull-billed tern nests declined from approximately 268 to only 90, common tern nests from 2,761 to 498, and black skimmer nests from 976 to 555. Numbers of most breeding, colonially nesting shorebirds within North Carolina have declined over the past 20 to 30 years (Cohen et al. 2010; see table 29). For example, from 1977 to 2007, colonial waterbird nesting declined 30%, from 7,068 to 5,004 nests (table 29). Barrier island beaches provide important habitat for gull-billed terns, common terns, least terns, and black skimmers. Many of these beaches are severely degraded due to coastal development and associated increases in human disturbance and in predation by overabundant species. These factors have most likely contributed to the decline in colonial waterbird numbers in North Carolina, including the Seashore (Cameron and Allen 2008).

Within the Seashore, six gull-billed tern nests were recorded in 2007 on Green Island and none were found in 2008 or 2009, representing a decline from the Seashore's average of approximately 32 nests during surveys between 1977 and 2009. In 2010, one gull-billed tern nest was documented at Cape Point, but was lost before hatching. A total of 19 common tern nests were documented at the Seashore in 2008, although that number rose to 53 nests for the 2009 season. The number of least tern nests rose dramatically at the Seashore in 2009, when 577 were documented by resource management staff. Black skimmer nest numbers have sharply declined at the Seashore, with only 11 nests in 2007 and 4 nests counted in 2008. However, 61 black skimmer nests were documented in 2009 (table 30). The number of nests recorded in 2007 for three of the four species was the lowest in the history of waterbird surveys in North Carolina (Cameron and Allen 2008). With the exception of the gull-billed tern, colonial waterbird numbers at the Seashore showed substantial increases during the 2009 breeding season.

*Common terns, gull-billed terns, and black skimmers are necessary to fulfill the purposes for which the Seashore was established.* The Seashore's enabling legislation provides for the Seashore to be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic conditions prevailing in the area to be preserved. The common tern, gull-billed tern, and black skimmer, all of which have been identified as special status species, are important parts of the unique flora and fauna that the Seashore was established to preserve.

*Common terns, gull-billed terns, and black skimmers are key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore.* The migratory shorebirds that exist within the Seashore are part of the Seashore's significance. The common tern, gull-billed tern and black

skimmers found in the Seashore have been identified as special status species and preservation of these species are part of why the Seashore was established (preservation of the unique flora and fauna) which is key to the natural integrity of the Seashore.

*Common terns, gull-billed terns, and black skimmers are implicitly but not explicitly identified as a significant resource in the Seashore's planning documents.* The Seashore's planning documents do not provide an explicit listing of "significant resources," i.e., a list stating which resources are significant and which are not. However, the planning documents repeatedly address the flora and fauna and physiographic conditions of the Seashore, particularly migratory birds and threatened and endangered species. Common terns, gull-billed terns and black skimmers are all migratory shorebirds found at the Seashore that are an important part of the Seashore's natural resources addressed in its planning documents. Therefore it seems reasonable to conclude that the Seashore's planning documents implicitly consider the common tern, gull-billed tern, and black simmer "significant" because they are part of the fauna the Seashore is mandated to preserve.

The Seashore's 2007 Long-Range Interpretive Plan in its description of the Seashore's purpose calls out preserving and protecting the "park's natural resources" and "dynamic barrier islands that are shaped by ongoing natural processes" (Seashore's Long-Range Interpretive Plan (NPS 2007d)). The Seashore's 2006 – 2011 Strategic Plan lists preserving and protecting the "dynamic coastal barrier island system...flora and fauna that are found in a variety of habitats at the park," including "migratory birds and several threatened and endangered species" (2006 – 2011 Strategic Plan (NPS 2007b)). The Seashore's General Management Plan states: "The overall planning objective for the national seashore is to preserve the cultural resources and the flora, fauna, and natural physiographic condition, while providing for appropriate recreational use and public access to the oceanside and soundside shores in a manner that will minimize visitor use conflict, enhance visitor safety, and preserve park resources" (NPS 1984). The primary resource management objective of the Seashore as expressed in the General Management Plan, is to preserve the dynamic physiography and the characteristic ecological communities of the Outer Banks, in all units of the Seashore except for the developed areas. The Seashore's Strategic Plan states "The purpose of Cape Hatteras National Seashore is to preserve and protect significant segments of barrier island coastline for the benefit and enjoyment of the people and to provide for recreational visitor use consistent with that purpose." The Seashore's Strategic Plan describes the significance of the Seashore as follows:

This dynamic coastal barrier island system continually changes in response to natural forces of wind and wave. The flora and fauna that are found in a variety of habitats at the park include migratory birds and several threatened and endangered species.

In addition to these broader planning documents that provide management for the flora and fauna, migratory birds and threatened and endangered species as part of the resources of the Seashore, the Seashore's Interim Protected Species Management Strategy provides management measures specifically for colonial waterbirds including common tern, gull-billed tern, and black skimmer.

*Analysis.* Implementation of alternative A has the potential for impairment to common terns, gull-billed terns, and black skimmers because it may result in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Numbers of these three species nesting in the Seashore have already declined substantially and are at sufficiently low levels for colonial nesting species that, over the long term life of the plan, measures such as prenesting closures and larger buffers for these species, which are not provided by alternative A, would likely be needed to restore Seashore population levels to the point that it could be determined that impairment would not result. Alternative A would designate the ocean and inlet shoreline and existing soundside routes as designated ORV routes and permit year-round unrestricted night driving on the beach. Under alternative A,

prenesting closures would not be installed for common tern, least tern, gull-billed tern, and black skimmer that nest in the Seashore. For colonial waterbirds that nest at the spits, Cape Point, and South Beach, the piping plover prenesting closures would provide protection from disturbance, if they nest inside the closures. However, other nesting locations used by these species in recent years would not be protected with prenesting closures. For colonial waterbirds, if territorial behavior / courtship behavior is observed during two consecutive surveys, then observation would increase to three times a week and a buffer would be established. If scrapes or eggs are observed, observation would increase to three times a week and a buffer established. For colonial waterbird nests, a 150- to 300-foot buffer would be established, with the exact distance within that range dependent on best professional judgment based on adult reaction to human disturbance. The smaller buffers in the 150- to 300-foot range would likely be inadequate for the common tern, gull-billed tern, and black skimmer, which are more sensitive to disturbance than least terns. Alternative A does not require that the larger 300-foot buffers be provided for these species. Even if provided, they are smaller than recommended in some of the scientific literature for these species, which are more easily disturbed than least terns. Colonial waterbirds with unfledged chicks would be observed at one-day to two-day intervals. Observation would be more frequent when broods are mobile. Colonial waterbird unfledged chick buffers would initially be 150- to 300-feet and then vary in size within that range based on best professional judgment and adult reaction to human disturbance. Although, under alternative A the need to adjust buffers frequently would result in disturbance, the buffers would help prevent, but not eliminate, further disturbance. If installation of buffers or adjustments to the buffer are not made quickly or if nests are missed by observers, the birds may be adversely affected. Because chick buffers are relatively small, would be variable based on adult response to human disturbance and on chick behavior (when chicks are mobile), and could change frequently, additional disturbance to these species may occur, including from the increased chances for intentional or unintentional visitor noncompliance with the closures. Alternative A would provide a 24-hour-per-day ORV corridor along the ocean and inlet shoreline and existing soundside routes of the Seashore including, where beach width is sufficient, a corridor adjacent to areas used by these species. This would increase opportunities for noncompliance with resource protection closures. Although most visitors respect closures, closure intrusions by vehicles, pedestrians, and pets may result in harassment, injury, or mortality to one or more individuals. Under alternative A, ORVs would bring more people into the vicinity of breeding areas used by these three species, where trash associated with recreation use would continue to attract mammalian and avian predators. Predation is known to adversely affect the reproductive success of shorebirds at the Seashore. The indirect impacts of attracting predators would be detectable and beyond the level of harm that can occur naturally, but are not expected to result in large declines in population because the Seashore takes management action to protect state-listed species from predation.

Nonbreeding closures would not be established for these species, although they could use the interior habitat at spits and at Cape Point that would be closed to ORV and other recreational use for piping plover during the nonbreeding season, resulting in year-round protected interior habitat in these areas for all species. No areas of shoreline would be protected for nonbreeding shorebird foraging under alternative A. Effects from commercial fishing would not be observable or measurable and would be well within natural fluctuations because the special use permit under which commercial fishing is managed prohibits entering resource closures and because a relatively small number of commercial fishermen operate inside the Seashore. Under alternative A, pets are allowed on the beach year-round at the Seashore, but prohibited from the landward side of the posts delineating the ORV corridor at the spits and Cape Point and inside bird closures. Because some visitors do not keep their pets restrained on a 6-foot or shorter leash or crated as required, allowing pets in the vicinity of resource closures could result in harassment, injury, or mortality to one or more individuals.

The plan/EIS analysis evaluated impacts on these species from ORV and other recreational use and from lack of specific management measures, such as (1) prenesting closures, (2) winter foraging closures on the shoreline, (3) buffer distances that may not provide adequate protection (especially if buffer distances

are based on observed bird behavior and the birds are not being continuously observed), (4) buffer distances that even at the large end of the allowed range may not be adequate for the more sensitive species of colonial waterbirds, (5) and lack of designated non-ORV areas. Overall, the impacts to gull-billed tern, common tern, and black skimmer were deemed by the plan/EIS impact analysis to be moderate to major adverse because implementation of alternative A could result in substantial declines in population numbers or failure to restore sufficient numbers to maintain a sustainable population in the Seashore for these three species.

For several reasons, the colonial waterbird data for the Seashore are not sufficient to support a trend analysis for the two years (2006 and 2007) that management under alternative A was in effect. A nest survey was not conducted in 2006; annual nest surveys did not begin until 2007; and survey methodology varied over the years, including among the recent annual surveys. For example, the Seashore's 2008 annual report for colonial waterbirds notes that an important factor to recognize when comparing the 2008 breeding season to the previous season is that more emphasis was placed on collecting colonial waterbird data in 2008. Due to staffing levels in 2008, it was possible to spend more time monitoring the waterbird colonies. Colonies were surveyed on foot at least once a week by small groups of bio-technicians, producing relatively reliable nest and chick counts. In previous years (including 2007), colonies were rarely walked through and were usually surveyed by one bio-technician telescoping the colony of birds. Because of the differences in survey techniques, it is difficult to accurately compare 2008 data with 2007 data. Additionally, one overview of the status of gull-billed terns commented on the lack of population data for the species and noted that counts from single colonies or even single regions may be impossible to interpret in isolation

(<http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Gelochelidon+nilotica>). In the 2007 survey, which occurred under the Interim Strategy, 6 gull-billed tern nests, 109 common tern nests, and 11 black skimmer nests were documented at the Seashore. In 2008, 4 black skimmer nests and 19 common tern nests were recorded at the Seashore under procedures modified by the consent decree. In 2009, 61 black skimmer and 53 common tern nests were found.

The analysis in the plan/EIS of cumulative impacts combined the effects of alternative A with effects of other past, present, and future planned actions in and around the Seashore, such as major dredging and maintenance dredging of Oregon Inlet, storms and other weather events, local development, predator management by the Seashore, commercial fish harvesting, and increased interpretative programs as part of the Seashore's long-range interpretive plan. The plan/EIS impact analysis deemed the cumulative impacts to be moderate to major adverse for the black skimmer, common tern, and gull-billed tern because a decrease in Seashore populations levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore could result. Therefore the black skimmer, common tern, and gull-billed tern impacts have the potential to result in impairment.

## **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

### **Resources Management Activities**

*Establishment of Prenesting Closures.* As with alternative A, under alternative B specific prenesting closures would not be established for American oystercatchers, colonial waterbirds, or Wilson's plover. For American oystercatchers and colonial waterbirds, closures would be established only when a territory is established or a nest is located. Although these species would be able to utilize prenesting closures for piping plovers that are in effect by March 15, no specific prenesting closures for these other species would be established at other locations, including many areas that had been used for nesting in the past three years. The piping plover prenesting closures would be established at Bodie Island Spit, Cape Point, South Beach, Hatteras Inlet Spit, North Ocracoke Spit, and South Point by March 15 and would be

delineated to incorporate to the maximum extent the areas delineated in the 2008 prenesting closure maps and would include to the maximum extent possible the soundside intertidal zone, areas of moist soil habitat, ocean backshore, dunes, dry sand flats, overwashes, blowouts, and areas of the ocean tidal zone consistent with the 2008 prenesting closures. These closures would remain in place until the later part of July 15 or two weeks after the last chick within the area has fledged, as determined by two consecutive monitoring events.

As under alternative A, during prenesting, a 33-meter (108-foot) wide ORV and pedestrian corridor would be established and pedestrian access would be prohibited outside of ORV corridors including breeding areas beyond the symbolic fencing. The ORV/pedestrian corridor would be delineated with posts placed up to 33 meters (108 feet) above the high tide line. In areas of reduced corridor width (i.e., narrower than 33 meters [108 feet]), a speed limit of 10 mph would be posted. All prenesting closures would be removed when areas have been abandoned for a two-week period. In addition, under alternative B in all locations not in front of the villages, outside of the piping plover prenesting areas and open to ORV use, the NPS would provide an ORV-free zone from March 15 to November 30 in the ocean backshore at least 10 meters (32 feet) wide and running the length of the site, wherever backshore habitat exists, provided there is sufficient beach width to allow an ORV corridor of at least 20 meters (66 feet) above the mean high tide line. This ORV-free zone would be adjacent to the toe of the primary dune whenever a primary dune exists.

Under alternative B, the implementation of prenesting closures for piping plover at the inlets, Cape Point, and South Beach and the ocean backshore closures at other locations by March 15 would be early enough in the breeding season that it would be beneficial to early nesting American oystercatchers, as well as to other species that typically nest later. Because there are no specific prenesting closures for state-listed and special status species, apart from the piping plover prenesting areas, many areas that had been used for nesting in the past three years would not be protected until breeding activity is observed. There would be overall long-term moderate adverse impacts to these species, except for minor adverse impacts for Wilson's plover, which generally would nest within the prenesting areas established for piping plover.

*Surveying and Monitoring.* Surveying and monitoring for state-listed and special status species would occur as described for alternative A. In addition, under alternative B trained NPS biologists or field technicians would survey Cape Point and South Beach, Hatteras Inlet Spit, and the northern and southern ends of Ocracoke at least once every two days from March 15 to April 15, and daily from April 16 to July 15. Seashore staff would monitor Bodie Island Spit at least daily from March 15 to July 15.

Surveying would likely have long-term minor adverse impacts, but overall surveying would provide long-term benefits to the species. Under alternative B, impacts from species surveying measures would have more of a beneficial effect on nesting state-listed/special status species and their habitat than alternative A due to earlier and increased monitoring of the inlets, Cape Point, and South Beach. Alternative B would also have a more beneficial effect on state-listed and special status species due to piping plover prenesting areas being installed by March 15, instead of April 1 as under alternative A. This would likely reduce disturbance of other species present at these locations during the early part of the breeding season.

Although surveying would provide substantial benefits to the species from data collected, surveying would bring people and/or essential vehicles into direct short-term contact with state-listed/special status species and their habitat, as described under alternative A. Therefore, under alternative B, species surveying could likely have long-term minor adverse impacts from the introduction of human disturbance during these activities, but overall surveying would provide long-term benefits to the species as it would allow the Seashore to better manage the species. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse.

*Buffer/Closure Establishment.* If breeding behavior, including but not limited to territorial behavior, courtship, mating, confirmed scrapes, or other nest-building activities, is observed outside of existing closures, Seashore staff would automatically establish prescribed species-specific buffers, rather than providing flexible buffers based on observations of bird behavior as would occur under alternative A. If the NPS observes breeding behavior (as defined in the consent decree) of American oystercatchers, colonial waterbirds, or Wilson's plover, the NPS would establish the prescribed buffers as quickly as possible, but always within eight daylight hours. Upon discovery of an active nest or chicks that are outside an existing closure, protective measures would be taken immediately to close and establish the buffers described above. Symbolic fencing with the applicable buffer distances stated above would be installed as soon as NPS staff can reasonably be mobilized to install the fencing, but always within six daylight hours.

The size and timing of these buffers would have a beneficial effect for American oystercatchers, colonial waterbirds, and Wilson's plover. The NPS would rely upon monitoring to detect the presence of breeding activity in many locations that are otherwise open to ORV use and associated recreational activities. Under alternative B, people, their pets, and vehicles could still come into direct contact with state-listed/special status species prior to the detection of breeding activity by NPS staff, although it would be to a much lesser extent than alternative A. Larger buffer distances and timely installation of resource closures for observed breeding behaviors would minimize disturbance to pairs during territory establishment. These activities, as with surveying, are known risk factors. As described under alternative A, American oystercatchers at the Seashore can begin courting and nesting as early as mid-February or early March and be particularly sensitive to disturbance at that time (Cohen et al. 2010). Hence, a March 15 start to management could mean that early nesting American oystercatchers, especially those that establish territories outside of recently used nesting areas, would not be fully protected under alternative B.

Under alternative B, buffers/closures would be established for breeding behavior and nesting American oystercatchers for a distance of 150 meters (492 feet). A buffer of 200 meters (656 feet) would be established for unfledged oystercatcher chicks. For the least tern, a colonial waterbird, a buffer/closure of 100 meters (328 feet) would be established for breeding behavior and nesting and a buffer of 200 meters (656 feet) would be established for unfledged least tern chicks. For all other colonial waterbirds, a buffer/closure of 200 meters (656 feet) would be established around the nest or colony based on observed bird behavior for breeding, nesting, and protection of unfledged chicks. When multiple species are present, the greatest applicable buffer distance would be used. If NPS staff observe disturbance from ORVs and/or pedestrians, buffers would be expanded in 50-meter (164-foot) increments until no disturbance occurs. If a deliberate violation occurs that disturbs wildlife or vandalizes nests or fencing, the buffer would be expanded by 50 meters (164 feet) on the first offense. If there are multiple occurrences in the same area, the buffer would be expanded by 100 meters (656 feet) and 500 meters (1640 feet) for the second and third violations respectively. If a violator is apprehended, the NPS would not be required to institute expanded buffers.

In contrast to alternative A, when resource closures using the prescribed buffers are created around nests under alternative B, the ORV corridor would not be reduced to accommodate an ORV corridor. When resource closures are created or expanded around observed breeding activity or nests, due to the larger buffer distances provided under alternative B, the ORV corridor would likely be closed in most cases and a bypass in the immediate vicinity of the site would be precluded. Unfledged chick buffers would follow a prescribed distance, and the size of the buffer would be maintained as chicks move. Although it is possible under alternative B, as described under alternative A, that observations of chick movements may not be sufficient to adjust buffers such that they always ensure timely protection of chicks from ORV/pedestrian impact, the increased monitoring and larger buffer/closure areas under alternative B would likely reduce any potential effects to negligible. As under alternative A, an alternate



ORV/pedestrian access route would be provided to open areas beyond the closure, if possible. The ORV corridor would be reopened in recent or current nesting areas after chicks fledge. As under alternative A, no additional buffers or closures would be provided to foraging adult state-listed/special status species under alternative B.

Under alternative B, establishment of increased buffer zones around breeding/nesting/fledging areas for all nesting state-listed/special status species, implementation of stipulations for increasing buffer zones should there be a violation of these zones from ORV or pedestrian use, and posting of nests with symbolic fencing would provide some deterrent to the entry of people, pets, and ORVs into their habitats and greatly reduce the possibility of disturbance to species, including first time breeders, and habitat compared to alternative A.

By clearly defining triggers for closure establishment, increasing closures sizes and reducing the time it takes to implement closures to protect species, alternative B would provide more benefits to American oystercatchers and colonial waterbirds by reducing disturbance to potential and nesting pairs. If breeding behavior, including but not limited to territorial behavior, courtship, mating, confirmed scrapes, or other nest-building activities, is observed outside of existing closures, the NPS would automatically establish prescribed species-specific buffers, rather than providing flexible buffers based on observations of bird behavior as would occur under alternative A. If breeding behavior is observed, appropriate buffers would be established within eight daylight hours. If an active nest or chicks are discovered outside of an existing closure, protective measures would be established immediately and appropriate buffers would be established within six daylight hours. Symbolic fencing consisting of wooden post, bird usage signs, string, and flagging tape would be installed as soon as NPS staff can be reasonably mobilized to install the fencing.

With larger buffers and more timely closures for breeding/nesting/fledging areas under alternative B, impacts from closures/buffers under alternative B would be long-term minor adverse.

*Wintering/Nonbreeding Management.* Nonbreeding surveys for American oystercatchers, Wilson's plover, and red knots would be conducted according to the NPS SECN survey protocol, with no nonbreeding surveys for colonial waterbirds. These surveying activities would have minor impacts (due to human disturbance as discussed above) and long-term benefits related to the increase in knowledge about the species. Lack of nonbreeding surveys for colonial waterbirds would have long-term moderate adverse impacts, as data would not be collected to assist in the determination of future management (nonbreeding) of these birds.

No nonbreeding closures would be established for state-listed/special status species, although these species could utilize the nonbreeding closures for piping plover that would include suitable interior habitats at spits and at Cape Point year-round. Being able to utilize other species closures would have some long-term benefits, as some protection is offered during this sensitive life stage. However, these closures would not be specific to the state-listed/special status species and would not include ocean beach habitat, resulting in some long-term minor adverse impacts. Wilson's plover would benefit from nonbreeding closures for piping plover as they utilize similar nonbreeding habitat.

*Education and Outreach.* Under alternative B and as described under alternative A, the public would continue to receive information at the visitor centers and ORV access points about state-listed/special status species and their ecology and the measures the Seashore is taking to protect the species. The public would also be informed through weekly Beach Access Reports, weekly Resource Management Reports, Google Earth, and information available on the Seashore's website. As with alternative A, public outreach as part of species management would have long-term beneficial impacts, with the expanded outreach having greater impacts than alternative A.

*Overall Impact of Resources Management Activities.* The overall impact of resources management activities (primarily resulting from the effects of surveying and field activities) for each species under alternative B would be as follows:

- American oystercatcher. Establishment of piping plover prenesting closures earlier in the season that could be used by oystercatchers and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information and result in actions that would be beneficial to the species.
- Colonial waterbirds. Establishment of piping plover prenesting closures earlier in the season that would be used by some colonial waterbird species and establishment of larger, pre-set buffers would result in long-term beneficial impacts to colonial waterbirds. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information and result in actions that would be beneficial to the species.
- Wilson's plover. Establishment of piping plover prenesting closures earlier in the season that could be used by other species and establishment of larger, pre-set buffers for piping plover, used by Wilson's plover, would result in long-term beneficial impacts to Wilson's plover. While there would still be minor adverse impacts related to human disturbance during field activities, species surveying and field activities on the whole would provide information and result in actions that would be beneficial to the species.
- Red knot. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. The red knot would benefit from extended breeding season closures for other species and from wintering closures for piping plover at the inlets and Cape Point, although benefits would be minimal as red knot prefer ocean beach habitat. Impacts to nonbreeding red knot would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures.

## **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps).. There would be no designated VFAs, although temporary closures would occur for resource protection and safety reasons, and seasonal closures would occur in front of the villages. Alternative B would provide for closures of piping plover prenesting areas, which may benefit other species, as well as closures based on observations of breeding behavior, foraging, and chick movements. Under the consent decree, for the benefit of all bird species, from March 15 to November 30, in all locations not in front of villages, outside of the prenesting areas, and open to ORV use, the NPS would provide an ORV-free zone in the ocean backshore at least 10 meters wide and running the length of the site, wherever backshore habitat exists, provided there is sufficient beach width to allow an ORV corridor at least 20 meters above the mean high tide line. This zone shall be adjacent to the toe of the primary dune whenever a primary dune exists (i.e., ORVs should be restricted to a corridor between the mean high tide line and the edge of the zone of the protected backshore).

Under alternative B and as described in the previous section, staff would monitor shorebird breeding habitat for signs of breeding behavior and human disturbance and to ensure the timely installation of resource closures and the adequacy of prescribed buffers. Resource protection areas would not be adjusted to accommodate ORV use. Based on the size of the prescribed buffers, the ORV corridor is likely to be closed at any location in which breeding activity is observed.

Recreation and commercial fishing use under the restrictions defined in alternative B would greatly reduce the proximity of ORVs, essential vehicles (for safety, enforcement, etc.), pedestrian, pets, and other recreation activities to state-listed/special status species and their habitat compared to alternative A. It is likely that outside of existing resource protection closures, some species could still be disturbed, albeit briefly, until NPS monitoring detects the breeding activity and establishes the prescribed buffers. Even after closures have been established, American oystercatchers could leave the closures to forage and during this time would not be protected from disturbance. Compliance with closures may not be absolute, resulting in minor to possibly moderate adverse impacts if non-compliance occurs. Disturbance during the most critical periods of reproduction and within key habitats could occur, resulting in direct mortality, abandonment or loss of habitat, if closure compliance is lacking and/or if the breach of the closure occurs in the earlier life stages, even with the measures to increase buffers when a violation of the closure occurs.

Under alternative B, as described under alternative A, there would be no year-round or seasonal closures specifically to protect key red knot habitat. Recreation and commercial fishing activities that occur in the months when red knots are in residence on beaches in the Seashore have the potential to impact resting and foraging red knots from vehicle use and associated noise and presence of people and pets. Of particular concern is when these disturbance factors result in red knots being forced to fly while they are foraging. Frequent escape flights means that time spent foraging is reduced and replaced by an increase in time spent flying, resulting in the chance that birds would not be able to add the body fat they need for their long-distance migration. Impacts to red knots would be long-term minor to moderate adverse.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative B would allow for beach driving in the wrack during the day outside of resource closures, but would maintain nighttime closures. Resource closures that are in effect 24 hours per day and nighttime closures would reduce disturbance in this area for a portion of the year. Overall impacts to invertebrates would be long-term and minor (as discussed later in this chapter), and would reduce the food source available to the state-listed and special status species at the Seashore that rely on this food source, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

*Night-Driving Restrictions.* Under alternative B, all recreational ORV traffic would be prohibited in the ocean intertidal zone, ocean backshore, and dunes, from 10:00 p.m. until 6:00 a.m. between May 1 and September 15. However, from September 16 to November 15, night-driving permits would be available for authorized nonessential driving between the hours of 10:00 p.m. and 6:00 a.m. The permit would contain restrictions on light use during the September 16 to November 15 permitted night-driving period. Furthermore, the NPS retains the discretion to limit night driving to certain areas or routes, based on resource protection considerations. American oystercatchers, Wilson's plover, and red knot are known to be active at night (Simons and Schulte 2008; Morrier and McNeil 1991; Niles et al. 2007) and would be subject to disturbance from vehicular and pedestrian disturbance. This disturbance can impact their foraging behavior and has been shown to result in disorientation and even abandonment of American oystercatcher chicks (Simons and Schulte 2008). Restrictions on night driving under alternative B would provide long-term benefits to state-listed/special status species; however, night driving could still result in long-term minor adverse impacts during the time when night driving is allowed by permit. Further, night-

driving restrictions that begin after dark, in this case 10:00 p.m., do not offer full nighttime protection to the species.

*Commercial Fishing.* Commercial fishing restrictions under alternative B would be similar to those under alternative A, with those holding commercial fishing permits restricted from night driving from 10:00 p.m. until 5:00 a.m. (as opposed to 6:00 a.m. for recreational users) from May 1 to September 15. As with recreational users, commercial fishing permit holders can get a permit for night driving from September 16 to November 15. Presence of commercial fishing operations would have a long-term negligible adverse impact, with beneficial impacts from night-driving restrictions.

*Permit/Carrying Capacity Requirements.* As described above, alternative B would require a fall seasonal night-driving permit, although the educational information provided by the permit would not be relevant to bird species, which would limit the beneficial impacts of this requirement. Given the lack of prenesting closures for these species outside of the piping plover prenesting closures, with more immediate, larger buffers and longer lasting closures once breeding behavior is observed, the lack of a carrying capacity would have long-term minor adverse impacts to most state-listed/special status species that nest on Seashore beaches, as unrestricted numbers of ORVs would be allowed in recent breeding areas prior to the implementation of resource closures increasing the potential for disturbance. For American oystercatchers that regularly forage on the ocean shoreline and on the soundside outside of resource closures, there would be the potential for long-term minor to moderate adverse impacts as they forage in areas used by ORVs, as described under alternative A.

*Pet/Other Recreational Activity Restrictions.* Alternative B would have the same restrictions on camping, beach fires, and pets as under alternative A, with the addition of no ORV use from 10:00 p.m. to 6:00 a.m. during May 1 to September 15, resulting in benefits to state-listed/special status species. As with alternative A, there is the potential for non-compliance with pet regulations that would be mitigated by the prohibition of pets from the landward side of the posts delineating the ORV corridor at the spits and Cape Point, the prohibition of pets within symbolic fencing around any bird closure area, and through education and outreach efforts via the Seashore field personnel and partnerships with local volunteers and organizations, and would result in long-term minor adverse impacts, due to non-compliance.

*Overall Impact of ORV and Other Recreational Use.* The overall impact of ORV and other recreational use for each species under alternative B would be as follows:

- American oystercatcher. Establishment of prenesting closures for piping plover earlier in the season, implementation of larger, more immediate buffers, longer lasting closures for American oystercatchers once breeding behavior occurs, and night-driving restrictions would benefit the American oystercatcher. However, recreational use, with no carrying capacity, would still occur in the vicinity of this species and the established buffers may not be large enough to afford adequate protection. Because the birds would not be under constant observation, disturbance may go undetected and implementation of adequate buffers may be delayed in some nesting locations. Compliance with closures may not be absolute, resulting in minor to moderate adverse impacts if non-compliance occurs. Further adverse impacts would result from allowing pets in the Seashore during breeding season, resulting in the possibility of non-compliance with these regulations. Because of these factors, impacts to American oystercatchers from ORV use and other recreational activities would be long-term moderate adverse.
- Colonial waterbirds. Impacts to colonial waterbirds from ORV and other recreational use would be long-term moderate adverse, for the same reasons as American oystercatchers under this alternative.

- Wilson's plover. Impacts to Wilson's plover from ORV and other recreational use would be long-term minor to moderate adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover and would therefore be provided slightly more protection than other state-listed/special status species.
- Red knot. Impacts to red knots from ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species especially during a key life stage of wintering. Although this species may benefit from longer lasting breeding season closures for other species and from winter closures established for piping plovers, the lack of designated VFAs, a year-round permitting system, no night-driving restrictions when red knots are at the Seashore, and allowing pets at the Seashore during the migrating/nonbreeding season would contribute to these adverse impacts.

**Cumulative Impacts.** Cumulative actions and their associated impacts under alternative B would be the same as those described under alternative A. Although alternative B does provide greater protection that would be beneficial to state-listed / special status bird species, the adverse effects on birds from other actions occurring in the region would still exist. The overall combined impacts of these past, current, and future actions would be long-term minor to moderate adverse. These impacts, combined with the long-term moderate adverse impacts under alternative B, would result in long-term moderate adverse cumulative impacts.

**Conclusion.** The overall impact to each state-listed and special status species under alternative B would be:

- American oystercatcher. While there would still be minor adverse impacts related to human disturbance during species surveying and field activities, on the whole these activities would provide information and result in actions that would be beneficial to the species. Establishment of prenesting closures for piping plover earlier in the season, implementation of larger more immediate buffers and longer lasting closures for American oystercatchers once breeding behavior occurs, and night-driving restrictions would result in long-term benefits for this species. Recreational use, with the lack of designated VFAs, year-round permits, or carrying capacity requirements, would still occur in the vicinity of this species. Because the birds would not be under constant observation, disturbance may go undetected and implementation of adequate buffers may be delayed in some nesting locations. Compliance with closures may not be absolute, resulting in minor to possibly moderate adverse impacts if non-compliance occurs. Further adverse impacts would result from allowing pets in the Seashore during breeding season, resulting in the possibility of non-compliance with these regulations. Because of these factors, impacts to American oystercatchers from recreation and other activities would be long-term moderate adverse.
- Colonial waterbirds. Impacts and benefits of surveying and field activities, and impacts of recreation and other activities, would be the same as described for American oystercatchers above for the same reasons. Because of these factors, impacts to colonial waterbirds could be long-term moderate adverse.
- Wilson's plover. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover and would therefore be provided slightly more protection than other state-listed/special status species. Impacts to Wilson's plover from recreation and other activities would be long-term minor to moderate adverse.

- **Red knot.** Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. The red knot would benefit from extended breeding season closures for other species and from wintering closures for piping plover at the inlets and Cape Point, although benefits would be minimal as red knot prefer ocean beach habitat. Impacts to nonbreeding red knot would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures. Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species especially during a key life stage of wintering, increasing the possibility of disturbance to the species from recreational use. The lack of designated VFAs, allowing night driving during the time period when red knot are present at the Seashore, and allowing ORVs, people, and pets at the Seashore during the nonbreeding season in the vicinity of this species would contribute to adverse impacts.

Cumulative impacts under alternative B would be long-term minor to moderate adverse.

## **Impacts of Alternative C: Seasonal Management**

### **Resources Management Activities**

*Establishment of Prenesting Closures.* Under alternative C, the NPS would establish SMAs based on an annual habitat assessment for management of all breeding shorebirds and subject to periodic review. Each SMA would be under ML1 or ML2 management procedures, as described in table 10 (chapter 2). All breeding shorebird SMAs would be posted as prenesting closures using symbolic fencing by March 15 at sites involving American oystercatchers and Wilson's plover and by April 15 at sites involving colonial waterbirds. If multiple species exist on each site, closures would begin on the earliest date. Proactive closures of these areas would provide long-term beneficial impacts to state-listed/special status species, greater than those under alternatives A and B, which do not offer this wide a range of protection.

*Surveying and Monitoring.* Surveys of prenesting closures for all state-listed/special status species would occur three times per week. Surveys for American oystercatchers and Wilson's plover would begin on March 15 and surveys for colonial waterbirds would begin on May 1. Surveys for suitable habitat outside of SMAs would also occur three times per week once breeding pairs are present.

The NPS would conduct nest surveys from a distance for American oystercatchers and Wilson's plover at least three times per week in areas managed under ML1 procedures. Colonial waterbirds in areas with ML1 procedures would be observed at least three times per week from a distance that does not disturb the birds. Nest count estimates would be conducted during the peak nesting period for each species, which generally is during the last week of May and the first week of June, but could be later, especially for black skimmers. For all species that have incubating birds that cannot be observed from a distance, continuation of incubation and/or status of the colony would be determined on a weekly basis (or as staff is available). The NPS would observe nests under ML2 procedures daily from a distance as long as this can be performed without disturbing the colony or incubating bird. For incubating birds that cannot be observed from a distance, nests/colonies would be checked every three days with minimum disturbance to the incubating bird and/or colony. Colonial waterbird colonies would be surveyed for hatching (approximately 21 days after initial nest observations).

For unfledged chicks, the NPS would survey broods and colonies every other day under ML1 procedures. Under ML2 procedures, American oystercatcher, Wilson's plover, and colonial waterbird chicks would be observed once daily. For American oystercatchers and Wilson's plover, observation ends once chicks have fledged. For colonial waterbirds, a survey would be conducted during peak fledge (approximately 20

days after hatch counts). Observations would end after no unfledged chicks have been observed on three consecutive surveys.

Under alternative C, surveys would concentrate in established SMAs, which may not detect American oystercatchers or colonial waterbirds that establish territories in new habitat. However, surveying under alternative C would increase knowledge on how and when special status/state-listed species use the Seashore and enable adaptive management initiatives, which would contribute to better management.

Pre-nesting surveys under alternative C would not be as frequent as those under alternatives A and B; however, due to the designation of SMAs and suitable habitat surveys outside of SMAs, effects of survey times to implement closures would be the same. Under alternative C, under ML1 procedures less monitoring of nests would occur; however there would be no ORV or pedestrian access allowed. Under ML2 procedures, birds would be monitored more frequently (the same as nesting areas under alternatives A and B) due to the presence of an ORV and/or pedestrian corridor. Alternative C would likely have long-term minor adverse impact on nesting state-listed/special status species from survey time and frequencies during the pre-nesting and nesting season at the Seashore, with overall long-term beneficial impacts from the species protection measures that result from surveying activities. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse.

*Establishment of Buffers/Closures.* Under alternative C, as described under alternative B, closure of pre-nesting areas by March 15 (in most cases) and/or April 15 for colonial waterbirds would have a more beneficial effect due to closures occurring earlier, ensuring a reduction of disturbance for colonial waterbirds during breeding (courtship, mating, scrapes, etc.). As described above, under alternative C SMAs would be established and managed under ML1 or ML2 procedures. ML1 procedures would not allow ORV or pedestrian access when pre-nesting closures are in effect. ML2 procedures (Bodie Island Spit, Cape Point, and South Point) would establish a narrow pedestrian access corridor. Upon first observation of breeding activity, the standard buffers would apply, which depending on the circumstances may close the access corridor. Pets, kite flying, ball and Frisbee tossing, or similar activities would be prohibited in access corridors while pre-nesting closures are in effect. If no breeding activity is observed in SMAs by July 31, or two weeks after all chicks have fledged (whichever is later), pre-nesting closures would be adjusted to the configurations of Nonbreeding Shorebird SMAs (established from annual monitoring of presence, abundance, and behavior of migrating and wintering shorebirds from July through May).

Under alternative C, a total of seven SMAs would be closed to ORV and pedestrian access and managed under ML1 procedures from March 15 through October 14 due to multiple species closures. A total of three SMAs would be managed under ML2 procedures and would be closed to ORV use from March 15 through October 14, but would provide a pedestrian access corridor generally below the high tide line and no greater than 10 meters (30 feet) above the high tide line. Buffers would be applied to courtship/mating, nesting, and unfledged chick activities both within and outside of designated SMAs. All SMAs would maintain a 300-meter (900-foot) buffer during all activities for all state-listed / special status bird species. ML2 buffer areas would vary by species and activity. ML2 procedures for American oystercatchers would establish 150-meter (450-foot) buffers for breeding and nesting activities and 200 meters (600 feet) for unfledged chick activity. Under ML2 procedures, buffers for least terns, a colonial waterbird, would be 100 meters (300 feet) for breeding and nesting activities and 200 meters (600 feet) for unfledged chick activity. All other colonial waterbird buffers under ML2 procedures would be 200 meters (600 feet) for breeding, nesting, and unfledged chick activities. For areas where breeding activity is observed outside of pre-nesting areas, ML1 procedures would determine the buffers. For alternative C, buffers would be removed outside of pre-nesting areas if no breeding activity is observed for a two-week period or when

associated breeding activity has concluded, whichever is later. If breeding activity or scraping is observed outside of an existing closure, buffers would be expanded to accommodate the designated buffer for the particular management level (ML1 or ML2). Under alternative C, as described under alternative B, if NPS staff observe disturbance from ORVs and/or pedestrians, buffers would be expanded in 50-meter (164-foot) increments until no disturbance occurs. Under alternative C, for all species buffers/closures, vehicles and/or pedestrians may be allowed to pass through portions of the buffer or closures that are considered inaccessible to chicks because of steep topography, dense vegetation, or other naturally occurring obstacles. Establishment of SMAs and implementation of larger buffer sizes would have long-term beneficial impacts to state-listed and special status species.

Under alternative C, as described under alternatives A and B, observations of chick movements may not be sufficient to adjust buffers such that they ensure protecting chicks from ORV/pedestrian impact; however, increased larger buffer/closure areas under alternative C would likely reduce any potential effects to negligible. As described under alternatives A and B, no additional buffers or closures would be provided to foraging adult state-listed/special status species under alternative C, although species would likely indirectly benefit from the protections provided to piping plover foraging habitat.

Under alternative C, establishment of SMAs with ML1 and ML2 procedures, increased buffer zones around breeding/nesting/fledging areas for all nesting state-listed/special status species, and posting of nests with symbolic fencing would not only eliminate ORV and pedestrian use in multiple high use bird areas, but also provide a major deterrent to the entry of people, pets, and ORVs into habitats and greatly reduce the possibility of disturbance to species, including first time breeders, and habitat compared to alternatives A and B.

Under alternative C, as described under alternatives A and B, oystercatchers at the Seashore can begin courting and nesting as early as mid-February or early March and be particularly sensitive to disturbance at that time (Cohen et al. 2010). Hence, a March 15 start to management could mean that early nesting oystercatchers, especially those that establish territories outside of historic areas would not be fully protected under alternative C.

Under alternative C, prenesting closures in SMAs would provide buffers around courting oystercatchers, Wilson's plover, and colonial waterbirds, which could have a beneficial effect. Under ML1, areas as closed to ORV and pedestrian access would reduce potential effects of bringing people, essential vehicles, and equipment into direct contact with state-listed/special status species and their habitat when compared to management under alternatives A and B. Under ML2 procedures, management of these areas would also reduce potential effects of vehicle collisions and disturbance by closing areas to ORV use; however, allowing a pedestrian corridor through the area combined with a reduction in buffer size for breeding, nesting, and unfledged chick activities would still bring people into direct contact with species.

With the designated SMA closures, ML1 and ML2 procedures and associated buffers for breeding/nesting/fledging areas, impacts from closures/buffers under alternative C would be long-term minor adverse.

*Wintering/Nonbreeding Management.* Nonbreeding surveys for American oystercatchers, Wilson's plover and red knots, would be conducted according to the NPS SECN survey protocol, although unlike alternatives A and B, surveys for some colonial waterbirds would be included. These surveying activities would have minor impacts (due to human disturbance as discussed above) and long-term benefits related to the increase in knowledge about the species.

Under alternative C, nonbreeding shorebird SMAs would be established for migrating/wintering shorebirds at various locations throughout the Seashore. Closures would be installed no later than when



breeding season closures are removed at the same location(s). Pets would be prohibited within Nonbreeding Shorebird SMAs. Nonbreeding resource closures would be established at the points and spits based on habitat used by wintering piping plovers in more than one of the past five years, the presence of birds at the beginning of the migratory season, and suitable habitat types based on the results of the annual habitat assessment. In addition to nonbreeding resource closures, NPS would establish VFAs along the ocean shoreline. This would ensure that adequate foraging, resting, and roosting areas would be provided for all migratory and nonbreeding state-listed/special status species compared to alternatives A and B, which do not have provisions to protect these nonbreeding species. Overall, management of species during nonbreeding would result in long-term beneficial impacts.

*Education and Outreach.* Under alternative C and as described under alternative B (including weekly resource and access reports, information on the Seashore website, and use of Google Earth), the public would continue to receive information at the visitor centers about state-listed/special status species and their ecology and the measures the Seashore is taking to protect the species. In addition, the public would be provided education through the required ORV use permit and protected species information would be provided at all access points. As with alternative A, public outreach as part of species management would have long-term beneficial impacts, with the expanded outreach having greater impacts than alternative A.

*Overall Impact of Resources Management Activities.* The overall impact of resources management activities (primarily resulting from the effects of surveying and field activities) for each species under alternative C would be as follows:

- American oystercatcher. Implementation of 10 SMAs that are closed to ORVs during the breeding season would provide a proactive resource closure early in the breeding season. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, on the whole, resources management activities would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to the American oystercatcher, greater than those provided under alternative B.
- Colonial waterbirds. Impacts to colonial waterbirds from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.
- Wilson's plover. Impacts to Wilson's plover from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.
- Red knot. Nonbreeding shorebird SMAs and the establishment of VFAs along the ocean shoreline would result in beneficial impacts to nonbreeding red knots. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, some of which are closed to ORVs year-round, would be beneficial to those red knot that happen to use those areas, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.

### **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under alternative C, approximately 27 miles of shoreline would be designated for ORV use year-round; approximately 27 miles would be designated for seasonal ORV use from October 15 through March 14; and approximately 13 miles would be designated as vehicle free year-round. The speed limit would be 15 mph unless otherwise posted and permits would be required for all ORVs. Three SMAs managed under ML2 procedures would maintain an open pedestrian access corridor, subject to resource closures, along the shoreline to the inlet or point.

The seasonal restrictions under alternative C would reduce the potential of disturbance and nest abandonment from direct short-term contact with people and/or essential vehicles compared to alternatives A and B, which would result in a beneficial impact. Although these measures should limit adverse impacts to state-listed/special status species, compliance with closures may not be absolute, since alternative C still includes pedestrian access to the three major points and spits during the summer season, and the areas that are closed to ORV over the rest of the Seashore are not expansive or contiguous. This could result in short-term minor to moderate adverse impacts if non-compliance occurs, but for the most part the populations would remain functional, and impacts limited to minor adverse by the restrictions extending through October 14 in all SMAs. Under alternative C, there would be seasonal ORV closures and recreational restrictions in key red knot habitat reducing the potential to impact resting and foraging red knots from vehicle use and associated noise and presence of people and pets.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative C would allow for beach driving in the wrack during the day outside of SMAs, but would maintain nighttime closures and limit driving during the day where SMAs are established reducing disturbance in these areas. Overall impacts to invertebrates would be long-term and negligible to minor (as discussed later in this chapter), and would reduce the food source available to state-listed and special status species at the Seashore that rely on this food source, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

*Night-Driving Restrictions.* Under alternative C, all nonessential ORV traffic would be prohibited from all areas (other than the soundside) between 7:00 p.m. to 7:00 a.m. from May 1 to November 15. From November 16 to April 30, ORV use would be allowed 24 hours per day in designated ORV routes for vehicles holding a valid ORV permit. Furthermore, the NPS retains the discretion to limit night driving to certain areas or routes, based on resource protection considerations. Because these species are known to be active at night (Staine and Burger 1994; Majka and Shaffer 2008), chick and fledgling response to vehicles can increase their vulnerability to ORVs (USFWS 1996a, 2009a), the high level of protection at night from May 1 to November 15 under alternative C would result in long-term beneficial impacts because it would reduce the potential for disturbance to birds that could result in mortality, and would be more beneficial than alternative B because the restrictions start before dark.

*Commercial Fishing.* Management of commercial fishing vehicles would be the same as under alternative A and would be managed by the terms and conditions in the commercial fishing special use permit, which include restriction from entering resource closures. Commercial fisherman would not be required to obtain an ORV permit, but would be regulated under their existing commercial fishing special use permit. Under alternative C, commercial fishing vehicles would be authorized to enter VFAs except for full resource closures and lifeguarded beaches. Night-driving restrictions, which are applicable to all ORV use, could be slightly modified outside of existing resource closures for commercial fishing uses. Presence of commercial fishing operations would have a long-term negligible adverse impact on state-listed/special status species, with long-term minor to moderate benefits from night-driving restrictions.

*Permit/Carrying Capacity.* As described above under the night-driving restrictions and education/outreach sections, alternative C would require a permit for ORV use, which would include seasonal restrictions on night driving. As stated in these sections, the educational information provided by the required permit would result in benefits to state-listed/sensitive species as ORV users would be more aware of the regulations in place to protect these species, which would likely result in a higher level of compliance with these restrictions. There would be no impacts related to the implementation of a carrying capacity requirement under alternative C, as ORVs would not be permitted in resource protection areas.

*Pets/Other Recreational Activity Restrictions.* Pets would be prohibited within all designated Breeding Shorebird SMAs from March 15 to October 15 and within all Nonbreeding Shorebird SMAs that are otherwise open to recreational use. However, compliance would be needed to ensure that this reduces the risks of impacts. In addition, an educational permit would be required for any beach fire year-round, which would inform visitors about species protection issues related to this recreational use. Camping restrictions would be the same as alternative A, with additional requirements for removing beach equipment. These restrictions would result in long-term benefits to species at the Seashore, further reducing pressure to state-listed/special status species from recreational activity.

*Overall Impact of ORV and Other Recreational Use.* The overall impact of ORV and other recreational use for each species under alternative C would be as follows:

- American oystercatchers. Implementation of a permit system with an educational component, larger buffer sizes, seasonal night-driving restrictions, establishment of breeding and nonbreeding SMAs, and not allowing pets in SMAs would benefit the American oystercatcher. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative C does manage three SMAs under ML2 procedures, which provide for some level of pedestrian access into these areas and introduces the potential for impacts to the species. Although there would be some protection measures in place, ORV and other recreational use could still have impacts to the species, resulting in long-term minor to moderate adverse to American oystercatchers.
- Colonial waterbirds. Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as American oystercatchers under this alternative.
- Wilson's plover. Impacts to Wilson's plover from ORV and other recreational use would be long-term minor adverse, less than those under alternative A and B. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize the closures for piping plover, in addition to the specific buffers/closures provided for the species, and would therefore be provided slightly more protection than other state-listed/special status species.
- Red knot. Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative C that offer this wintering species further protection.

**Cumulative Impacts.** Cumulative actions and their associated impacts under alternative C would be the same as those described under alternatives A and B (long-term minor to moderate adverse). Although alternative C provides additional protection that would be beneficial to state-listed / special status bird species, the adverse effects on birds from other actions occurring in the region would still exist. The impact of these past, current, and reasonably foreseeable future actions, when combined with the long-term beneficial and long-term minor to moderate adverse impacts of alternative C, would result in long-term minor to moderate adverse cumulative impacts.

**Conclusion.** The overall impacts to state-listed/special status species under alternative C would be as follows:

- American oystercatcher. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, species surveying and field activities on the whole would provide information and result in actions that would be beneficial to the species. Implementation of SMAs that provide a proactive resource closure early in the breeding season, a permit system with an educational component, establishment of nonbreeding SMAs, seasonal night-driving restrictions, as well as larger buffer sizes and earlier prenesting closures, would provide long-term beneficial impacts to American oystercatchers, greater than those under alternative B. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative C does manage three SMAs under ML2 procedures, which provides for some level of pedestrian access into these areas, which introduces the potential for impacts to the species. Although there would be some protection measures in place, ORV and other recreational use could still have long-term minor to moderate adverse impacts to American oystercatchers.
- Colonial waterbirds. Impacts to colonial waterbirds from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers. Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as discussed for American oystercatchers under this alternative.
- Wilson's plover. Impacts to Wilson's plover from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for the American oystercatcher, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover. Impacts to Wilson's plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize the closures for piping plover, in addition to the specific buffers/closures provided for the species, and would therefore be provided slightly more protection than other state-listed/special status species.
- Red knot. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of both breeding and nonbreeding SMAs, some of which are closed to ORVs year-round, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B. Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative C that offer this wintering species further protection.

Cumulative impacts under alternative C would be long-term minor to moderate adverse.

## **Impacts of Alternative D: Increased Predictability and Simplified Management**

### **Resources Management Activities**

*Establishment of Prenesting Closures.* Under alternative D, as described under alternative C, the NPS would establish SMAs based on an annual habitat assessment for management of all breeding shorebirds

and subject to periodic review. All SMAs under alternative D would be managed under ML1 procedures during the breeding season (areas of larger, longer lasting buffers with less monitoring and closures to all ORV and pedestrian access) and would be closed year-round to ORV use. Under alternative D, breeding season closures of SMAs and the year-round prohibition of ORV in SMAs would have a long-term beneficial effect on all state-listed/special status species due to continual protection of all activities associated with shorebirds at the Seashore (breeding and nonbreeding) from ORV disturbance, and protection from pedestrian disturbance during the prenesting period. Establishment of these SMAs would have long-term beneficial impacts, which would be greater than those under alternatives A, B, or C, because of the size and duration of the closures, particularly when considering the year-round prohibition of ORV in these areas.

*Surveying and Monitoring.* Surveys of prenesting closures for all state-listed/special status species would occur three times per week. Surveys for American oystercatchers and Wilson's plovers would begin on March 15 and surveys for colonial waterbirds would begin on May 1. Surveys for suitable habitat outside of SMAs would also occur three times per week once breeding pairs are present.

Under ML1 procedures at all locations, the NPS would conduct nest surveys from a distance for American oystercatchers and Wilson's plover at least 3 times per week. Colonial waterbirds would also be observed at least three times per week from a distance that does not disturb the birds. Nest count estimates would be conducted during the peak nesting period for each species, which generally is during the last week of May and the first week of June, but could be later, especially for black skimmers. For all species that have incubating birds that cannot be observed from a distance, nest checks would occur on a weekly basis (or as staff is available). Colonial waterbird colonies would be surveyed for hatching (approximately 21 days after initial nest observations).

For unfledged chicks, the NPS would survey broods and colonies every other day. For American oystercatchers and Wilson's plover, observations end once chicks have fledged. For colonial waterbirds, a survey would be conducted during peak fledge (approximately 20 days after hatch counts). Observations would end after no unfledged chicks have been observed on three consecutive surveys. Under alternative D, as described under alternative C, surveys would concentrate in established SMAs, which may not detect American oystercatchers or colonial waterbirds that establish territories in new habitat.

Although surveying would provide substantial benefits to the species from data collected, surveying would bring people and/or essential vehicles into direct short-term contact with state-listed/special status species and their habitat, as described under alternative A. Therefore, under alternative D, species surveying could likely have long-term minor adverse impacts, from the introduction of human disturbance during these activities but overall surveying would provide long-term benefits to the species as it would allow the Seashore to better manage the species through the implementation of adaptive management initiatives. Many of the surveying and field activities would occur outside of the primary time when red knots are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse.

As described under alternative C, surveying under alternative D would result in long-term beneficial impacts to state-listed/special status species.

*Buffer/Closure Establishment.* As described above, under alternative D, all SMAs would be managed under ML1 procedures. All 10 SMAs would be closed to ORV access year-round and would be closed pedestrian access and managed under ML1 procedures during the breeding season. Upon first observation of breeding activity, the standard buffers would apply. Buffers would be applied to courtship/mating, nesting, and unfledged chick activities both within and outside of designated SMAs. Under alternative D, as described under alternative C, ML1 procedures would maintain a 300-meter (900-foot) buffer during

all activities for all state-listed / special status bird species. For areas where breeding activity is observed outside of prenesting areas, ML1 procedures would apply to determine prescribed buffer distances. For alternative D, as described under alternative C, buffers would be removed outside of prenesting areas if no breeding activity is observed for a two-week period or when associated breeding activity has concluded, whichever is later. If breeding activity or scraping is observed outside of an existing closure, buffers would be expanded to accommodate the designated buffer under ML1 procedures. Under alternative D, as described under alternatives B and C, if NPS staff observe disturbance from ORVs and/or pedestrians, buffers would be expanded in 50-meter (164-foot) increments until no disturbance occurs. Also, for all species buffers/closures, vehicles and/or pedestrians may be allowed to pass through portions of the buffer or closures that are considered inaccessible to chicks because of steep topography, dense vegetation, or other naturally occurring obstacles.

Under alternative D, closure of SMAs to ORVs year-round and to pedestrians during the breeding season would result in a substantial beneficial effect to all state-listed/special status species and their habitat by eliminating potential effects of bringing people, essential vehicles, and equipment into direct contact with state-listed/special status species and their habitat when compared to management under alternatives A, B, and C. As described under alternatives A, B, and C, American oystercatchers at the Seashore can begin courting and nesting as early as mid-February or early March and be particularly sensitive to disturbance at that time (Cohen et al. 2010). Closure of SMAs to ORVs year-round and to pedestrians during the breeding season would ensure that early nesting American oystercatchers, except those that establish territories outside of areas that have not been utilized within the past five years, would be fully protected under alternative D. The year-round SMAs would provide long-term beneficial impacts to all state-listed/special status species at the Seashore.

Under alternative D, as described under alternatives A, B, and C, observations of chick movements may not be sufficient to adjust buffers such that they ensure protecting chicks from ORV/pedestrian impact; however, buffer/closure areas under alternative D would likely reduce any potential effects to negligible as many of the species would occur in the large SMAs. As described under alternatives A, B, and C, no additional buffers or closures would be provided to foraging adult state-listed/special status species under alternative D, although these species would likely indirectly benefit from the protections provided to piping plover foraging habitat and the large year-round SMAs.

Under alternative D, establishment of year-round SMAs managed under ML1 procedures during the breeding season, prenesting closures and increased buffer zones around breeding/nesting/fledging areas for all nesting state-listed/special status species and posting of nests with symbolic fencing, would not only eliminate ORV and reduce pedestrian use in historic bird use areas, but would also greatly reduce the possibility of disturbance to species (including first time breeders) and habitat compared to alternatives A, B, and C. With the designated SMA closures and implementation of buffers in areas not within closures, impacts from closures/buffers under alternative D would be long-term and beneficial to all breeding and nonbreeding state-listed / special status species by ensuring undisturbed nesting and wintering habitat.

*Wintering/Nonbreeding Management.* Nonbreeding surveys for American oystercatchers, Wilson's plover, red knots, and some species of colonial waterbirds would be conducted using the NPS SECN survey protocol. These surveying activities would have minor impacts due to disturbance from monitors, although the surveys would result in long-term benefits related to the increase in knowledge about the species and improvements in management methods.

Under alternative D, as described under alternative C, Nonbreeding Shorebird SMAs would be established for migrating/wintering shorebirds at various locations throughout the Seashore. Closures would be installed no later than when breeding season closures are removed at the same location(s). Pets would be prohibited within Nonbreeding Shorebird SMAs, although non-conflicting, nonmotorized

recreational uses would be allowed. Nonbreeding resource closures would be established at the points and spits. These nonbreeding SMAs would include areas of suitable nonbreeding habitat that has had concentrated foraging by migrating/wintering shorebirds in more than one (i.e., two or more) of the past five years and is managed to reduce human disturbance during the nonbreeding season. This may include portions of breeding SMAs that provide suitable nonbreeding habitat during periods of overlap between the breeding and migrating season and designated VFAs that are set aside to provide pedestrians with the opportunity for a natural beach experience. In addition to nonbreeding resource closures, the NPS would establish VFAs along the ocean shoreline. This would ensure that adequate foraging, resting, and roosting areas would be provided for all migratory and nonbreeding state-listed/special status species. Overall, management of species during nonbreeding would result in long-term beneficial impacts.

*Education and Outreach.* Under alternative D and as described under alternative A, the public would continue to receive information at the visitor centers about state-listed/special status species and their ecology and the measures the Seashore is taking to protect these species. In addition, the public would be provided education through the required ORV use permit, and protected species information would be provided at all access points. As with alternative A, public outreach as part of species management would have long-term beneficial impacts, with the expanded outreach having greater impacts than alternative A.

*Overall Impact of Resources Management Activities.* The overall impact of resources management activities (primarily resulting from the effects of surveying and field activities) for each species under alternative D would be as follows:

- American oystercatcher. Establishment of 10 SMAs that are closed to ORVs year-round and all managed under ML1 procedures during the breeding season would provide long-term benefits to breeding and wintering American oystercatchers, greater than those under alternative C. Additional benefits would be provided from surveying and closures outside of these established SMAs, as well as from the education and outreach provided. These surveying and field activities would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to this species, greater than those provided under alternative B.
- Colonial waterbirds. Impacts to colonial waterbirds from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.
- Wilson's plover. Impacts to Wilson's plover from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.
- Red knot. Nonbreeding shorebird SMAs and the establishment of VFAs along the ocean shoreline would result in beneficial impacts to nonbreeding red knots. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, all of which are closed to ORVs year-round would result in long-term beneficial impacts to red knot when compared to all other alternatives.

### **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under alternative D, approximately 27 miles of shoreline would be designated for ORV use and approximately 40 miles would be designated as vehicle free year-round.

There would be no seasonally designated ORV use areas. Compliance with closures would likely be easier for the public as the large SMAs areas would be clearly defined and predictable, and users would be educated as to where these areas are upon receiving an ORV use permit. Establishment of large, year-round SMAs that are managed under ML1 procedures during the breeding season, as well as educational information from a permit system, would provide a more defined separation of uses and reduced potential for recreational disturbance to birds than under alternatives A, B, or C. Impacts to state-listed and special status species from ORV and pedestrian access would be expected to be long-term minor adverse, as some interactions may still cause disturbance, but these events would likely be infrequent.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative D would allow for beach driving in the wrack during the day outside of SMAs and would maintain nighttime closures. Restricting driving in SMAs year-round and seasonal night driving restrictions would reduce disturbance in these areas both seasonally and year-round. Compared to other alternatives, this alternative would also limit daytime ORV use in more areas of the Seashore. Overall impact to invertebrates would be long-term and negligible (as discussed later in this chapter), and would reduce the food source available to birds at the Seashore, but to a lesser degree than if night driving or greater access during the day was permitted, resulting in long-term negligible impacts to state-listed and special status species that rely on this food source.

*Night-Driving Restrictions.* Under alternative D, night driving of all nonessential ORV traffic would be the same as under alternative C and would result in long-term beneficial impacts as it would further reduce the potential for disturbance to night-foraging birds that could result in mortality.

*Commercial Fishing.* Commercial fishing activities under alternative D would be managed the same as under alternative C, resulting in long-term negligible adverse impacts to state-listed/special status species, with long-term minor to moderate benefits from night-driving restrictions.

*Permit/Carrying Capacity Requirements.* As described above under the night-driving restrictions and education/outreach sections, alternative D would require a permit for ORV use, which includes night driving. As stated in these sections, the educational information provided by the required permit would result in benefits to state-listed/sensitive species as ORV users would be more aware of the regulations in place to protect these species, which would likely result in a higher level of compliance. There would be no impacts related to carrying capacity, as ORV use would not be permitted in resource protection areas.

*Pets/Other Recreational Activity Requirements.* Pets would be prohibited within all SMAs year-round. Camping would not be permitted at the Seashore, and beach fires would be regulated with a non-fee educational permit, as described under alternative C. Prohibition of pets within the SMAs year-round and additional education from a beach fire permit would be expected to have long-term beneficial impacts to the species, greater than those under alternative C, provided the level of non-compliance is kept low.

*Overall Impact of ORV and Other Recreational Use.* The overall impact of ORV and other recreational use for each species under alternative D would be as follows:

- American oystercatcher. Providing large SMAs that are closed year-round to ORVs and closed to pedestrians during the breeding season would provide large undisturbed areas for both breeding and nonbreeding oystercatchers. Further benefits would be provided by seasonal night-driving restrictions, the establishment of a permit system with an educational component, and prohibition of pets in SMAs year-round. With these measures in place, impacts to American oystercatchers from ORV and other recreational use would be long-term minor adverse, as the chance of disturbance still exists, but would be lower than that under the other alternatives evaluated.



- Colonial waterbirds. Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor adverse, for the same reasons as American oystercatchers under this alternative.
- Wilson's plover. Impacts to Wilson's plover from ORV and other recreational use would be long-term negligible to minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.
- Red knot. Impacts to red knot from recreation and other activities would be long-term negligible to minor adverse due to the additional nonbreeding closures provided under alternative D that offer this wintering species further protection, as well as the large year-round SMAs that would offer further protection during red knot wintering.

**Cumulative Impacts.** Cumulative actions and their associated impacts under alternative D would be the same as those described under alternative A (long-term minor to moderate adverse). Although alternative D provides additional protection that would be beneficial to state-listed / special status bird species, the adverse effects on birds from other actions occurring in the region would still exist. The impact of these past, current, and reasonably foreseeable future actions, when combined with the long-term beneficial and long-term negligible to minor adverse impacts of alternative D, would result in long-term minor adverse cumulative impacts.

**Conclusion.** Overall impacts to state-listed/special status species under alternative D would be as follows:

- American oystercatcher. Establishment of 10 SMAs that are closed year-round to ORVs and closed to pedestrians and managed under ML1 procedures during the breeding season would provide long-term benefits to breeding and wintering American oystercatchers. Additional benefits would be provided from surveying and closures outside of these established SMAs, as well as from the education and outreach provided. These surveying and field activities would all contribute to further knowledge about the species that would contribute to better management, and result in long-term beneficial impacts. Providing large SMAs that are closed to ORVs year-round and to pedestrians during the breeding season would provide the American oystercatcher a large undisturbed area for both breeding and nonbreeding. Further benefits would be provided by seasonal night-driving restrictions, prohibition of pets within SMAs, and the establishment of a permit system. With these measures in place, impacts to American oystercatchers from ORV and other recreational use would be long-term minor adverse, as the chance of disturbance still exists, but would be lower than that under the other alternatives evaluated.
- Colonial waterbirds. Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for the American oystercatcher. Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor adverse, for the same reasons as American oystercatchers under this alternative.
- Wilson's plover. Impacts to Wilson's plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for the American oystercatcher, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover. Impacts to Wilson's plover from ORV and other recreational use would be long-term negligible to minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the specific buffers/closures provided for the species, and would therefore be provided slightly more protection than other state-listed/special status species.

- Red knot. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, which are closed to ORVs year-round, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B. Impacts to red knot from ORV and other recreational use would be long-term negligible to minor adverse due to the additional nonbreeding closures provided under alternative D that offer this wintering species further protection, as well as the large year-round SMAs that would offer further protection during red knot wintering.

Cumulative impacts under alternative D would be long-term minor adverse.

## **Impacts of Alternative E: Variable Access and Maximum Management**

### **Resources Management Activities**

*Establishment of Prenesting Closures.* Under alternative E, as described under alternative C and D, the NPS would establish SMAs based on an annual habitat assessment for management of all breeding shorebirds and subject to periodic review. Seven SMAs would be managed under ML1 procedures and three under ML2 procedures. All Breeding Shorebird SMAs would be posted as prenesting closures using symbolic fencing by March 15 at sites involving American oystercatchers and Wilson's plover and by April 15 at sites involving colonial waterbirds. If multiple species exist on each site, closures would begin on the earliest date. Under alternative E, as described under alternative C, closure of prenesting areas by March 15 (in most cases) and/or April 15 for colonial waterbirds would have a more beneficial effect due to closures occurring earlier, ensuring a reduction of disturbance for colonial waterbirds during breeding (courtship, mating, scrapes, etc.).

*Surveying and Monitoring.* Surveys of prenesting closures for all state-listed/special status species would occur three times per week. Surveys for American oystercatchers and Wilson's plovers would begin on March 15 and surveys for colonial waterbirds would begin on May 1. Surveys for suitable habitat outside of SMAs would also occur 3 times per week once breeding pairs are present. Prenesting surveys under alternative E would not be as frequent as those under alternatives A and B; however, due to the designation of SMAs as prenesting closures and suitable habitat surveys outside of prenesting closures, effects of survey times to implement closures would be the same. Under alternative E, under ML1 procedures, less monitoring of nests would occur; however there would be no ORV or pedestrian access allowed. Under ML2 procedures, SMAs with this management would be monitored more frequently (the same as nesting areas under alternatives A and B) due to the presence of an ORV and/or pedestrian corridor.

Under ML1 procedures, NPS would conduct nest surveys from a distance for American oystercatchers and Wilson's plover at least three times per week. Colonial waterbirds would also be observed at least three times per week from a distance that does not disturb the birds. Nest count estimates would be conducted during the peak nesting period for each species, which generally is during the last week of May and the first week of June, but could be later, especially for black skimmers. For all species that have incubating birds that cannot be observed from a distance, nest checks would occur on a weekly basis (or as staff is available). Colonial waterbird colonies would be surveyed for hatching (approximately 21 days after initial nest observations). For unfledged chicks, NPS would survey broods and colonies every other day under ML1 procedures.

Under ML2 procedures, American oystercatcher and Wilson's plover chicks would be observed once daily for at least one-half hour and colonial waterbird colonies would be observed daily. For American oystercatchers and Wilson's plover, observations would end once chicks have fledged. For colonial waterbirds, a survey would be conducted during peak fledge (approximately 20 days after hatch counts). Observations would end after no unfledged chicks have been observed on three consecutive surveys.

Under alternative E, as described under alternatives C and D, surveys would concentrate in established SMAs, which may not detect American oystercatchers or colonial waterbirds that establish territories in new habitat. Surveying activities under alternative E would likely have long-term minor adverse impacts on nesting state-listed/special status species as a result of survey time and frequencies during the prenesting and nesting season at the Seashore. Although surveying can bring people into contact with the species and cause disturbance, overall species surveying would provide long-term beneficial impacts as it would provide the NPS with the information needed to implement adaptive management measures, and enhance future management. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse.

*Buffer/Closure Establishment.* Under alternative E SMAs would be established and designated either ML1 or ML2. ML1 areas would not allow ORV or pedestrian access when prenesting closures are in effect. Bodie Island Spit, Cape Point, and South Point would be managed under ML2 procedures, and narrow ORV access corridors would be established in these areas. Upon first observation of breeding activity, the standard buffers would apply, which depending on the circumstances may close the access corridor. Pets, kite flying, ball and Frisbee tossing, or similar activities would be prohibited in access corridors while prenesting closures are in effect. If no breeding activity is observed in SMAs by July 31, or two weeks after all chicks have fledged (whichever is later), prenesting closures would be adjusted to the configurations of Nonbreeding Shorebird SMAs (as determined from annual monitoring of presence, abundance, and behavior of migrating and wintering shorebirds from July through May).

Under alternative E, a total of three SMAs would be closed to ORV access year-round. During the breeding season, a total of seven SMAs would be closed to ORV and pedestrian access under ML1 procedures areas from March 15 through August 31; and a total of three areas would be managed under ML2 procedures, which would allow an ORV access corridor with a pass-through zone from March 15 to August 31, subject to resource closures. Buffers would be applied to courtship/mating, nesting, and unfledged chick activities both within and outside of designated SMAs. Under ML1 procedures, a 300-meter (900-foot) buffer would be maintained during all activities for all state-listed / special status bird species. Under ML2 procedures, buffer areas would vary by species and activity. For ML2 procedures, buffers for American oystercatchers would be 150 meters (450 feet) for breeding and nesting activities and 200 meters (600 feet) for unfledged chick activity. ML2 buffers for least terns, a colonial waterbird, would be 100 meters (300 feet) for breeding and nesting activities and 200 meters (600 feet) for unfledged chick activity. All other colonial waterbird ML2 buffers would be 200 meters (600 feet) for breeding, nesting, and unfledged chick activities. For areas where breeding activity is observed outside of prenesting areas, buffers under ML1 would apply. For alternative E, buffers would be removed outside of prenesting areas if no breeding activity is observed for a two-week period or when associated breeding activity has concluded, whichever is later. If breeding activity or scraping is observed outside of an existing closure, buffers would be expanded to accommodate the designated buffer for that management level. Under alternative E, as described under alternatives B and C, if NPS staff observe disturbance from ORVs and/or pedestrians, buffers would be expanded in 50-meter (164-foot) increments until no disturbance occurs. Under alternative E, for all species buffers/closures, vehicles and/or pedestrians may be allowed to pass through portions of the buffer or closures that are considered inaccessible to chicks because of steep topography, dense vegetation, or other naturally occurring obstacles.

Under alternative E, closure of three SMAs year-round and prenesting closures in all SMAs would provide buffers around courting American oystercatchers, Wilson's plover, and colonial waterbirds, which could have a substantial beneficial effect. ML1 procedures that close areas to ORV and pedestrian access from March 15 to August 31 would reduce potential effects of bringing people, essential vehicles, and equipment into direct contact with state-listed/special status species and their habitat when compared to management under alternatives A and B; however the reduction of effects would not be as much as those under alternative C given the longer period of ORV closure under that alternative (October 14). Under ML2, the three SMAs that would have an ORV pass-through zone would have greater adverse impacts from disturbance than would occur in the three SMAs under alternative C that would have a pedestrian access corridor under ML2 procedures, due to the potential effects of vehicle collisions and disturbance from bringing people into direct contact with species.

Under alternative E, as described under alternatives A, B, and C, American oystercatchers at the Seashore can begin courting and nesting as early as mid-February or early March and be particularly sensitive to disturbance at that time (Cohen et al. 2010). Hence, a March 15 start to management could mean that early nesting oystercatchers, especially those that establish territories outside of historic areas would not be fully protected under alternatives A, B, C, or E.

Under alternative E, as described under alternatives A, B, and C, observations of chick movements may not be sufficient to adjust buffers such that they ensure protecting chicks from ORV/pedestrian impact; however, increased closure areas under alternative E would likely reduce any potential effects to negligible. As described under alternatives A, B, C, and D, no additional buffers or closures would be provided to foraging adult state-listed/special status species under alternative E, although species would likely indirectly benefit from the protections provided to piping plover foraging habitat.

Under alternative E, establishment of SMAs with ML1 and ML2 procedures, closure of some SMAs to ORV use year-round, increased buffer zones around breeding/nesting/fledging areas for all nesting state-listed/special status species, and posting of nests with symbolic fencing would reduce ORV and pedestrian use in multiple high use bird areas during sensitive timeframes, provide a major deterrent to the entry of people, pets, and ORVs into habitats, and greatly reduce the possibility of disturbance to species (including first time breeders) and habitat compared to alternatives A and B.

With the designated SMA closures, ML1 and ML2 procedures and associated buffers for breeding/nesting/fledging areas, impacts from closures/buffers under alternative E would be long-term minor adverse.

*Wintering/Nonbreeding Management.* Nonbreeding surveys for American oystercatchers, Wilson's plover and red knots, would be conducted according to the NPS SECN survey protocol, although unlike the no-action alternatives, surveys for some colonial waterbirds would be included. These surveying activities would have minor impacts (due to human disturbance as discussed above) and long-term benefits related to the increase in knowledge about the species. Surveying activities would have negligible impacts to red knots during the breeding season (for other state-listed/special status species) at the Seashore, and long-term benefits related to the increase in knowledge about the species resulting from nonbreeding surveys.

Under alternative E, as described under alternatives C and D, Nonbreeding Shorebird SMAs would be established for migrating/wintering shorebirds at various locations throughout the Seashore. Closures would be installed no later than when breeding season closures are removed at the same location(s). Pets would be prohibited within Nonbreeding Shorebird SMAs. These nonbreeding SMAs would include areas of suitable nonbreeding habitat that has had concentrated foraging by migrating/wintering shorebirds in more than one (i.e., two or more) of the past five years and is managed to reduce human disturbance during the nonbreeding season. This may include portions of breeding SMAs that provide suitable

nonbreeding habitat during periods of overlap between the breeding and migrating season and designated VFAs that are set aside to provide pedestrians with the opportunity for a natural beach experience. In addition to nonbreeding resource closures, the NPS would establish VFAs along the ocean shoreline. This would ensure that adequate foraging, resting, and roosting areas would be provided for all migratory and nonbreeding state-listed/special status species. Management of wintering/nonbreeding populations would provide long-term benefits, but these benefits would not be as great as those under alternative D, as alternative E would provide an increased level of recreational access and therefore an increased potential for disturbance to state-listed/special status species.

*Education and Outreach.* Under alternative E, impacts as a result of education and outreach efforts, including educational information from a required ORV permit, would be long-term and beneficial, as described under alternative C.

*Overall Impact of Resources Management Activities.* The overall impact of resources management activities (primarily resulting from the effects of surveying and field activities) for each species under alternative E would be as follows:

- American oystercatcher. Implementation of 10 SMAs, 7 of which are closed to ORVs during the breeding season, would provide a proactive resource closure early in the breeding season. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts from human disturbance during field activities, resources management activities on the whole would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to this species, greater than those provided under alternative B.
- Colonial waterbirds. Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.
- Wilson's plover. Impacts to Wilson's plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.
- Red knot. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, some of which are closed year-round, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.

### **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under alternative E, approximately 32 miles of shoreline would be designated for ORV use year-round; approximately 20 miles would be seasonally designated for ORV use from September 1 through March 14; and approximately 16 miles would be designated as vehicle free year-round. The speed limit would be 15 mph unless otherwise posted, and permits would be required for all ORVs. Three SMAs (under ML2 procedures) would maintain an ORV corridor with a pass-through zone from March 15 to August 31, subject to resource closures.

Management of ORV and pedestrian access under alternative E would reduce the potential for disturbance and nest abandonment from direct contact with people and vehicles compared to alternatives A and B, but would have greater impacts than alternative C as a result of the increased amount of recreational access provided by the establishment of an ORV corridor in areas under ML2 procedures and a reduction in the length of closure in areas under ML1 procedures from October 14 under alternative C to August 31. Adverse impacts would also be greater under alternative E than alternative D, which has all SMAs closed to ORVs year-round and closed to pedestrian use during the breeding season. As described under alternative C, these measures should limit adverse impacts to state-listed / special status species; however, compliance with closures may not be absolute, resulting in adverse impacts if non-compliance occurs, but for the most part the populations would remain functional and adverse impacts limited in the SMAs by the seasonal or year-round restrictions.

Under alternative E, there would be seasonal closures in key red knot habitat reducing the potential to impact resting and foraging red knots from vehicle use and associated noise and presence of people and pets.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative E would allow for beach driving in the wrack during the day outside of SMAs but would maintain nighttime closures and limit driving during the day where SMAs are established reducing disturbance in these areas. Overall impacts to invertebrates would be long-term and minor (discussed later in this chapter), and would reduce the food source available to state-listed and special status species at the Seashore that rely on this food source, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

Overall, there would be long-term minor to moderate adverse impacts to nesting state-listed/special status species from ORV and pedestrian access under alternative E as providing more areas managed under ML2 procedures during the breeding season would result in more recreational access and an increased chance of species disturbance. Impacts to nonbreeding red knots would be long-term minor adverse.

*Night-Driving Restrictions.* Under alternative E, night-driving restrictions for all nonessential ORV traffic would be similar to alternative B. American oystercatchers, Wilson's plover, and red knot are known to be active at night (Simons and Schulte 2008; Morrier and McNeil 1991; Niles et al. 2007), and would be subject to disturbance from vehicular and pedestrian disturbance. This disturbance can impact their foraging behavior and has been shown to result in disorientation and even abandonment of American oystercatcher chicks (Simons and Schulte 2008). Restrictions on night driving under alternative E would provide long-term benefits to state-listed/special status species; however, night driving could still result in long-term minor adverse impacts during the time when night driving is allowed by permit. Further, night-driving restrictions that begin after dark, in this case 10:00 p.m., do not offer full nighttime protection to the species.

*Commercial Fishing.* Management of commercial fishing under alternative E would be the same as alternative C, resulting in long-term negligible adverse impacts from the presence of commercial fishing vehicles, with long-term minor to moderate benefits from night-driving restrictions.

*Permit/Carrying Capacity.* As described above under the night-driving restrictions and education/outreach sections, alternative E would require a permit for ORV use, which would include night driving. As stated in these sections, the educational information provided by the required permit would result in benefits to state-listed/sensitive species as ORV users would be more aware of the regulations in place to protect these species, which would likely result in a higher level of compliance.

There would be no impacts related to the implementation of a carrying capacity requirement under alternative E, because ORVs would not be permitted within resource protection areas.

*Pets/Other Recreational Activity Restrictions.* Pets would be prohibited within all SMAs, as described under alternative C. This would include the ORV pass-through zones under alternative E and the seasonal prohibition dates would be March 15 to August 31. As with alternative C, an educational permit would be required for any beach fire year-round, which would inform visitors about species protection issues related to this recreational use.

Camping restrictions would be the same as alternative C; however, the Seashore would issue park-and-stay permits for overnight beach use at selected spits and points that are not closed for resource protection. The provision for park-and-stay overnight at some spits and points during portions of the breeding season when resource closures do not preclude access would increase the potential for human disturbance to breeding and nesting birds adjacent to those locations.

Overall, restrictions on pets, camping, and beach fires would result in long-term benefits to species at the Seashore, further reducing pressure to state-listed/special status species from recreational activity, with the potential for long-term minor to moderate adverse impacts from the park-and-stay option, which would occur outside of resource closures.

*Overall Impact of ORV and Other Recreational Use.* The overall impact of ORV and other recreational use for each species under alternative E would be as follows:

- American oystercatcher. Implementation of a permit system with an educational component, larger buffer sizes, seasonal night-driving restrictions, restrictions on pets in SMAs, and establishment of breeding and nonbreeding SMAs would benefit the American oystercatcher. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative E does allow an ORV access corridor at three SMAs managed under ML2 procedures during the breeding season (more than the other action alternatives), which provide for some level of pedestrian or ORV access into these area, which introduces the potential for impacts to the species. Although there would be some protection measures in place, recreational use could still result in long-term minor to moderate adverse impacts to American oystercatchers.
- Colonial waterbirds. Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as those discussed above for American oystercatchers under this alternative.
- Wilson's plover. Impacts to Wilson's plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.
- Red knot. Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative E that offer this wintering species further protection; however, there would be greater adverse impacts than under alternatives D or F due to fewer miles of shoreline being closed to ORVs under alternative E during the nonbreeding season.

**Cumulative Impacts.** Cumulative actions and their associated impacts under alternative E would be the same as those described under alternatives A, B, C, and D (long-term minor to moderate adverse).

Although alternative E provides additional protection which would be beneficial to state-listed / special status bird species, the adverse effects on birds from other actions occurring in the region would still exist. The impact of these past, current, and reasonably foreseeable future actions would be minor adverse. These impacts, when combined with the long-term beneficial and long-term minor to moderate adverse impacts of alternative E, would have long-term minor to moderate cumulative impacts.

**Conclusion.** Overall impacts to state-listed/special status species under alternative E would be as follows:

- American oystercatcher. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, resource management activities on the whole would provide information and result in actions that would be beneficial to the species. Implementation of SMAs that provide a proactive resource closures early in the breeding season, a permit system with an educational component, seasonal night-driving restrictions, as well as larger buffer sizes and earlier prenesting closures, would provide long-term beneficial impacts to the American oystercatcher, greater than those under alternative B. Implementation of a permit system with an educational component, seasonal night-driving restrictions, prohibition of pets in the SMAs during breeding season, and establishment of breeding and nonbreeding SMAs would benefit the American oystercatcher. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative E does allow ORV access to three SMAs that would be managed under ML2 procedures during the breeding season (more than the other action alternatives), which provide for some level of pedestrian or ORV access into these area and which introduces the potential for impacts to the species. Although there would be some protection measures in place, recreational use could still result in long-term minor to moderate adverse impacts to American oystercatchers.
- Colonial waterbirds. Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers. Impacts to colonial waterbirds from ORV and other recreation use would be long-term minor to moderate adverse, for the same reasons as American oystercatchers under this alternative.
- Wilson's plover. Impacts to Wilson's plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover. Impacts to Wilson's plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to closures/buffers provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.
- Red knot. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, some of which are closed to ORVs year-round, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B. Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative E that offer this wintering species further protection, with greater adverse impacts than under alternatives D or F from fewer miles of shoreline being closed to ORVs under alternative E during the nonbreeding season.



Cumulative impacts under alternative E would be long-term minor to moderate adverse.

## **Impacts of Alternative F: NPS Preferred Alternative**

### **Resources Management Activities**

*Establishment of Prenesting Closures.* Under alternative F, a survey for potential breeding habitat would occur by March 1 (except for colonial waterbirds, which would occur by April 1) and prenesting closures would be established using symbolic fencing by March 15 at sites involving American oystercatchers and Wilson's plover and by April 15 at sites involving colonial waterbirds. If multiple species exist on each site, closures would begin on the earliest date. Establishment of closures early in the season would have long-term beneficial impacts to these species.

SMA's would not be established, as described under alternatives C, D, and E. Instead, prenesting closures for American oystercatcher, Wilson's plover, and colonial waterbirds would be established and areas of known breeding habitat, such as Bodie Island, would be designated as seasonal or year-round VFAs. These areas would be open to pedestrians but subject to resource closures as described in table 10-1, providing areas of relatively less disturbance; however, there would be more disturbance under this alternative in prenesting areas, as pedestrians would be permitted seaward of prenesting closures, unless breeding activity is present and a resource closure is necessary. Once established in the beginning of the breeding season, these areas would not be reduced to accommodate an ORV corridor. Under alternative F, all areas of the Seashore would be managed similar to the ML2 procedures described for alternatives C, D, and E (see table 10-1).

*Surveying and Monitoring.* Surveys of prenesting closures for all state-listed/special status species would occur three times per week. Surveys for American oystercatchers and Wilson's plover would begin on March 15 and surveys for colonial waterbirds would begin on May 1. Surveys for suitable habitat would also occur three times per week outside prenesting closures once breeding pairs are present. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse.

The NPS would observe American oystercatcher nests/scrapes from a distance on a daily basis and Wilson's plover nests/scrapes every three days. Colonial waterbird scrapes/nests would also be observed daily from a distance that does not disturb the birds. Colonial waterbird nest count estimates would be conducted during the peak nesting period for each species, which generally is during the last week of May and the first week of June, but could be later, especially for black skimmers. For all species that have incubating birds that cannot be observed from a distance, nest checks would occur every three days. For unfledged chicks, NPS would observe broods and colonies once daily for Wilson's plover, American oystercatcher, and colonial waterbirds. For American oystercatchers, if the brood cannot be located, at least one-half hour would be spent in efforts to locate the brood/chick. Colonial waterbird colonies would be surveyed for unfledged chicks during the peak hatching period (approximately 21 days after initial nest observations).

For American oystercatchers and Wilson's plover, observations end once chicks have fledged. For colonial waterbirds, a survey would be conducted during peak fledge (approximately 20 days after hatch counts). Observations would end after no unfledged chicks have been observed on three consecutive surveys. As described under all other alternatives, surveying under alternative F would provide benefits to the species.

Under alternative F surveys would concentrate in established prenesting closures, which may not detect American oystercatchers or colonial waterbirds that establish territories in new habitat. As described under all other alternatives, surveying under alternative F would provide benefits to the species.

Under alternative F, as described under alternative B, C, and E, closure of prenesting areas by March 15 (in most cases) and/or April 15 for colonial waterbirds would have a more beneficial effect due to closures occurring earlier, ensuring a reduction of disturbance for colonial waterbirds during breeding (courtship, mating, scrapes, etc.) than under alternative A. Prenesting surveys under alternative F would not be as frequent as those under alternatives A and B; however, due to the designation of prenesting closures within suitable habitat, established buffers for breeding activity, as well as the designation of seasonal and year-round VFAs in locations of known habitat, effects of survey times to implement closures would be the same. Under alternative F, management of all areas of the Seashore would be similar to the ML2 procedures described under alternatives C, D, and E and would require more frequent monitoring (the same as nesting areas under alternatives A and B) due to the presence of ORVs and/or pedestrians in these areas. Alternative F would likely have minor adverse impacts on nesting state-listed/special status species from survey time and frequencies during the prenesting and nesting season at the Seashore, but overall the information provided would allow the Seashore to implement adaptive management initiatives, thereby improving future management, resulting in overall long-term beneficial impacts.

*Buffer/Closure Establishment.* Under alternative F, all areas of the Seashore would be managed in a way similar to the ML2 procedures detailed under alternatives C, D, and E, but would provide for prenesting closures instead of SMAs. Outside of prenesting closures, buffers would be established based on breeding/nesting activity (see table 10-1). Under alternative F, areas of the Seashore would be designated as vehicle free seasonally or year-round including:

- Ramp 1 to 0.5 miles south of Coquina Beach (year-round)
- 0.2 mile south of ramp 4 to southeast corner of Bodie Island spit (vehicle free March 15 to September 14)
- Southeast corner of Bodie Island spit along inlet shoreline to southwest edge of Bait Pond (near bridge) (year-round)
- Rodanthe boundary to 0.1 mile south of Rodanthe pier (year-round)
- 0.1 mile south of Rodanthe Pier–Waves–Salvo to ramp 23 (vehicle free April 1 to October 31)
- Ramp 23 to 1.5 miles south of ramp 23 (year-round)
- Ramp 27 to ramp 30 (year-round)
- Ramp 32.5 to ramp 34 (year-round)
- Ramp 34 to ramp 38 (vehicle free April 1 to October 31)
- Ramp 38 to 1.5 miles south of ramp 38 (i.e., Haulover) (year-round)
- 0.3 mile west of the hook (Cape Point) to 1.7 miles west of ramp 45 (year-round)
- Frisco Village Beach (east village boundary to west boundary) (vehicle free April 1 to October 31)
- Sandy Bay / Frisco day use area (west Frisco boundary to east Hatteras Village boundary) (year-round)
- Hatteras Village Beach (east boundary to ramp 55) (vehicle free April 1 to October 31)

- Bone Road to Hatteras Inlet, along inlet shoreline to Spur Road (year-round)
- (New) interdunal road from eastern portion of Spur Road west toward inlet (vehicle free March 15 to September 14)
- Hatteras Inlet to (new) ramp 59.5 (year-round)
- (New) ramp 63 to 1.0 mile northeast of ramp 67 (year-round)
- 0.5 mile northeast of ramp 68 to ramp 68 (Ocracoke Campground area) (vehicle free April 1 to October 31)
- Ramp 68 to 0.4 miles northeast of ramp 70 (includes Ocracoke Day Use area) (year-round).

Pedestrians would be permitted in VFAs, but these areas would be subject to resource closures, following the procedures outlined in table 10-1. Within both ORV areas and VFAs, surveys for potential habitat would occur, as described above, and prenesting closures would be established. Prenesting closures for Wilson's plover and American oystercatchers would begin on March 15 and for colonial waterbirds on May 1. If no breeding activity is seen, these prenesting closures would be removed July 15 (or August 15 if black skimmers are present), or two weeks after all chicks have fledged.

At Cape Point and South Point, an ORV corridor would be established, but would be reduced in size from 50 meters (164 feet) during the nonbreeding season to 35 meters (115 feet) during prenesting and breeding seasons. Upon first observation of breeding activity, the standard buffers would apply, which depending on the circumstances may close access corridors. Once breeding activity has ceased, the corridor would return to 50 meters (164 feet).

Under alternative F, buffers would be applied to courtship/mating, nesting, and unfledged chick activities throughout the Seashore, in both designated ORV routes and VFAs. Buffers for American oystercatchers would be 150 meters (450 feet) for breeding and nesting activities and 200 meters (600 feet) for unfledged chick activity. Buffers for Wilson's plover would be 75 meters (246 feet) for breeding and nesting activities and 200 meters (600 feet) for unfledged chick activity. Under alternative F, buffers for least terns, a colonial waterbird, would be 100 meters (300 feet) for breeding and nesting activities and 200 meters (600 feet) for unfledged chick activity. All other colonial waterbird buffers would be 200 meters (600 feet) for breeding, nesting, and unfledged chick activities.

For all species, the Seashore would retain the discretion to expand scrape or nest buffers as needed to protect resources. In unprotected areas, a buffer would be established immediately when a nest with egg(s) is found. If breeding activity or scraping is observed outside of an existing closure, buffers would be expanded to accommodate the designated buffer for the particular species. Prior to hatching, vehicles may be allowed to pass by such areas within designated ORV access corridors that have been established along the outside edge of nesting habitat where, in the judgment of Seashore resources management staff, steep topography, dense vegetation, or other naturally-occurring obstacles minimize the risk of human disturbance. Such sites would be re-evaluated for disturbance during each subsequent survey. When scrape(s), nest(s), or chick(s) occur in the immediate vicinity of paved roads, parking lots, campgrounds, buildings, and other facilities, such as within the villages or at NPS developed sites, the NPS would retain the discretion to provide resource protection to the extent possible while still allowing those facilities to remain operational. Regardless of the nature of the adjacent facilities, in all cases, as a minimum, NPS would provide signs, fencing and reduced buffers to protect nest(s) and chick(s) once they occur.

The NPS would not reduce buffers to accommodate an ORV corridor or ORV ramp access. Buffers would remain in place for two weeks after a nest is lost to determine if the pair will re-nest. For buffers that occur outside of, or that expand, the original prenesting areas, the buffer or expansion would be

removed if no breeding activity is observed for a two-week period, or when associated breeding activity has concluded, whichever is later.

If breeding activity or scraping is observed outside of an existing closure, buffers would be expanded to accommodate the designated buffer for that species, as detailed in table 10-1. Under alternative F, as described under alternatives B through E, if NPS staff observe disturbance from ORVs and/or pedestrians, buffers would be expanded in 50-meter (164-foot) increments until no disturbance occurs. Under alternative F, for all species buffers/closures, vehicles and/or pedestrians may be allowed to pass through portions of the buffer or closures that are considered inaccessible to chicks because of steep topography, dense vegetation, or other naturally occurring obstacles.

Under alternative F, the prenesting closures would provide a buffer around courting oystercatchers, Wilson's plovers, and colonial waterbirds, and the buffers detailed in table 10-1 would provide additional protections during breeding/nesting activities. The seasonal or year-round VFAs, as described above would also provide areas of less disturbance due to the absence of ORVs. These measures together could have a beneficial effect. Prenesting areas closed to ORV and pedestrian access from March 15 to July 31 or two weeks after all chicks have fledged, whichever is later, would reduce potential effects of bringing people, essential vehicles, and equipment into direct contact with state-listed/special status species and their habitat when compared to management under alternatives A and B. However, the reduction of effects would be greater at some locations under alternative F as many of the VFAs are year-round, and many are seasonally vehicle free until October 31 (or September 15 at two locations). These seasonal VFAs are also longer than alternatives C or E, which have seasonal VFAs of shorter duration (October 14 and August 31 respectively).

American oystercatchers at the Seashore can begin courting and nesting as early as mid-February or early March and be particularly sensitive to disturbance at that time (Cohen et al. 2010). Hence, a March 15 start to management could mean that early nesting oystercatchers, especially those that establish territories outside of historic areas, would not be fully protected under alternatives A, B, C, E, or F.

Under alternative F, as described under alternatives A, B, C, and E, observations of chick movements may not be sufficient to adjust buffers such that they ensure protecting chicks from ORV/pedestrian impact; however, increased closure areas under alternative F would likely reduce any potential effects to negligible. As described under all of the other alternatives, no additional buffers or closures would be provided to foraging adult state-listed/special status species under alternative F, although species would likely indirectly benefit from the protections provided to piping plover foraging habitat.

Under alternative F, establishment of prenesting closures and seasonal or year-round VFAs; increased buffer zones around breeding/nesting/fledging areas for all nesting state-listed/special status species; and posting of nests with symbolic fencing, would not only eliminate or significantly reduce ORV and pedestrian use in multiple high use bird areas during sensitive timeframes, but would also provide a major deterrent to the entry of people, pets, and ORVs into habitats and greatly reduce the possibility of disturbance to species (including first time breeders) and habitat compared to alternatives A and B. Overall reduction of effects would be greater under alternative F than those under alternatives C and E due to the seasonal and year-round VFAs. The potential for disturbance would be minimized, in part, as breeding areas would not reopen to recreational use until after all chicks in an area have fledged, which could be after July 31 depending upon the species.

With the designated prenesting closures, VFAs, and associated buffers for breeding/nesting/fledging areas, impacts to state-listed/special status species as a result of the buffers and closures provided under alternative F would be long-term minor adverse.

*Wintering/Nonbreeding Management.* Nonbreeding surveys for American oystercatchers, Wilson's plover and red knots, would be conducted, although unlike the no-action alternatives, surveys for some colonial waterbirds would be included. These surveying activities would have minor impacts (due to human disturbance as discussed above) and long-term benefits related to the increase in knowledge about the species.

Under alternative F, an annual habitat assessment would be conducted after all of the birds have fledged from the area. Prior to removing prenesting closures, resource closures would be established in the most sensitive portions of nonbreeding shorebird habitat at the points and spits, based on habitat used by piping plovers in more than one (i.e., two or more) of the past five years. Other species would be able to take advantage of the closures that are based on piping plover behavior. No people or pets would be permitted in these closures. Additional protection for nonbreeding birds, including Wilson's plover, American oystercatcher, red knots, and colonial waterbirds, would be provided by the year-round VFAs under alternative F that would provide a relatively less disturbed area for foraging, resting and roosting for migrating and wintering birds. These areas would be open to pedestrians for recreational use, and pets would be permitted under the provisions of 36 CFR 2.15, which applies to all units of the national park system and prohibits pet owners from "failing to crate, cage, restrain on a leash which shall not exceed 6 feet in length, or otherwise physically confine a pet at all times." These nonbreeding closures and VFAs would provide long-term benefits under alternative F, with these benefits being greater than alternatives C and E due to the additional year-round VFAs.

*Education and Outreach.* Under alternative F, the public would continue to receive information at the visitor centers about state-listed/special status species and their ecology and the measures the Seashore is taking to protect the species. In addition, the public would be provided education through the required ORV use permit and protected species information would be provided at all access points. As with alternative A, public outreach as part of species management would have long-term beneficial impacts, with the expanded outreach having greater impacts than alternative A.

*Overall Impact of Resources Management Activities.* The overall impact of resources management activities (primarily resulting from the effects of surveying and field activities) for each species under alternative F would be as follows:

- American oystercatcher. Implementation of prenesting closures, buffers for breeding/nesting, and year-round and seasonal VFAs would provide a proactive resource closure early in the breeding season. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to the species, greater than those provided under alternative B.
- Colonial waterbirds. Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.
- Wilson's plover. Impacts to Wilson's plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.
- Red knot. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying

and field activities would be long-term negligible adverse. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of year-round VFAs, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.

### **ORV and Other Recreational Use**

*ORV and Pedestrian Access.* Under alternative F, approximately 28 miles of shoreline would be designated for ORVs use year-round; approximately 13 miles would be seasonally designated for ORV use from either November 1 through March 31 or September 15 through March 14; and approximately 26 miles would be designated as vehicle free year-round. The speed limit would be 15 mph unless otherwise posted and permits would be required for all ORVs. An ORV corridor would be maintained at Cape Point and South Point once prenesting closures are established, but would be reduced in size and would be subject to resource closures.

Management of ORV and pedestrian access under alternative F would reduce the potential of disturbance and nest abandonment from direct short-term contact with people and/or essential vehicles compared to alternatives A and B. Compared to alternatives C and E, it would also have less impacts because of the year-round and seasonal VFAs, and the reduced size of the ORV corridor, that is subject to resource closures, at Cape Point and South Point. Impacts would be greater under alternative F than alternative D, which has all SMAs closed to ORVs year-round and closed to pedestrian use during the breeding season, a greater area than the VFAs under alternative F. As described under all of other alternatives, all measures taken for species protection, including buffers and monitoring, should limit adverse impacts to state-listed/special status species; however, compliance with closures may not be absolute, resulting in short-term moderate to major adverse impacts if non-compliance occurs. However, for the most part, the populations would be remain functional and impacts limited to minor to moderate adverse due to the buffers in place from prenesting and resource closures, as well as the year-round or seasonal VFAs that provide areas with less disturbance.

Under alternative F, there would be seasonal closures in key red knot habitat, as well as more year-round VFAs, reducing the potential to impact resting and foraging red knots from vehicle use and associated noise and presence of people and pets, offering greater protection to this species than alternatives A, B, C, or E.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative F would allow for beach driving in the wrack during the day on ORV routes outside of designated VFAs and would maintain nighttime closures. These measures would reduce disturbance in these areas both seasonally and year-round. Overall impacts to invertebrates would be long-term and minor (as discussed later in this chapter), and would reduce the food source available to state-listed and special status species at the Seashore that rely on this food source, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

Overall, there would be long-term minor to moderate adverse impacts to nesting state-listed/special status species, and long-term minor adverse impacts to red knot from ORV and pedestrian access under alternative F.

*Night-Driving Restrictions.* Under alternative F, all nonessential ORV traffic would be prohibited from all areas (other than the soundside), from 9:00 p.m. to 7:00 a.m. from May 1 to November 15. From September 16 to November 15, ORV routes with no turtle nests remaining would reopen for night driving subject to the terms and conditions of the standard ORV permit. From November 16 to April 30, ORV

use would be allowed 24 hours per day in designated ORV routes for vehicles with a valid ORV permit. Furthermore, the NPS retains the discretion to limit night driving to certain areas or routes, based on resource protection considerations. Because some species are known to be active at night (Staine and Burger 1994; Majka and Shaffer 2008), and chick and fledgling response to vehicles can increase their vulnerability to ORVs (USFWS 1996a), the high level of protection at night from May 1 to November 15 under alternative F would result in long-term beneficial impacts because it would reduce the potential for disturbance to birds that could result in mortality. Beneficial impacts under alternative F would be greater than those under alternatives B or E, due to the restrictions beginning at 9:00 p.m. instead of 10:00 p.m.

*Authorized Commercial Vehicles.* Management of commercial fishing vehicles would be the same as under alternative A. Commercial fishermen would not be required to obtain an ORV permit, and commercial fishing vehicles would be authorized to enter VFAs except for resource closures and lifeguarded beaches. These management measures would result in long-term negligible adverse impacts from the presence of commercial fishing vehicles, with long-term minor to moderate benefits from night-driving restrictions.

*Permits/Carrying Capacity.* Alternative F would require a permit for ORV use, including night driving. As stated in these sections, the educational information provided by the required permit would result in benefits to state-listed/sensitive species as ORV users would be more aware of the regulations in place to protect these species, which would likely result in a higher level of compliance. There would be no impacts related to carrying capacity as ORV use would not be permitted within resource protection areas.

*Pets/Other Recreational Activity Restrictions.* Pets would be permitted throughout the Seashore in accordance with 36 CFR 2.15, which applies to all units of the national park system and prohibits pet owners from “failing to crate, cage, restrain on a leash which shall not exceed 6 feet in length, or otherwise physically confine a pet at all times.” In addition pets would be prohibited within resource closures and in areas of pedestrian shoreline access in areas in front of (i.e., seaward of) bird prenesting closures. These regulations would reduce the likelihood of pet disturbance in state-listed/special status species breeding areas; however, compliance is needed to ensure that this reduces the risk of impacts. Camping restrictions would be the same as those under alternative C. For beach fires, a non-fee educational permit would be required (the same as alternative C) and fires would be prohibited from 10:00 p.m. to 6:00 a.m. year-round. In addition, from May 1 to November 15 beach fires would be permitted only in front of Coquina Beach, Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras Village, and Ocracoke day use area. These additional restrictions during breeding season would result in long-term beneficial impacts to species at the Seashore as recreational pressures to state-listed/special status species would be further reduced.

*Overall Impact of ORV and Other Recreational Use.* The overall impact of ORV and other recreational use for each species under alternative F would be as follows:

- American oystercatcher. Implementation of a permit system with an educational component, larger buffer sizes, seasonal night-driving restrictions, prohibition of pets in the shoreline access seaward of prenesting closures, and establishment of year-round and seasonal VFAs would benefit the American oystercatcher. Establishment of prenesting closures and VFAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative F does provide for management similar to ML2 procedures, which provide for some level of pedestrian or ORV access throughout the Seashore, which introduces the potential for impacts to the species. As there would be some protection measures in place, but recreational use could still have impacts to the species, impacts to American oystercatchers would be long-term minor to moderate adverse.

- Colonial waterbirds. Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as American oystercatchers under this alternative.
- Wilson's plover. Impacts to Wilson's plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.
- Red knot. Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the nonbreeding closures and year-round VFAs provided under alternative F.

**Cumulative Impacts.** Cumulative actions and their associated impacts under alternative F would be the same as those described under alternatives A, B, C, D, and E (long-term minor to moderate adverse). Although alternative F provides additional protection that would be beneficial to state-listed / special status bird species, the adverse effects on birds from other actions occurring in the region would still exist. The cumulative impact of these past, current, and reasonably foreseeable future actions would be minor to moderate adverse. These impacts, when combined with the long-term beneficial and long-term minor to moderate adverse impacts of alternative F, would have long-term minor to moderate adverse cumulative impacts.

**Conclusion.** Overall, impacts to state-listed/special status species under alternative F would be as follows:

- American oystercatcher. Establishment of prenesting closures and larger, pre-set buffers, as well as the designation of year-round and seasonal VFAs, would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts from human disturbance during field activities, resources management activities on the whole would provide information and result in actions that would be beneficial to the species. Implementation of prenesting closures that provide a proactive resource closure early in the breeding season, a permit system with an educational component, seasonal night-driving restrictions, as well as larger buffer sizes and earlier prenesting closures, would provide long-term beneficial impacts to the American oystercatcher, greater than those under alternative B. Prohibition of pets in the shoreline access seaward of prenesting closures and establishment of nonbreeding closures would benefit the American oystercatcher. Alternative F manages the Seashore using similar buffers to the ML2 procedures (alternatives C, D, and E), which provide for pedestrian or ORV access into these areas and introduces the potential for impacts to the species. Although there would be some protection measures in place, recreational disturbance could result in long-term minor to moderate adverse impacts to American oystercatchers.
- Colonial waterbirds. Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers. Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as American oystercatcher under this alternative.
- Wilson's plover. Impacts to Wilson's plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover. Impacts to Wilson's plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to utilize closures for piping plover, in



addition to closures/buffers specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.

- Red knot. Many of the surveying and field activities would occur outside of the primary time when red knot are present at the Seashore. Therefore, any impacts to this species from surveying and field activities would be long-term negligible adverse. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of year-round VFAs, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B. Impacts to red knot from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures (from VFAs and wintering piping plover closures) provided under alternative F that offer this wintering species further protection.

Cumulative impacts under alternative F would be long-term minor to moderate adverse.

**TABLE 55. SUMMARY OF IMPACTS TO STATE-LISTED AND SPECIAL STATUS SPECIES UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
American Oystercatcher – Resources Management Activities					
<p>Impacts would be long-term minor to moderate adverse as surveying and lack of specific prenesting closures for this species may miss early nesters. Piping plover prenesting closures, which could be utilized by this species as well, would not protect a number of American oystercatcher nest sites used in recent years. Also, buffer distances based on bird behavior may not provide adequate protection for the species.</p>	<p>Establishment of piping plover prenesting closures earlier in the season that could be used by oystercatchers and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information and result in actions that would be beneficial to the species.</p>	<p>Implementation of 10 SMAs that are closed to ORVs during the breeding season would provide a proactive resource closure early in the breeding season. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, on the whole, resources management activities would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to the American oystercatcher, greater than those provided under alternative B.</p>	<p>Establishment of 10 SMAs that are closed to ORVs year-round and all managed under ML1 procedures during the breeding season would provide long-term benefits to breeding and wintering American oystercatchers, greater than those under alternative C. Additional benefits would be provided from surveying and closures outside of these established SMAs, as well as from the education and outreach provided. These surveying and field activities would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to this species, greater than those provided under alternative B.</p>	<p>Implementation of 10 SMAs, 7 of which are closed to ORVs during the breeding season, would provide a proactive resource closure early in the breeding season. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts from human disturbance during field activities, resources management activities on the whole would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to this species, greater than those provided under alternative B.</p>	<p>Implementation of prenesting closures would provide a proactive resource closure early in the breeding season. Seasonal and year-round VFAs that total 39 miles of Seashore would provide additional areas of the Seashore with less disturbance for shorebirds. Establishment of prenesting closures earlier in the season and establishment of larger, pre-set buffers would result in long-term beneficial impacts to American oystercatchers. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information that would enable the implementation of adaptive management initiatives and contribute to better management. These activities would result in long-term beneficial impacts to the species, greater than those provided under alternative B.</p>

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
American Oystercatcher – ORV And Other Recreational Use					
<p>Impacts would be long-term moderate to major adverse as buffers that adjust frequently based on bird behavior are more subject to non-compliance. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets at the Seashore during breeding season would contribute to these adverse impacts.</p>	<p>Establishment of prenesting closures for piping plover earlier in the season, implementation of larger, more immediate buffers, longer lasting closures for American oystercatchers once breeding behavior occurs, and night-driving restrictions would benefit the American oystercatcher. However, recreational use, with no carrying capacity, would still occur in the vicinity of this species and the established buffers may not be large enough to afford adequate protection. Because the birds would not be under constant observation, disturbance may go undetected and implementation of adequate buffers may be delayed in some nesting locations. Compliance with closures may not be absolute, resulting in minor to moderate adverse impacts if non-compliance occurs. Further adverse impacts would result from allowing pets in the Seashore during breeding season, resulting in the possibility of non-compliance with these regulations. Because of these</p>	<p>Implementation of a permit system with an educational component, larger buffer sizes, seasonal night-driving restrictions, establishment of breeding and nonbreeding SMAs, and not allowing pets in SMAs would benefit the American oystercatcher. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative C does manage three SMAs under ML2 procedures, which provide for some level of pedestrian access into these areas and introduces the potential for impacts to the species. Although there would be some protection measures in place, ORV and other recreational use could still have impacts to the species, resulting in long-term minor to moderate adverse impacts to American oystercatchers.</p>	<p>Providing large SMAs that are closed year-round to ORVs and closed to pedestrians during the breeding season would provide large undisturbed areas for both breeding and nonbreeding oystercatchers. Further benefits would be provided by seasonal night-driving restrictions, the establishment of a permit system with an educational component, and prohibition of pets in SMAs year-round. With these measures in place, impacts to American oystercatchers from ORV and other recreational use would be long-term minor adverse, as the chance of disturbance still exists, but would be lower than that under the other alternatives evaluated.</p>	<p>Implementation of a permit system with an educational component, larger buffer sizes, seasonal night-driving restrictions, restrictions on pets in SMAs, and establishment of breeding and nonbreeding SMAs would benefit the American oystercatcher. SMAs would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species. However, alternative E does allow an ORV access corridor at three SMAs managed under ML2 procedures during the breeding season (more than the other action alternatives), which provide for some level of pedestrian or ORV access into these area, which introduces the potential for impacts to the species. Although there would be some protection measures in place, recreational use could still result in long-term minor to moderate adverse impacts to American oystercatchers.</p>	<p>Implementation of a permit system with an educational component, prenesting closures, seasonal night-driving restrictions, allowing pets under the regulations of 36 CFR 2.15 with the additional prohibition of pets in resource closures and in pedestrian shoreline access areas in front of (i.e., seaward of) bird prenesting closures and establishment of seasonal and year-round VFAs that total 39 miles of Seashore would benefit the American oystercatcher. Prenesting closures would provide a proactive method of limiting recreational uses early in the breeding season, and limit the potential for impacts to state-listed/special status species, with additional areas that are relatively less disturbed provided by prenesting closures. However, alternative F does manage all areas of the Seashore to allow for ORV and/or pedestrian access, which introduces the potential for impacts to the species. As there would be some protection</p>

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
	factors, impacts to American oystercatchers from ORV use and other recreational activities would be long-term moderate adverse.				measures in place, but recreational use could still have impacts to the species, impacts to American oystercatchers would be long-term minor to moderate adverse.
Colonial Waterbirds – Resources Management Activities					
Impacts would be long-term minor to moderate adverse as no prenesting closures would be established for colonial waterbirds. Some species, such as terns and black skimmers may be able to utilize the prenesting closures established for piping plovers; however, those prenesting areas would not protect a number of colonial waterbird nest sites used in recent years. Also, buffer distances based on bird behavior may not provide adequate protection for the species.	Establishment of piping plover prenesting closures earlier in the season that would be used by some colonial waterbird species and establishment of larger, pre-set buffers would result in long-term beneficial impacts to colonial waterbirds. While there would still be minor adverse impacts related to human disturbance during field activities, resources management activities on the whole would provide information and result in actions that would be beneficial to the species.	Impacts to colonial waterbirds from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.	Impacts to colonial waterbirds from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.	Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.	Impacts to colonial waterbirds from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers.
Colonial Waterbirds – ORV And Other Recreational Use					
Impacts would be long-term moderate to major adverse as buffers may not be adequate to protect the species, and disturbance from recreational uses is more likely. The lack of designated VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions,	Impacts to colonial waterbirds from ORV and other recreational use would be long-term moderate adverse, for the same reasons as American oystercatchers under this alternative.	Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as American oystercatchers under this alternative.	Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor adverse, for the same reasons as American oystercatchers under this alternative.	Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as those discussed above for American oystercatchers under this alternative.	Impacts to colonial waterbirds from ORV and other recreational use would be long-term minor to moderate adverse, for the same reasons as American oystercatchers under this alternative.

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
and allowing pets in the vicinity of breeding birds would also contribute to adverse impacts.					
Wilson's Plover – Resources Management Activities					
Impacts would be long-term minor adverse as the habitat for this species would be well surveyed during piping plover surveys and this species would be able to take advantage of management measures for piping plover as their breeding seasons and habitat requirements are similar. Also, buffer distances based on bird behavior may not provide adequate protection for the species. Some benefits may occur from incidental management of Wilson's plover during piping plover management activities, both during breeding and nonbreeding seasons.	Establishment of piping plover prenesting closures earlier in the season that could be used by other species and establishment of larger, pre-set buffers for piping plover, used by Wilson's plover, would result in long-term beneficial impacts to Wilson's plover. While there would still be minor adverse impact related to human disturbance during field activities, species surveying and field activities on the whole would provide information and result in actions that would be beneficial to the species.	Impacts to Wilson's plover from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.	Impacts to Wilson's plover from surveying and field activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.	Impacts to Wilson's plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.	Impacts to Wilson's plover from resources management activities would be long-term beneficial, for the same reasons as discussed above for American oystercatchers, with slightly greater benefits as this species would also benefit from the management measures applied to piping plover.
Wilson's Plover – ORV And Other Recreational Use					
Impacts would be long-term moderate to major adverse as no specific management would be provided for this species, although they could utilize buffers and closures established for piping plover. The lack of designated	Impacts to Wilson's plover from ORV and other recreational use would be long-term minor to moderate adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to	Impacts to Wilson's plover from ORV and other recreational use would be long-term minor adverse, less than those under alternative A and B. Although this species would face the same adverse impacts as American oystercatchers and	Impacts to Wilson's plover from ORV and other recreational use would be long-term negligible to minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to	Impacts to Wilson's plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to	Impacts to Wilson's plover from ORV and other recreational use would be long-term minor adverse. Although this species would face the same adverse impacts as American oystercatchers and colonial waterbirds, it also tends to

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
VFAs, a permitting system, carrying capacity, or seasonal night-driving restrictions, and allowing pets at the Seashore during breeding season would contribute to these adverse impacts.	utilize closures for piping plover and would therefore be provided slightly more protection than other state-listed/special status species.	colonial waterbirds, it also tends to utilize the closures for piping plover, in addition to the specific buffers/closures provided for the species, and would therefore be provided slightly more protection than other state-listed/special status species.	utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.	utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.	utilize closures for piping plover, in addition to the buffers/closures provided specifically for this species, and would therefore be provided slightly more protection than other state-listed/special status species.
<b>Red Knot – Resources Management Activities</b>					
Many of the surveying and field activities for other species would occur outside of the primary time when the red knot is a resident at the Seashore. Therefore, any impacts to this species from surveying and field activities for other species would be long-term negligible adverse.					
Impacts to nonbreeding red knot would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures, although the ability of this species to use wintering closures for piping plover at inlets and Cape Point would result in some benefit.	The red knot would benefit from extended breeding season closures for other species and from wintering closures for piping plover at the inlets and Cape Point. Impacts to nonbreeding red knot would be long-term minor adverse as their prime foraging habitat (ocean shoreline) would not be afforded protection by nonbreeding closures.	Nonbreeding shorebird SMAs and the establishment of VFAs along the ocean shoreline would result in beneficial impacts to nonbreeding red knots. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, some of which are closed to ORVs year-round, would be beneficial to those red knot that happen to use those areas, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.	Nonbreeding shorebird SMAs and the establishment of VFAs along the ocean shoreline would result in beneficial impacts to nonbreeding red knots. However, the ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, all of which are closed to ORVs year-round would result in long-term beneficial impacts to red knot when compared to all other alternatives.	The ability of this species to use wintering closures that have been established for piping plover as well as the establishment of SMAs, some of which are closed year-round, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.	The ability of this species to use wintering closures that have been established for piping plover as well as the establishment of year-round and seasonal VFAs over 39 miles of the Seashore (of which 26 miles would be year-round and provide protection of non-breeding habitat, would be beneficial, and overall result in long-term beneficial impacts to the species when compared to alternatives A and B.
<b>Red Knot – ORV And Other Recreational Use</b>					
Impacts would be long-term moderate adverse as no specific management	Impacts to red knots from ORV and other recreational use would be long-term	Impacts to red knot from ORV and other recreational use would be long-term minor adverse	Impacts to red knot from recreation and other activities would be long-term negligible to minor	Impacts to red knot from ORV and other recreational use would be long-term minor adverse	Impacts to red knot from ORV and other recreational use would be long-term minor adverse

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
would be provided for this species especially during a key life stage of wintering. The lack of designated VFAs, a permitting system, or night-driving restrictions when red knots are at the Seashore, and allowing pets at the Seashore during the migrating/nonbreeding season would contribute to these adverse impacts. Impacts to red knots would be lower than other species as they would not be subject to impacts during their breeding cycle and their use of the Seashore corresponds to times of lower visitation.	moderate adverse as no specific management would be provided for this species especially during a key life stage of wintering. Although this species may benefit from longer lasting breeding season closures for other species and from winter closures established for piping plovers, the lack of designated VFAs, a year-round permitting system, no night-driving restrictions when red knots are at the Seashore, and allowing pets at the Seashore during the migrating / nonbreeding season would contribute to these adverse impacts.	due to the additional nonbreeding closures provided under alternative C that offer this wintering species further protection.	adverse due to the additional nonbreeding closures provided under alternative D that offer this wintering species further protection as well as the large year-round SMAs that would offer further protection during red knot wintering.	due to the additional nonbreeding closures provided under alternative E that offer this wintering species further protection; however, there would be greater adverse impacts than under alternatives D or F due to fewer miles of shoreline being closed to ORVs under alternative E during the nonbreeding season.	due to the wintering closures established for piping plover, as well as the 26 miles of year-round VFAs that provide less disturbed non-breeding habitat.

## WILDLIFE AND WILDLIFE HABITAT

### GUIDING REGULATIONS AND POLICIES

The Seashore’s Resource Management Plan (NPS 1997) identifies the following natural resource-related goals to provide direction for future management of the Seashore:

- Identify visitor uses and impacts to establish appropriate management policies that would meet the needs of the Seashore visitor while providing for the preservation and protection of the resources unimpaired for future generations.
- Continue to provide rigorous enforcement, research, environmental surveying, and applied resource management in accordance with available funding and direction.
- Continue to closely monitor and regulate recreational use in accordance with environmental, ecological, and preservation considerations.

Service-wide NPS regulations and policies, including the NPS *Organic Act of 1916*, NPS *Management Policies 2006* (NPS 2006c), and the NPS Natural Resource Management Reference Manual 77, also direct national parks to provide for the protection of Seashore resources. The *Organic Act* directs national parks to conserve wildlife unimpaired for future generations and is interpreted to mean that native animal life is to be protected and perpetuated as part of a park unit’s natural ecosystem. Parks rely on natural

processes to control populations of native species to the greatest extent possible; otherwise, they are protected from harvest, harassment, or harm by human activities.

The NPS *Management Policies 2006* state that the NPS “will maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems. The term “plants and animals” refers to all five of the commonly recognized kingdoms of living things and includes such groups as flowering plants, ferns, mosses, lichens, algae, fungi, bacteria, mammals, birds, reptiles, amphibians, fishes, insects, worms, crustaceans, and microscopic plants or animals.” The NPS will achieve this by:

- preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur;
- restoring native plant and animal populations in parks when they have been extirpated by past human-caused actions; and
- minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them (NPS 2006c).

Section 4.1 of NPS *Management Policies 2006* states that “natural resources will be managed to preserve fundamental physical and biological processes, as well as individual species, features, and plant and animal communities. The Service will not attempt to solely preserve individual species (except threatened or endangered species) or individual natural processes; rather, it will try to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and genetic and ecological integrity of the plant and animal species native to those ecosystems” (NPS 2006c). According to Section 8.2.2.1 of the NPS *Management Policies 2006*, “Superintendents will develop and implement visitor use management plans and take action, as appropriate, to ensure that recreational uses and activities in the park are consistent with its authorizing legislation or proclamation and do not cause unacceptable impacts on park resources or values” (NPS 2006c).

Seashore wildlife has evolved in a barrier island ecosystem, which is dependent on the continuation of natural shoreline processes. Barrier islands are highly dynamic with changes in sea level, wave and wind action, and ocean currents continuously creating and altering habitat for wildlife through the processes of erosion and accretion of shorelines and sand dunes; overwash across the islands; and the formation, migration, and closure of inlets. To protect coastal barrier processes, the NPS *Management Policies 2006* direct that natural shoreline processes such as erosion, deposition, dune formation, overwash, inlet formation, and shoreline migration will be allowed to continue without interference (NPS 2006c, sec. 4.8.1.1). The policies further state, “[w]here human activities or structures have altered the nature or rate of natural shoreline processes, the Service will, in consultation with appropriate state and federal agencies, investigate alternatives for mitigating the effects of such activities or structures and for restoring natural conditions.”

## **ASSUMPTIONS, METHODOLOGY, AND IMPACT THRESHOLDS**

The following describes the methodology used to evaluate the impacts of the proposed alternatives on general wildlife at the Seashore. This discussion focuses on those species that may potentially be impacted by the actions described in the proposed alternatives and is, therefore, directed toward specific wildlife, including invertebrates and “other” bird species (those not state or federally protected or species of special concern). The analysis is organized according to those two wildlife types. Although a number of studies have investigated ORV impacts on invertebrates found on sandy beaches, the studies have focused on a relatively small number of species, and only a few of the studies have occurred on southeastern U.S. beaches that would have similar species to the beaches of Cape Hatteras National



Seashore. There have also not been any comprehensive studies within the Seashore to determine the species composition and abundance of invertebrates within the bird foraging habitat. As a result, sufficient information is not available to provide a site-specific assessment of impacts of ORVs on all of the invertebrate species inhabiting the wrack, intertidal sand flats, island spits, and the high energy intertidal zone at the Seashore. Therefore, impacts to invertebrates are discussed in general terms, based on existing studies and, where possible, impacts on species specific to the Seashore are discussed.

Potential impacts on other bird species and their associated habitat focused on shorebirds that would likely be using the same habitats as the protected species addressed in this plan/EIS. Information about habitat and other existing data were acquired from staff at the Seashore, the USFWS, and available literature (see the Literature Review in appendix A). A comprehensive list of other bird species can be found in “Chapter 3: Affected Environment.”

For each alternative, potential impacts on wildlife and wildlife habitat were evaluated based on the pattern of proposed ORV use at the Seashore, resulting from what areas are open to ORV and other recreational uses and for what duration, the nature of habitats and species present, and the nature of coastal barrier processes that create and alter habitat. Primary steps in assessing impacts on wildlife and wildlife habitat were to determine (1) the potential for species to occur in habitats likely to be affected by management actions described in the alternatives; (2) current and future use and distribution of ORVs by alternative; (3) habitat impact or alteration caused by the alternatives; and (4) disturbance potential of the action and the potential to directly or indirectly affect wildlife or wildlife habitat as a result of ORV activities. The information contained in this analysis was obtained through best professional judgment of the Seashore staff and experts in the field and by reviewing applicable scientific literature.

A summary of impacts to wildlife and wildlife habitat under all alternatives is provided in table 56 at the end of this section. The following thresholds for evaluating impacts to wildlife and wildlife habitat were defined.

*Negligible:* There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.

*Minor Adverse:* Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Occasional responses by some individuals to disturbance could be expected, but without interference to feeding, reproduction, resting, or other factors affecting population levels. Small changes to local population numbers, population structure, and other demographic factors might occur. However, some impacts might occur during critical reproduction periods for a species, but would not result in injury or mortality. Sufficient habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

*Moderate Adverse:* Impacts on native species, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses by some individuals to disturbance could be expected, with some negative impacts to feeding, reproduction, resting, or other factors affecting local population levels. Some impacts might occur during critical periods of reproduction or in key habitats in the Seashore and result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and habitat in the Seashore would remain functional to maintain a sustainable population in the Seashore.

*Major Adverse:* Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, would be expected to be outside the natural range of variability, and would be permanent. Frequent responses by some individuals to disturbance would be expected, with negative impacts to feeding, reproduction, or other factors resulting in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts would occur during critical periods of reproduction or in key habitats in the Seashore and result in direct mortality or loss of habitat. Local population numbers, population structure, and other demographic factors might experience large declines.

*Duration:* Short-term effects would be one to two breeding seasons for bird species and one to two years for all other native species.

Long-term would be anything beyond two breeding seasons for bird species or two years for all other native species.

## Study Area

The study area for assessment of the various alternatives is the Seashore boundary. The study area for the cumulative impacts analysis is the Seashore plus the adjacent lands outside of the Seashore boundaries on Bodie, Hatteras, and Ocracoke islands.

## Impacts Common to All Alternatives

**Impacts to Invertebrates—Resources Management Activities.** Under all alternatives, species surveying and management would occur for piping plover, sea turtles, and seabeach amaranth. These surveying activities may vary in duration between alternatives, but the use of ATVs/UTVs and, in some cases, ORVs to conduct certain surveying and management activities is a constant among alternatives.

Management activities that would have the greatest potential to impact invertebrates include the use of vehicles for surveying and management because of the potential for mortality of individual invertebrates caused by compaction under vehicle tires. Seashore staff would continue to use ATVs/UTVs and occasionally ORVs to conduct bird and turtle surveys and also to establish resource closures as required based on species behavior under all alternatives. Staff would avoid driving across the wrack, an area known to contain high number of invertebrates, and would only drive during nighttime hours when patrolling for law enforcement reasons, which would limit impacts to invertebrates in this area. Driving in the wrack would be limited because studies have shown that areas closed to ORV use have higher densities of invertebrates in these areas (Landry 2004; Kluft and Ginsberg 2009; Moss and McPhee 2006). Due to the limited amount of vehicle use by staff and the fact that such use would occur predominantly during the day, impacts to beach invertebrates from resources management activities would be long-term negligible adverse across all alternatives.

**Impacts to Other Bird Species—Resources Management Activities.** Under all alternatives, Seashore staff would perform surveys of recent breeding areas for protected species and would also continue to monitor breeding, nesting, and fledging activities throughout the breeding season. Although the time and duration of these surveys may vary between alternatives, common to all alternatives is that surveying and monitoring activities would bring staff and/or vehicles into contact with other bird species, increasing the potential for disturbance. However, the majority of these other bird species are not at the Seashore during their breeding cycle, which would reduce the impacts of disturbance from resources management staff

under all alternatives. Also, many of the surveying and field activities for protected species would occur outside of the primary time when other bird species are residents at the Seashore. Because resource protection staff would also take proper measures to minimize any disturbance to these species, surveying activities associated with all alternatives would only result in negligible adverse effects on other bird species.

Also common to all alternatives is the provision of prenesting habitat closures for protected species, species closures for breeding activities, and closure of nonbreeding wintering habitat. All alternatives include the establishment of prenesting closures for recent piping plover breeding areas, and nesting buffers and closures around established territories and nests of colonial waterbirds and American oystercatchers. The symbolic fencing would deter the entry of people, pets, and ORVs into these habitats. Although the size and location of these closures vary between the alternatives, these closures would be implemented under each alternative and would benefit birds other than the piping plover, American oystercatcher, and other protected species. Species that are not listed as state or federally protected or are not species of special concern would also benefit from the management measures for protected species under all of the alternatives. However, the majority of the other bird species would not be present at the Seashore to take advantage of prenesting closures established for piping plover or other breeding bird species. Therefore, the establishment of prenesting closures would only result in minimal benefits for other bird species.

Because these other bird species are at the Seashore during wintering and migration, they would be most affected by the wintering/nonbreeding management actions included in this plan/EIS. These impacts are discussed below under each specific alternative.

**Predation.** An indirect impact from ORV and recreational use is the attraction of mammalian and bird predators to the waste stream associated with recreational use (USFWS 1996a). Although the Seashore would enforce proper trash disposal and anti-wildlife feeding regulations, recreational use would continue to have indirect impacts on other bird species through the attraction of predators. These predators are a well-known factor in nest failure for piping plovers and all ground nesting birds within the Seashore. However, because the majority of these other bird species do not breed at the Seashore, they are not subject to predation pressures during this life cycle stage. However, under all alternatives, some adult migratory bird species could still be taken by predators, resulting in long-term negligible to minor adverse impacts to other bird species at the Seashore.

### **Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy**

Under alternative A, there would be no construction activities implemented and therefore no construction related impacts would occur to wildlife or wildlife habitat. Activities that could potentially impact wildlife and wildlife habitat under alternative A would be associated with species surveying and management, the continued recreational use of ORVs, and pedestrian activity.

#### **Impacts to Other Bird Species**

**Resources Management Activities.** No nonbreeding closures would be established for other bird species, although these species could utilize the nonbreeding closures for piping plover that would include suitable interior habitats at spits and at Cape Point year-round. Being able to utilize other species closures would have some long-term benefits, as some protection is offered during this sensitive life stage. However, these closures would not be specific to other bird species and would not include ocean beach habitat, resulting in long-term minor adverse impacts to other bird species.

**ORV and Other Recreational Use.** Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps). ORV and other recreational activities that occur in the months when other bird species are in residence on Seashore beaches have the potential to impact resting and foraging birds from vehicle use and associated noise and presence of people and pets. Of particular concern is when these disturbance factors result in birds being forced to fly while they are foraging, known as frequent escape flight. Frequent escape flights result in a reduction in time foraging and an increase in the time spent flying. Because foraging is replaced with flying, birds would not be able to add the body fat they need for migration, resulting in long-term minor to moderate adverse impacts.

Because this alternative would allow an unlimited number of vehicles and pedestrians to access most areas of the Seashore 24 hours a day, there is the potential for frequent disturbance to other bird species. Even though buffers would be established for protected species (which could be used by other bird species), it is likely that some birds could be disturbed by recreational or commercial fishing activities as vehicles disturbance can affect nonbreeding birds (Tarr 2008).

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative A would allow for beach driving during the day outside of resource closures, with no restrictions on night driving. This level of access would result in long-term minor to moderate impacts expected to invertebrate populations (as described below), and therefore would reduce the food source to other bird species at the Seashore, resulting in long-term moderate impacts.

Impacts to other bird species from ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for these species especially during wintering and migration, when most of these species are present at the Seashore. The lack of designated VFAs, a permitting system, or night-driving restrictions, and allowing pets at the Seashore during the migrating/nonbreeding season would contribute to these long-term moderate adverse impacts.

### **Impacts to Invertebrates**

**ORV and Other Recreational Use.** Under alternative A, ORV routes would include the all ocean and inlet shoreline and on the existing soundside routes (as described above under Other Bird Species) and would include the wrack, intertidal zone, or sand flats that would be open to ORV use unless closed by protected species closures. While the typical ORV use pattern within the Seashore is to drive on the upper beach, above the high tide line (Hardgrove pers. comm. 2005), when recreational vehicles reach their destination they may drive into the intertidal zone and Seashore. Access to commercial fishing grounds also involves operating vehicles in the intertidal zone to reach desired fishing destinations. Driving on the sands of the intertidal zone would likely have adverse impacts on invertebrates due to mortality of individual species caused by compaction under vehicle tires. Access to the intertidal zone often requires vehicles to cross over the wrack, which is normally deposited within the ORV corridor and is usually an area of high concentrations of invertebrates. Driving over the wrack would cause damage and dispersal to an important source of food and habitat for many beach invertebrates (Kluft and Ginsberg 2009; Stephenson 1999).

Impacts of night driving on ghost crab populations at the Seashore are also a concern under alternative A. Though the extent of the ghost crab populations within the Seashore has not been documented, Wolcott and Wolcott (1984) concluded that even 20–50 vehicles driving at night could impact ghost crab

populations, as demonstrated in their study at Cape Lookout National Seashore. As unlimited night driving would be allowed under alternative A, it can be expected that this level of traffic would have long-term minor to moderate adverse impacts on the ghost crab population.

In summary, the implementation of alternative A would result in long-term minor to moderate adverse impacts to invertebrate species primarily due to mortality arising from unlimited night driving in the intertidal and wrack areas.

**Cumulative Impacts.** Other past, present, and future planned actions within and the Seashore have the potential to impact invertebrates and other bird species. While the many different bird species considered in this section may arrive at the Seashore at different times (although not during breeding), in general the below actions would occur year-round and have the potential to impact many of the other bird species. Various dredging is occurring in the vicinity of the Seashore, such as the dredging of the federally authorized navigation channel at Oregon Inlet. These dredging activities fall under two categories: major dredging projects and maintenance activities. For the dredging of Oregon Inlet, major projects occur every four to five years, with sand being deposited in areas outside the Seashore, such as on Pea Island. While the actual dredging would impact benthic invertebrates within the channel, it would not directly impact invertebrates within the sandy beach habitat of the Seashore. However, during the dredging operations some heavy construction equipment may be used at the deposition site, which is typically Pea Island (USACE 2002; NPS 2007e, 2003e). Depending on the size and weight of the equipment and the timing and duration of the operations, there could be a short-term moderate adverse impact on some of the invertebrate species on Pea Island beaches due to crushing and compaction of the sand. However, given the total available spit habitat within the Seashore, the overall impact to the Seashore would be short-term minor to moderate adverse. The type and placement location of the dredged material, as well as the timing and frequency of placement, may also have adverse impacts on invertebrates in the study area. Deposition of dredged material has direct impacts to invertebrates in the area where the material is deposited, due to crushing under the weight of the material, changes in the sediment characteristics of the beach, and increases in turbidity. While populations of most beach invertebrates can recover fairly quickly from a single beach disposal event, annual sand placements could keep beach fauna in a long-term state of disturbance at reduced levels. Because the Pea Island population of ghost crabs is particularly sensitive to deposition of sand/dredge material, they would be adversely impacted within the beach disposal area (USFWS 2001). The effects of deposition of dredged materials would result in long-term moderate adverse impacts on invertebrates. Major or maintenance dredging can occur when many of these other bird species are using Seashore and could result in short-term minor adverse impacts due to disturbance. When major dredging projects do occur, it is common for bird habitat at the southern end of Bodie Island Spit to slough off into the channel for a number of months after the dredging operation, which could cause short-term minor to moderate adverse effects to habitat.

The Cape Lookout Interim Protected Species Management Plan/EA provides long-term moderate to major beneficial impacts to species at the neighboring Seashore through the management policies that it employs. However, even with these management measures in place, long-term negligible to minor adverse impacts would still occur to the species as recreational uses, including night driving, as noted in the Cape Lookout Interim Protected Species Management Plan/EA. The outcome of the Cape Lookout National Seashore ORV Management Plan/EIS would also have direct long-term impacts on bird populations within the Seashore, as well as within the state of North Carolina. Specifically, it would provide increased protection to more habitat in the area for all species of birds. However, whether the impact of the ORV plan would be moderate to major beneficial or adverse to other bird species would depend upon the management decisions that are made and ultimately implemented.

The replacement of the Herbert C. Bonner Bridge is likely to adversely affect invertebrates due to bridge piling placement, dredging, and deposition of dredged materials, which would result in similar impacts as

the annual Oregon Inlet dredging, although bridge construction would be a one-time event with only short-term effects on invertebrates. The new bridge could disturb or displace some other bird species, but could also provide some long-term benefits by allowing barrier island processes to occur more naturally than the existing bridge and provide for new habitat opportunities. To the extent that the new bridge would allow the natural formation of new habitats, such as overwash fans, new inlets, and low sloping beaches, it might provide additional suitable habitat for other bird species. In addition, the final EIS for the project lays out a plan for avoidance, minimization, and compensatory mitigation to ensure impacts to wildlife and wildlife habitats, including invertebrate and other bird species habitats, are minimized (FHWA 2007). The final bridge alignment could result in the closure of ramp 4 and the construction of a new ramp 3 and associated parking north of Oregon Inlet Campground. The new ramp and parking area would be constructed in proximity to NC-12, but could result in the displacement of some bird species due to loss of habitat in the area of disturbance. However, due to the relatively small size of the construction area, sufficient habitat would remain to maintain a sustainable population in the Seashore and impacts to birds due to direct habitat loss would be long-term negligible to minor adverse. Impacts to beach invertebrates would be long-term negligible adverse due to the relatively small construction area, the mobility of invertebrates, and the distance of the facilities from the high energy shoreline where concentrations of invertebrates are higher.

Commercial fishing has been allowed within the Seashore in the past and would continue to be allowed under alternative A. Commercial fish harvesting would have long-term negligible impacts on other bird species because these birds do not feed on any commercially important fish. However, other bird species feed on some of the same prey items of fish species that may be harvested and, as such, harvest of fish may mean greater prey encounters for these bird species. In this case, commercial fishing would have long-term negligible to minor adverse impact on other bird species. Potential impacts to invertebrates from commercial fishing would result from vehicles driving in the intertidal area and over the wrack, as discussed above under “ORV and Other Recreational Use.”

Several of the local and NPS past, current, and future planning efforts can also affect wildlife at the Seashore. For example, new development that has occurred in Dare and Hyde counties under their land use plans had increased the residential housing and related services in the areas within the Seashore. This land development within the Seashore, as well as throughout the counties, has reduced the amount of habitat available to species, resulting in adverse impacts. In addition to past actions, new development could result from the implementation of the County Land Use Development Plans for Dare and Hyde counties, including expected revisions to the Dare County Plan. The implementation of the land use plans and zoning ordinances for Dare and Hyde counties that address how development can occur in the counties could result in additional residential development and an increase in the local population. This could result in adverse impacts on invertebrates and other bird species by increasing the amount of ORV traffic on the beaches, as well as decreasing the amount of habitat available to these species due to increased development pressures in the counties. However, that lack of detail on expected local development patterns makes it extremely difficult to estimate impacts on invertebrates and other bird species under alternative A.

The overall cumulative impact of these past, current, and future actions on other bird species would be long-term minor adverse, and when combined with the long-term minor to moderate adverse impacts under alternative A, would result in long-term minor to moderate adverse impacts to other bird species in the area of analysis.

The overall cumulative impact of these past, current, and future actions on invertebrates would be long-term negligible to moderate adverse; and when combined with the long-term minor to moderate adverse impacts in alternative A, would be long-term minor to moderate adverse depending upon the individual species of invertebrate.

**Conclusion.** Impacts to other bird species from resources management activities would be long-term minor adverse as nonbreeding closures would not be species-specific and therefore would not protect important habitat areas such as the ocean shoreline. Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species, increasing the possibility of disturbance to the species from recreational use. The lack of designated VFAs, a permitting system, or night-driving restrictions during the time period when these species are present at the Seashore, and allowing ORVs, people and pets at the Seashore during the nonbreeding season in the vicinity of these species would contribute to adverse impacts.

Cumulative impacts to other bird species would be long-term minor to moderate adverse under alternative A.

Under alternative A, ORV and other recreational use would have negligible to moderate adverse impacts to invertebrate species within the Seashore due to habitat disturbance or direct mortality from vehicles either during species surveying and management or from recreational use, and alternative A has no areas closed to ORV use except for resource-related closures. The establishment of prenesting closures, resource closures, and buffers would result in long-term negligible adverse impacts on invertebrates due to vehicle use by resources management staff.

Cumulative impacts to invertebrates would be long-term minor to moderate adverse, depending on the species of invertebrate and level of disturbance.

## **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

### **Impacts to Other Bird Species**

**Resources Management Activities.** No nonbreeding closures would be established for other bird species, although these species could utilize the nonbreeding closures for piping plovers that would include suitable interior habitats at spits and at Cape Point year-round. Being able to utilize other species closures would have some long-term benefits, as some protection is offered during this sensitive life stage. However, these closures would not be specific to other bird species and would not include ocean beach habitat, resulting in long-term minor adverse impacts to other bird species.

**ORV and Other Recreational Use.** Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps). There would be no designated VFAs, although temporary closures would occur for resource protection and safety reasons, and seasonal closures would occur in front of the villages. Alternative B would provide for closures of piping plover prenesting areas, which may benefit other species, as well as closures based on observations of breeding behavior, foraging, and chick movements. Under the consent decree, for the benefit of all bird species, from March 15 to November 30, in all locations not in front of villages, outside of the prenesting areas, and open to ORV use, the NPS would provide an ORV-free zone in the ocean backshore at least 10 meters wide and running the length of the site, wherever backshore habitat exists, provided there is sufficient beach width to allow an ORV corridor at least 20 meters above the mean high tide line.

Under alternative B, as described under alternative A, there would be no year-round or seasonal closures specifically to protect habitat for other bird species. Recreational activities that occur in the months when other bird species are in residence on Seashore beaches have the potential to impact resting and foraging birds from vehicle use and associated noise and presence of people and pets. As described under

alternative A, of particular concern is when disturbance results in birds being forced to fly while they are foraging, which would result in long-term minor to moderate adverse impacts as birds would not be able to add the body fat they need for migration.

Under alternative B, all recreational ORV traffic would be prohibited in the ocean intertidal zone, ocean backshore, and dunes, from 10:00 p.m. until 6:00 a.m. between May 1 and September 15. However, from September 16 to November 15, night-driving permits would be available for authorized nonessential driving between the hours of 10:00 p.m. and 6:00 a.m. Restrictions on night driving under alternative B would provide long-term benefits to other bird species that forage at night; however, night driving could still result in long-term minor adverse impacts during the time when night driving is allowed by permit. Further, night-driving restrictions that begin after dark, in this case 10:00 p.m., would not provide full nighttime protection for night-foraging birds.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative B would allow for beach driving in the wrack during the day outside of resource closures and would maintain nighttime closures. Prohibiting driving in resource closures as well as the seasonal prohibition of night driving would reduce disturbance in these areas for a portion of the year. Overall impacts to invertebrates would be long-term and minor (as described below), and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

Impacts to other bird species from ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for these species, especially during wintering. Although other bird species may benefit from longer lasting breeding season closures for protected species and from wintering closures established for piping plovers, the lack of designated VFAs, a year-round permitting system, or night-driving restrictions when many other bird species are at the Seashore, and allowing pets at the Seashore during the migrating / nonbreeding season would contribute to these adverse impacts.

### **Impacts to Invertebrates**

**ORV and Other Recreational Use.** ORV and other recreational use under alternative B would be similar to alternative A, except for restrictions on night driving and increased resource protection buffer distances. Alternative B would also involve the designation of an “ORV-free zone” in the ocean backshore (except in front of villages) when there is sufficient beach width to permit a 65.6-foot (20-meter) wide ORV corridor along the shoreline. Under alternative B, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes (potentially open to ORV year-round), as described above under “Other Bird Species,” but driving between the hours of 10:00 p.m. and 6:00 a.m. would be prohibited from May 1 through September 15, and would require a permit from September 15 through November 15. However, commercial fishermen would be able to access the shoreline at 5:00 a.m. instead of 6:00 a.m., subject to certain restrictions per the June 2008 modification to the consent decree. As under alternative A, ORV use would be subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures. Recreational ORV use would be expected to continue at levels similar to alternative A, but there would be substantially less night driving on an annual basis due to the restrictions. Because night driving would be limited, and night is the time when ghost crab are most active, alternative B would likely have long-term minor adverse impacts on the ghost crab population because the amount of time that ORVs spend in ghost crab habitat would be limited. However, in those areas that require ORVs to frequently drive through the wrack due to insufficient beach width and/or protected species closures, both during day and nighttime, impacts to invertebrates within or near the wrack would be long-term minor adverse due to direct impacts



from invertebrates being crushed by vehicles. Due to the amount of areas that would be closed for protected species under alternative B, impacts to all invertebrate species would be lower under alternative B when compared to alternative A.

In summary, the implementation of alternative B would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative B would be identical to those under alternative A. These impacts, when combined with the long-term minor to moderate adverse impacts under alternative B, would result in long-term minor to moderate adverse cumulative impacts to other bird species.

These actions would have long-term negligible to moderate adverse impacts for invertebrate species. These impacts, when combined with the long-term minor adverse impacts to invertebrates in alternative B, would result in long-term minor to moderate adverse cumulative impacts depending upon the individual species of invertebrate.

**Conclusion.** Impacts to other bird species would be long-term minor adverse as nonbreeding closures would not be species-specific and therefore would not protect important habitat areas such as the ocean shoreline when many of these species are wintering or migrating. Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for these species, increasing the possibility of disturbance to the species from recreational use. The lack of designated VFAs, allowing night driving during the time period when other bird species are present at the Seashore, and allowing ORVs, people and pets at the Seashore during the nonbreeding season in the vicinity of these species would contribute to adverse impacts.

Cumulative impacts to other bird species would be long-term minor to moderate adverse under alternative B.

ORV and other recreational use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts would be reduced when compared to alternative A due to limitations on ORV use at night and within the larger resource protection closures under alternative B.

Cumulative impacts to invertebrates would be long-term minor to moderate adverse, depending on the species of invertebrate.

## **Impacts of Alternative C: Seasonal Management**

### **Impacts to Other Bird Species**

**Resources Management Activities.** Under alternative C, Nonbreeding Shorebird SMAs would be established for migrating/wintering shorebirds at various locations throughout the Seashore. Closures would be installed no later than when breeding season closures are removed at the same location(s). Pets would be prohibited within Nonbreeding Shorebird SMAs. Nonbreeding resource closures would be established at the points and spits based on habitat used by wintering piping plovers in more than one of the past five years, the presence of birds at the beginning of the migratory season, and suitable habitat types based on the results of the annual habitat assessment. In addition to nonbreeding resource closures, the NPS would establish VFAs along the ocean shoreline. This would ensure that adequate foraging, resting, and roosting areas would be provided for migratory and nonbreeding bird species compared to alternatives A and B, which do not have provisions to protect nonbreeding shorebirds. As many of these

species are not present at the Seashore for breeding, any impacts to other bird species from surveying and field activities for protected species would be long-term negligible adverse. Overall, resources management activities would result in long-term beneficial impacts for other bird species due to the establishment of large, Nonbreeding Shorebird SMAs.

**ORV and Other Recreational Use.** Alternative C would involve closing the spits, points, and other SMAs to vehicular access for seven months out of the year, although pedestrian access to the most popular recreation areas would still be possible via an access corridor. Species buffers under this alternative would be similar to those under alternative B, although they would be larger in areas where ML1 measures would apply. Under alternative C, other bird species would benefit from the lack of vehicles and reduced pedestrian presence at the SMAs between March 14 and October 15, although the beneficial impact would only apply to those species present at the Seashore during the seasonal closures. Because this alternative would require some level of resource education in order to receive an ORV permit, all species at the Seashore, including other bird species, would benefit from the increased level of resource stewardship that is associated with public awareness. Some additional recreational access would result from the establishment of the interdunal road between ramp 45 and ramp 49, but the roads would be closed during the prenesting period and provide additional habitat for non-listed species during that time. The interdunal road would provide access around Cape Point to new ramps 47 and 48, around sites typically used by other bird species at the Seashore. Use of the road should not result in measurable impacts to other bird species because they would either remain on the beach or within the forested wetlands in the interior of the island. An indirect impact from recreational use would be the attraction of mammalian and avian predators, as described under alternative A.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative C would allow for beach driving in the wrack during the day outside of SMAs, but would maintain nighttime closures and limit driving during the day where SMAs are established reducing disturbance in these areas. Overall impacts to invertebrates would be long-term and negligible to minor (as discussed below), and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

Closing approximately 27 miles of village beaches and SMAs to ORV use for seven months out of the year would result in fewer disturbances to other bird species that use the SMAs for foraging and would also reduce the waste stream and the local abundance of predators. There would continue to be disturbance to other bird species from vehicles and pedestrians, but it would be less than under the no-action alternatives due to the increased buffer distances, designation of some year-round VFAs, and seasonal closures of the SMAs under alternative C. As described under alternative A, of particular concern is when disturbance results in birds being forced to fly while they are foraging, which would result in adverse impacts as birds would not be able to add the body fat they need for migration. Impacts to other bird species from ORV and other recreational use under alternative C would be long-term minor adverse.

**Construction Activities.** Implementation of alternative C would involve the installation or replacement of six new ORV access ramps, construction of seven new or expanded parking areas, and the development of one new interdunal road from ramp 45 to ramp 49. Construction activities would result in the temporary displacement of some other bird species localized in the areas of proposed disturbance and would involve a loss of some marginal habitat near the parking areas. Impacts to other bird species would be short-term negligible to minor adverse because these short-term disturbance impacts and changes to these marginal areas of habitat would not be expected to be a factor in the continued existence of these species at the Seashore.

## Impacts to Invertebrates

**ORV and Other Recreational Use.** Alternative C would involve the designation of some year-round ORV routes, as well as some routes and areas that would be open to ORV use from October 15 to March 14, primarily for resource protection reasons. Although the spits, points, and other SMAs would be closed to vehicular access for seven months out of the year, pedestrian access to the most popular recreation areas would still be possible via a pedestrian access corridor. ORV and pedestrian access would continue to be subject to temporary resource closures and nonbreeding habitat restrictions. Species buffers under this alternative would be similar to those under alternative B, although they would be larger in areas designated for ML1 measures. Alternative C would prohibit ORVs on the beaches between 7:00 p.m. and 7:00 a.m. from May 1 through November 15. This alternative would involve a permit system with an educational requirement and the possibility of revocation in the event of a violation.

Closing approximately 27 miles of beach to ORV use for seven months out of the year and 13 miles year-round (40 miles total) would result in fewer disturbances to beach invertebrates that inhabit the SMAs. Limiting vehicles to daytime use for 6.5 months of the year would reduce the potential for impacts to nocturnal invertebrates, such as the ghost crab, throughout the Seashore. However, vehicle use would still result in the loss of individual invertebrates, but would not be measurable and would be well within natural fluctuations as the area where driving would be permitted would be limited. Therefore, impacts to invertebrates from ORV and other recreational use under alternative C would be long-term negligible to minor adverse.

**Construction Activities.** Implementation of alternative C would involve the construction (or replacement) of six ORV access ramps, seven new or expanded parking areas, and one new interdunal road, which would extend from ramp 45 to ramp 49. Because the majority of invertebrate species identified inhabit the area between the dunes and the ocean, away from where construction would take place, proposed construction activities under this alternative would result in short-term negligible adverse impacts to invertebrates due to temporary displacement during construction activities.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative C would be identical to those under alternative A. The overall cumulative impact of these past, current, and future actions on other bird species would be long-term minor adverse, and when combined with the long-term minor adverse impacts under alternative C, would result in long-term minor adverse cumulative impacts to other bird species in the area of analysis.

These cumulative actions would have long-term negligible to moderate adverse impacts to invertebrates. These impacts, when combined with the long-term negligible to minor adverse impacts under alternative C, would result in long-term minor adverse cumulative impacts to invertebrates.

**Conclusion.** The establishment of both breeding and nonbreeding SMAs, some of which are closed to ORVs year-round, would result in long-term beneficial impacts to other bird species when compared to alternatives A and B. Impacts from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative C that offer wintering species further protection.

Overall cumulative impacts to other bird species would be long-term minor adverse.

Impacts to invertebrates from species management and recreational activities under alternative C would be long-term negligible to minor adverse as there would still be recreational use in the wrack area, but these species would benefit from nighttime and other closures. Proposed construction activities under this

alternative would result in short-term negligible adverse impacts to invertebrates from disturbance during construction activities.

Overall cumulative impacts to invertebrate species would be long-term minor adverse.

## **Impacts of Alternative D: Increased Predictability and Simplified Management**

### **Impacts to Other Bird Species**

**Resources Management Activities.** Under alternative D, as described under alternative C, Nonbreeding Shorebird SMAs would be established for migrating/wintering shorebirds at various locations throughout the Seashore. Closures would be installed no later than when breeding season closures are removed at the same location(s). Pets would be prohibited within Nonbreeding Shorebird SMAs, although non-conflicting, nonmotorized recreational uses would be allowed. Nonbreeding resource closures would be established at the points and spits. In addition to nonbreeding resource closures, the NPS would establish VFAs along the ocean shoreline. This would ensure that adequate foraging, resting, and roosting areas would be provided for migratory and nonbreeding species. As many of these species are not present at the Seashore for breeding, any impacts to other birds from surveying and field activities for protected species would be long-term negligible adverse. Overall, resources management activities would result in long-term beneficial impacts, which would be greater than those under alternative C due to the larger amount of year-round ORV closures under this alternative.

**ORV and Other Recreational Use.** Under alternative D, all areas that have historically supported sensitive species would be closed to ORV use year-round. Approximately 40 of the 67 miles of Seashore beaches would not be accessible for vehicular use. All 10 of the SMAs would be managed using ML1 measures, which would involve larger, longer lasting species buffers with no pedestrian or ORV access corridors provided. ORV and pedestrian access would continue to be subject to temporary resource closures in the 27 miles of beach outside of the SMAs, in addition restrictions in nonbreeding habitat areas. Alternative D would prohibit ORVs on the beaches between 7:00 p.m. and 7:00 a.m. from May 1 through November 15. An indirect impact from recreational use would be the attraction of mammalian and avian predators, as described under alternative A, although the reduction in beach mileage open to ORV use under alternative D would reduce these indirect impacts. Because this alternative would require some level of resource education in order to receive an ORV permit, all species at the Seashore, including other bird species, should benefit from the increased level of resource stewardship that is associated with public awareness.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative D would allow for beach driving in the wrack during the day in SMAs year-round and would maintain nighttime closures reducing disturbance in this area at night for a portion of the year. Compared to other alternatives, this alternative would also limit daytime ORV use in more areas of the Seashore due to the year-round SMAs. Overall impact to invertebrates would be long-term and negligible (as described below), and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving or greater access during the day was permitted, resulting in long-term negligible impacts.

Closing approximately 40 miles of beach to ORV use year-round would result in fewer disturbances to other bird species that use the SMAs for foraging and a reduction in the waste stream and the local abundance of predators. There would continue to be disturbance to other bird species from vehicles and pedestrians, but there would be the lowest potential for disturbance under alternative D due to the increased buffer distances, limitation on the amount of beach available to ORVs and pedestrians, and

provision of large, disturbance-free areas. As described under alternative A, of particular concern is when disturbance results in birds being forced to fly while they are foraging, which would result in adverse impacts as birds would not be able to add the body fat they need for migration. Therefore, impacts to other bird species from ORV and other recreational use under alternative D would be long-term negligible to minor adverse.

**Construction Activities.** Alternative D would require the least amount of construction of the action alternatives. This alternative would involve the construction (or replacement) of four ORV access ramps. Construction activities would result in the temporary displacement of some other bird species localized in the areas of proposed disturbance and would involve a loss of a small amount of marginal habitat. Construction impacts to other bird species would be short-term negligible adverse because these changes would not result in measurable impacts to other bird species populations.

### **Impacts to Invertebrates**

**ORV and Other Recreational Use.** Under alternative D, all areas that have historically supported sensitive species would be closed to ORV use year-round. Approximately 40 of the 67 miles of Seashore beaches would not be accessible for vehicular use. All 10 of the SMAs would be managed using ML1 measures during the breeding season, which would involve larger, longer lasting species buffers with no pedestrian or ORV access corridors provided. ORV and pedestrian access would continue to be subject to temporary resource closures in the 27 miles of beach outside of the SMAs, in addition restrictions in nonbreeding habitat areas. Alternative D would prohibit ORVs on the beaches between 7:00 p.m. and 7:00 a.m. from May 1 through November 15.

Closing approximately 40 miles of beach to ORV use year-round would result in fewer disturbances to beach invertebrates that inhabit those beaches. Limiting vehicles to daytime use for 6.5 months of the year in the areas where ORV use is permitted would reduce the potential for impacts to nocturnal invertebrates throughout the Seashore. Under alternative D, the potential for impacts to invertebrates would be the lowest among all the alternatives. However, ORV use would still result in the loss of individual invertebrates, but would not be measurable and would be well within natural fluctuations. Therefore, impacts to invertebrates from ORV and other recreational use under alternative D would be long-term negligible adverse.

**Construction Activities.** As with alternative C, all construction under alternative D would occur outside areas of invertebrate habitat, and therefore this alternative would result in short-term negligible adverse impacts to invertebrates due to temporary displacement during construction activities, but no long-term loss of invertebrate habitat would occur.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative D would be identical to those under alternative A. Cumulative actions under alternative D would have long-term minor adverse impacts to other bird species. These impacts, when combined with the long-term negligible to minor adverse impacts of recreational use and the beneficial impacts from resources management activities, would result in long-term negligible to minor adverse cumulative impacts to other bird species.

Past, present, and reasonable foreseeable future actions would have long-term negligible to moderate adverse impacts on invertebrates. These impacts, when combined with the long-term negligible adverse impacts of alternative D, would result in long-term negligible to minor adverse cumulative impacts, depending upon the individual species of invertebrate.

**Conclusion.** The establishment of SMAs, which would be closed to ORVs year-round, would result in long-term beneficial impacts to other bird species. Beneficial impacts would be greater than those under alternative C due to the larger amount of mileage closed to ORV use year-round. ORV and other recreational use would result in long-term negligible to minor adverse impacts to other bird species due to the amount of beach closed to ORV use and the additional nonbreeding closures that offer wintering species further protection.

Overall cumulative impacts to other bird species would be long-term negligible to minor adverse in the area of analysis.

Recreational ORV use would result in long-term negligible adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts to invertebrates would be reduced under this alternative due to the amount of beach closed to recreational use and night-driving restrictions. Short-term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.

Overall cumulative impacts to invertebrate species would be long-term negligible to minor adverse depending upon the individual species of invertebrate.

## **Impacts of Alternative E: Variable Access and Maximum Management**

### **Impacts to Other Bird Species**

**Resources Management Activities.** Under alternative E, as described under alternatives C and D, nonbreeding shorebird SMAs would be established for migrating/wintering shorebirds at various locations throughout the Seashore. Closures would be installed no later than when breeding season closures are removed at the same location(s). Pets would be prohibited within Nonbreeding Shorebird SMAs. Nonbreeding resource closures would be established at the points and spits based on habitat used by wintering piping plovers in more than one of the past five years, the presence of birds at the beginning of the migratory season, and suitable habitat types based on the results of the annual habitat assessment. In addition to nonbreeding resource closures, the NPS would establish VFAs along the ocean shoreline. This would ensure that adequate foraging, resting, and roosting areas would be provided for migratory and nonbreeding bird species compared to alternatives A and B, which do not have provisions to protect nonbreeding shorebirds. As many of these species are not present at the Seashore for breeding, any impacts to other bird species from surveying and field activities for protected species would be long-term negligible adverse. Overall, management of species during nonbreeding would result in long-term, beneficial impacts.

**ORV and Other Recreational Use.** Alternative E provides an increased level of beach access for recreational purposes through strategies such as improving the interdunal road system, providing ORV access corridors to selected points and spits, allowing a park-and-stay option for ORVs at selected points and spits, and establishing a pedestrian trail near Oregon Inlet. Because this alternative would require some level of resource education in order to receive an ORV permit, all species at the Seashore, including other bird species, should benefit from the increased level of resource stewardship that is associated with public awareness. Some additional recreational access would result from the establishment of the interdunal road between ramp 45 and ramp 49, but portions of the beach would be closed during the prenesting period. The interdunal road would provide access around Cape Point to new ramps 47 and 48. Use of the road should not result in measurable impacts to other bird species because they would either remain on the beach or within the forested wetlands in the interior of the island. An indirect impact from recreational use would be the attraction of mammalian and avian predators, as described under alternative

A. Increased levels of pedestrian and ORV access would still result in the generation of waste, which would increase the potential for predation when compared to alternatives C and D.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative E would allow for beach driving in the wrack during the day outside of SMAs but would maintain nighttime closures and limit driving during the day where SMAs are established reducing disturbance in these areas. Overall impacts to invertebrates would be long-term and minor (as described below), and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

Closing approximately 20 miles of beach to ORV use for almost six months and 16 miles year-round (36 miles total) a year would reduce the potential for disturbances to other bird species that use these seasonally closed areas. However, this alternative would still allow access to some of these areas through an ORV access corridor or pedestrian trail. The relatively large protected species buffers would provide some mitigation from impacts of recreational disturbance, when compared to alternative A. As described under alternative A, of particular concern is when disturbance results in birds being forced to fly while they are foraging, which would result in adverse impacts as birds would not be able to add the body fat they need for migration. There would continue to be disturbance to other bird species from vehicles and pedestrians under alternatives E, and impacts would be long-term minor adverse.

**Construction Activities.** Implementation of alternative E would involve the construction (or replacement) of 7 new ORV access ramps, 14 new or expanded parking areas, 1 new interdunal road, and a pedestrian trail near Oregon Inlet. Construction activities would result in the temporary displacement of some other bird species localized in the areas of proposed disturbance and would involve a loss of some marginal habitat near the parking areas. Construction impacts to other bird species would be short-term negligible to minor adverse because they may be displaced during construction, but would not lose prime habitat.

### **Impacts to Invertebrates**

**ORV and Other Recreational Use.** Alternative E would provide increased flexibility in the areas of beach accessible for recreational purposes through strategies such as improving the interdunal road system, and allowing a park-and-stay option for ORVs at selected points and spits. Alternative E also contains a seasonal aspect, which would result in certain routes and areas being open to ORV use from September 1 through March 14 and some ORV access would be provided via a corridor, subject to resource closures, to Bodie Island Spit, Cape Point, and South Point from March 15 through August 31. Protected species buffers would follow the ML1 measures at most areas of the Seashore, with the exception of Bodie Island Spit, Cape Point, and South Point, where ML2 buffers would apply. From May 1 through September 15, the ocean intertidal zone, ocean backshore, and dunes would be closed to ORV use from 10:00 p.m. to 6:00 a.m. ORV and pedestrian access would be subject to temporary resource closures and nonbreeding habitat restrictions. Like the other action alternatives, alternative E would involve an ORV permit system with an educational requirement.

Closing approximately 20 miles of beach to ORV use for almost six months a year and 16 miles year-round (36 miles total) would reduce the potential for disturbances to beach invertebrates that inhabit these seasonally closed areas. However, this alternative would still allow access to some of these areas through an ORV access corridor. Limiting vehicles to daytime use for 6.5 months of the year would reduce the potential for impacts to nocturnal invertebrates throughout the Seashore, although vehicles would still be allowed on beaches until 10:00 p.m. under this alternative, and some limited overnight use would be

allowed with the park-and-stay option. Vehicle use would result in the loss of individual invertebrates, but would be well within natural fluctuations. Therefore, impacts to invertebrates from ORV and other recreational use under alternative E would be long-term minor adverse.

**Construction Activities.** As with alternative C, all construction under alternative E would occur outside areas of invertebrate habitat, and therefore this alternative would result in short-term negligible adverse impacts to invertebrates due to temporary displacement during construction activities, but no long-term loss of invertebrate habitat would occur.

**Cumulative Impacts.** The same past, present, and future impacts from cumulative actions described for alternative A would also occur under alternative E. Cumulative actions under alternative E would have long-term minor adverse impacts to other bird species. These impacts, when combined with the long-term minor adverse impacts of recreational use and the beneficial impacts from resources management activities, would result in long-term minor adverse cumulative impacts to other bird species.

Cumulative actions under alternative E would have long-term negligible to moderate impacts to invertebrate species. These impacts, when combined with the long-term negligible to minor adverse impacts of alternative E, would result in long-term minor adverse cumulative impacts to invertebrate species.

**Conclusion.** The establishment of both breeding and nonbreeding SMAs, some of which are closed to ORVs year-round, would result in long-term beneficial impacts to other bird species. ORV and other recreational use would result in long-term minor adverse impacts to other bird species due to additional nonbreeding closures provided under alternative E that offer species further protection, with greater adverse impacts than under alternatives D or F from fewer miles of shoreline being closed to ORVs under alternative E during the nonbreeding season. Adverse impacts would be greater than those under alternatives C or D due to the increased level of recreational access provided under alternative E.

Cumulative impacts to other bird species would be long-term minor adverse.

Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Adverse impacts would be greater than those under alternatives C or D due to the increased level of recreational access provided under alternative E. Short-term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.

Overall cumulative impacts to invertebrates would be long-term minor adverse.

## **Impacts of Alternative F: NPS Preferred Alternative**

### **Impacts to Other Bird Species**

**Resources Management Activities.** Under alternative F, as described under alternatives C, D, and E, nonbreeding closures would be established for migrating/wintering piping plovers at various locations throughout the Seashore, as described in table 10-1, that all other bird species could take advantage of. Closures would be installed no later than when breeding season closures are removed at the same location(s). Nonbreeding resource closures would be established at the points and spits based on habitat used by wintering piping plovers in more than one of the past five years, the presence of birds at the beginning of the migratory season, and suitable habitat types based on the results of the annual habitat assessment. In addition to these closures, 28 miles of the Seashore would be designated as vehicle free



year round, providing an area with relatively less disturbance (no ORVs would be permitted, but pedestrians would still be allowed in these areas).

As many of these species are not present at the Seashore for breeding, any impacts to other bird species from surveying and field activities for protected species would be long-term negligible adverse. Overall, species management activities would result in long-term beneficial impacts to other bird species. Additional benefits, when compared to the other alternatives (except alternative D), would be realized under alternative F from the 28 miles of VFA provided year-round that would provide areas of relatively less disturbed habitat.

**ORV and Other Recreational Use.** Alternative F provides a level of recreational beach access similar to that under alternative E but would also include the development of two new interdunal roads. Interdunal roads would facilitate access to locations that have either seasonal or year-round restrictions on ORV use. Locations for interdunal roads would include: inland of South Beach from ramp 45 to ramp 49, with one new ramp at 47.5 and on Hatteras Inlet Spit extending from the intersection of Pole and Spur Roads southwest toward the inlet, stopping at least 100 meters from the inlet. Because this alternative would require some level of resource education in order to receive an ORV permit, all species at the Seashore, including other bird species, should benefit from the increased level of resource stewardship that is associated with public awareness. Increased levels of pedestrian and ORV access would still result in the generation of waste, which would increase the potential for predation when compared to alternatives C and D.

Alternative F would involve establishing seasonal and year-round VFAs. Seasonal VFAs would include Bodie Island spit, which would be vehicle free for six months of the year, and those beaches in front of Rodanthe (south of the pier), Waves, Salvo, Avon, Frisco and Hatteras village beaches, and Ocracoke Campground beach, which would be vehicle free for seven months of the year. In addition, 28 miles of Seashore would be designated as vehicle free year-round. Closing these areas seasonally and year-round to ORV use would reduce the potential for disturbances other bird species within VFAs. However, this alternative would still allow pedestrian access to these areas, subject to resource closures. The relatively large protected species buffers would provide some mitigation from impacts of recreational disturbance, when compared to alternative A. As described under alternative A, of particular concern is when disturbance results in birds being forced to fly while they are foraging, which would result in adverse impacts as birds would not be able to add the body fat they need for migration. However, there would continue to be disturbance to other bird species from vehicles and pedestrians under alternative F and impacts would be long-term minor adverse.

As noted in chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative F would allow for beach driving in the wrack during the day outside of SMA and would maintain nighttime closures. Prenesting closures, along with prohibiting driving within VFAs year-round and seasonally and the seasonal prohibition on night driving would reduce disturbance in these areas year-round and seasonally. Overall impacts to invertebrates would be long-term and minor (as described below), and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.

**Construction Activities.** Implementation of alternative F would include the relocation of 2 ramps and the construction of 4 new ORV access ramps, 12 new or expanded parking areas with permeable surfaces with associated pedestrian access, and 2 new interdunal roads. Construction activities would result in the temporary displacement of bird species localized in the areas of proposed disturbance and would involve a loss of some marginal habitat near the parking areas. Construction impacts to other bird species would

be short-term negligible to minor adverse as areas of important habitat would not be lost and there would not be noticeable impacts to populations.

### Impacts to Invertebrates

**ORV and Other Recreational Use.** Alternative F provides a level of recreational beach access similar to that under alternative E, although there would be no park-and-stay option. Alternative F would also include the development of two new interdunal roads, which would provide additional seasonal vehicular access on Hatteras Inlet Spit and inland of South Beach from ramp 45 to ramp 49. Night driving would be similarly restricted from May 1 through November 15, but vehicles would be removed from the beaches starting at 9:00 p.m. until 7:00 a.m., which further limits the hours that vehicles are allowed on beaches in the evening hours. ORV and pedestrian access would continue to be subject to temporary resource closures and nonbreeding habitat restrictions. This alternative would involve a permit system with an educational requirement.

Alternative F would involve establishing seasonal and year-round VFAs at the following locations:

- Ramp 1 to 0.5 miles south of Coquina Beach (year-round)
- 0.2 mile south of ramp 4 to southeast corner of Bodie Island spit (vehicle free March 15 to September 14)
- Southeast corner of Bodie Island spit along inlet shoreline to southwest edge of Bait Pond (near bridge) (year-round)
- Rodanthe boundary to 0.1 mile south of Rodanthe pier (year-round)
- 0.1 mile south of Rodanthe Pier–Waves–Salvo to ramp 23 (vehicle free April 1 to October 31)
- Ramp 23 to 1.5 miles south of ramp 23 (year-round)
- Ramp 27 to ramp 30 (year-round)
- Ramp 32.5 to ramp 34 (year-round)
- Ramp 34 to ramp 38 (vehicle free April 1 to October 31)
- Ramp 38 to 1.5 miles south of ramp 38 (i.e., Haulover) (year-round)
- 0.3 mile west of the hook (Cape Point) to 1.7 miles west of ramp 45 (year-round)
- Frisco Village Beach (east village boundary to west boundary) (vehicle free April 1 to October 31)
- Sandy Bay / Frisco day use area (west Frisco boundary to east Hatteras Village boundary) (year-round)
- Hatteras Village Beach (east boundary to ramp 55) (vehicle free April 1 to October 31)
- Bone Road to Hatteras Inlet, along inlet shoreline to Spur Road (year-round)
- (New) interdunal road from eastern portion of Spur Road west toward inlet (vehicle free March 15 to September 14)
- Hatteras Inlet to (new) ramp 59.5 (year-round)
- (New) ramp 63 to 1.0 mile northeast of ramp 67 (year-round)

- 0.5 mile northeast of ramp 68 to ramp 68 (Ocracoke Campground area) (vehicle free April 1 to October 31)
- Ramp 68 to 0.4 miles northeast of ramp 70 (includes Ocracoke Day Use area) (year-round).

Closing these areas seasonally and year-round to ORV use would reduce the potential for disturbances to beach invertebrates that inhabit these areas. Limiting vehicles to daytime use for 6.5 months of the year would reduce the potential for impacts to nocturnal invertebrates throughout the Seashore. Vehicle use would result in the loss of individual invertebrates, but would not be measurable and would be well within natural fluctuations. Therefore, impacts to invertebrates from ORV and other recreational use under alternative F would be long-term minor adverse.

**Construction Activities.** As with alternative C, all construction under alternative F would occur outside areas of invertebrate habitat; therefore, this alternative would result in short-term negligible adverse impacts to invertebrates due to temporary displacement during construction activities, but no long-term loss of invertebrate habitat would occur.

**Cumulative Impacts.** The same past, present, and future impacts from cumulative actions described for alternative A would also occur under alternative F. Cumulative actions under alternative F would have long-term minor adverse impacts to other bird species. These impacts, when combined with the long-term minor adverse impacts of recreational use and the beneficial impacts from resources management activities, would result in long-term minor adverse cumulative impacts to other bird species.

Cumulative actions under alternative F would have long-term negligible to moderate adverse impacts to invertebrate species. These impacts, when combined with the long-term negligible to minor adverse impacts to invertebrates under alternative F, would result in long-term minor adverse cumulative impacts to invertebrates.

**Conclusion.** The establishment of prenesting areas, year-round and seasonal VFAs, and wintering habitat closures, would result in long-term beneficial impacts to other bird species. Impacts to other bird species from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative F that offer wintering species further protection, and including 28 miles of year-round VFAs.

Cumulative impacts on other bird species under alternative F would be long-term minor adverse.

Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Short-term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.

Overall cumulative impacts to invertebrates would be long-term minor adverse.

**TABLE 56. SUMMARY OF IMPACTS TO WILDLIFE AND WILDLIFE HABITAT UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Other Bird Species					
Many of the surveying and field activities for protected species would occur outside of the primary time when other bird species are residents at the Seashore. Therefore, any impacts to other bird species from surveying and field activities for protected species would be long-term negligible adverse.					
<p>Impacts to other bird species from resources management activities would be long-term minor adverse as nonbreeding closures would not be species-specific and therefore would not protect important habitat areas such as the ocean shoreline.</p> <p>Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species, increasing the possibility of disturbance to the species from recreational use. The lack of designated VFAs, a permitting system, or night-driving restrictions during the time period when these species are present at the Seashore, and allowing ORVs, people and pets at the Seashore during the nonbreeding season in the vicinity of these species would contribute to adverse impacts.</p>	<p>Impacts to other bird species would be long-term minor adverse as nonbreeding closures would not be species-specific and therefore would not protect important habitat areas such as the ocean shoreline when many of these species are wintering or migrating.</p> <p>Impacts of ORV and other recreational use would be long-term moderate adverse as no specific management would be provided for this species, increasing the possibility of disturbance to the species from recreational use. The lack of designated VFAs, allowing night driving during the time period when other bird species are present at the Seashore, and allowing ORVs, people and pets at the Seashore during the nonbreeding season in the vicinity of these species would contribute to adverse impacts.</p>	<p>The establishment of both breeding and nonbreeding SMAs, some of which are closed to ORVs year-round, would result in long-term beneficial impacts to other bird species when compared to alternatives A and B.</p> <p>Impacts from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative C that offer wintering species further protection.</p>	<p>The establishment of SMAs, which would be closed to ORVs year-round, would result in long-term beneficial impacts to other bird species. Beneficial impacts would be greater than those under alternative C due to the amount of mileage closed to ORV use year-round.</p> <p>ORV and other recreational use would result in long-term negligible to minor adverse impacts to other bird species due to the amount of beach closed to ORV use and the additional nonbreeding closures that offer wintering species further protection.</p>	<p>The establishment of both breeding and nonbreeding SMAs, some of which are closed to ORVs year-round, would result in long-term beneficial impacts to other bird species.</p> <p>ORV and other recreational use would result in long-term minor adverse impacts to other bird species due to additional nonbreeding closures provided under alternative E that offer species further protection, with greater adverse impacts than under alternatives D or F from fewer miles of shoreline being closed to ORVs under alternative E during the nonbreeding season. Adverse impacts would be greater than those under alternatives C or D due to the increased level of recreational access provided under alternative E.</p>	<p>The establishment of prenesting areas, seasonal and year-round VFAs, and wintering habitat closures would result in long-term beneficial impacts to other bird species. Additional benefits, when compared to the other alternatives, would be realized under alternative F from nonbreeding closures as well as the 28 miles of year-round VFAs that would provide protection during this time.</p> <p>Impacts to other bird species from ORV and other recreational use would be long-term minor adverse due to the additional nonbreeding closures provided under alternative F that offer wintering species further protection.</p>
There would be no construction and therefore no construction-related to disturbance to other bird species under the no-action alternatives.		Impacts to other bird species from construction activities would be short-term negligible to minor adverse due to temporary displacement during construction activities.			

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Invertebrates					
The use of vehicles to conduct resources management activities would result in long-term negligible adverse impacts to invertebrates due to the potential for mortality of individual invertebrate species.					
Recreational ORV use would result in long-term minor to moderate adverse impacts to invertebrate species primarily due to mortality arising from unlimited night driving in the intertidal and wrack areas.	Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts would be reduced when compared to alternative A due to limitations on ORV use at night and within the larger resources management closures under alternative B.	Recreational ORV use would result in long-term negligible to minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts would be reduced due to longer seasonal restrictions on vehicle use under alternative C.	Recreational ORV use would result in long-term negligible adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Impacts to invertebrates would be reduced under this alternative due to the amount of beach closed to recreational use.	Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat. Adverse impacts would be greater than those under alternatives C or D due to the increased level of recreational access provided under alternative E.	Recreational ORV use would result in long-term minor adverse impacts to invertebrate species resulting from the continued use of ORVs in invertebrate habitat.
There would be no construction and therefore no construction-related to disturbance to invertebrates under the no-action alternatives.		Short-term negligible adverse impacts to invertebrates would occur due to temporary displacement during construction activities.			

## SOUNDSCAPES

### GUIDING REGULATIONS AND POLICIES

The NPS *Organic Act* (16 USC 1) establishes and authorizes the NPS “to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (NPS *Organic Act* [16 USC 1]). An important aspect of natural communities that the NPS wishes to preserve within our national parks is the natural soundscape, which protects visitor experience as well as wildlife.

Regarding general park soundscape management, NPS *Management Policies 2006*, Section 4.9 Soundscape Management, requires that the NPS “preserve, to the greatest extent possible, the natural soundscapes of parks.” Additionally, the NPS “will restore to the natural condition wherever possible those park soundscapes that have become degraded by the unnatural sounds (noise), and will protect natural soundscapes from unacceptable impacts” (NPS *Management Policies 2006* [NPS 2006c, sec 4.9]). Director’s Order 47: Soundscape Preservation and Management, was developed to emphasize NPS policies “that will require, to the fullest extent practicable, the protection, maintenance, or restoration of the natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources.” This Director’s Order also directs park managers to measure acoustic conditions, differentiate existing or proposed human-made sounds that are consistent with park purposes, set acoustic goals based on the sounds deemed consistent with the park purpose, and determine which noise sources are impacting the parks (NPS 2000a).

As discussed in “Chapter 1: Purpose and Need for Action,” ORV use within national parks is governed by Executive Order 11644 of 1972, Use of Off-Road Vehicles on Public Lands, as amended by Executive Order 11989 of 1977. In accordance with this executive order and as discussed in *NPS Management Policies 2006*, Section 8.2.3.1, Motorized Off-Road Vehicle Use, ORVs are allowed in locations where no adverse impacts to the natural, cultural, scenic and esthetic values would occur (*NPS Management Policies 2006* [NPS 2006c, sec 8.2.3.1]). Additionally, *NPS Management Policies 2006*, Section 8.2.3, Use of Motorized Equipment, acknowledges that motorized equipment operating in national parks could adversely impact the park’s natural soundscape. To preserve the natural soundscape, park superintendents will manage when and where motorized equipment is used, evaluating effects on the natural soundscape against the natural ambient sound level (that which exists in the absence of human-induced sounds) (*NPS Management Policies 2006* [NPS 2006c, sec 8.2.3]).

Additionally, 36 CFR 2.12, Audio Disturbance, prohibits the operation of motorized vehicles within national parks in excess of 60 dBA at a distance of 50 feet from the source, or if below that noise level, noise which is unreasonable. Reasonableness is dependent upon several factors including the nature and purpose of the actor’s conduct, location and time of occurrence, the park’s purpose and the impact the noise has on park users (36 CFR 2.12).

## **METHODOLOGY, ASSUMPTIONS, AND IMPACT THRESHOLDS**

The methodology used to assess impacts to the natural soundscape from the management of ORV use at the Seashore is consistent with *NPS Management Policies 2006* and Director’s Order 47: Soundscape Preservation and Noise Management.

ORVs drive more on the ocean beaches than they do along the soundside. On the soundside, visitors typically drive from NC-12, a relatively short distance to soundside recreational areas and park their vehicles. Impacts to the natural soundscape, visitor experience and wildlife would be negligible on the soundside. Therefore, the impacts analysis for all alternatives focuses on the beach areas, where most ORV driving takes place.

Impacts to the natural soundscape of the Seashore from ORV use were assessed using published information from the FHWA regarding automobile noise emission levels for travel speeds of 15 and 25 mph, measured at reference distances of approximately 15 meters (49 feet). These travel speeds are consistent with current and future proposed action speed limits for ORVs in the Seashore. Using these known vehicle noise emission levels, which vary by frequency, for the aforementioned travel speeds, the NPS Natural Sounds Program extrapolated vehicle noise levels at several distances from an ORV track. The extrapolation accounts for the effects of atmospheric absorption of sound waves with frequency, which is dependent upon the atmospheric conditions of the Seashore. Specifically, factors including temperature and humidity affect sound absorption depending on the frequency spectrum of the sound wave (Caltrans 1998). Sound waves may be further attenuated by ground surfaces and vegetation. Soft surfaces, which include soft dirt, and vegetation, such as grass or scattered bushes and trees, tend to absorb some of the sound energy as it passes over them from source to receiver. Conversely, hard surfaces like parking areas and smooth bodies of water tend to reflect sound waves, thereby providing no additional attenuation of sound energy (Caltrans 1998). The Seashore contains a mixture of surfaces, therefore the extrapolated vehicular sound levels assume no significant ground or vegetation absorption. If the ground surface between the source and receiver is soft and/or vegetated, there could be a slight attenuation of noise; however, it would be insignificant due to the short distances involved.

As noise from the surf is a predominant natural sound source at the Seashore, the Natural Sounds Program also calculated estimates of surf noise levels at several distances from an ORV track.<sup>12</sup> These calculations assume a surf noise level estimate of 55 dBA as measured 15 meters (49 feet) from the surf line, which is representative of the maximum value of surf noise in a range (20–55 dBA) identified in *Disposition of Offshore Cooling Water Conduits SONGS Unit 1 EIR*, as discussed in “Chapter 3: Affected Environment.” This surf noise level is also consistent with estimates of ambient levels at the surf line based on calculations using the measurement data collected on Bodie Island and at Cape Point (refer to “Chapter 3: Affected Environment”). A median distance from the surf line to an ORV track of 21 meters (69 feet) was used as part of the calculation based on information from the NPS, which indicates typical distances between the surf line and ORV tracks ranging between 18 and 24 meters (59 and 79 feet) (Broili pers. comm. 2009).

Impacts to the natural soundscape were assessed according to distances at which vehicle noise dominates the sound energy, as compared to the predominant natural sound of the surf, both landward and seaward from a given ORV track. Thus, vehicular and surf noise level estimations were predicted for both landward and seaward directions from a given ORV track. No additional sources of noise, including from visitor presence throughout the Seashore, were considered as part of the impacts analysis. As vehicle counts on ORV tracks are not available, vehicle noise level predictions are representative of the intensity of the vehicle noise during a single pass-by event and do not reflect the frequency of occurrence. The landward and seaward vehicle and surf noise level predictions are provided in table 57 and table 58, respectively. The distances shown in both tables represent distances from a given ORV track in meters and feet. Since table 57 depicts vehicle and surf noise levels at distances landward from a given ORV track, the distance from the surf is determined by adding the median distance between the surf line and ORV track (21 meters [69 feet]) to the particular distance from the ORV track. For example, at a distance of 15 meters (49 feet) landward from the ORV track, a given receiver is located approximately 36 meters (118 feet) from the surf line. Conversely, since table 58 depicts vehicle and surf noise levels at distances (in meters and in feet) in a seaward direction from an ORV track, the distance from the surf line is given by subtracting the distance from the ORV track from the 21-meter (69-foot) distance between a typical ORV track and the surf line. For example, at a distance of 15 meters (49 feet) from an ORV track, a receiver is located approximately 6 meters (20 feet) from the surf line. Beyond 21 meters (69 feet) from an ORV track, a receiver is located in the ocean. Therefore, surf noise levels beyond 21 meters (69 feet) are listed as “N/A” (i.e., “not applicable”).

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<sup>12</sup>NPS protocols for acoustic monitoring at national parks (NPS 2006) were followed in collection of acoustic data at Cape Hatteras National Seashore to determine ambient conditions. The protocols attempt to capture spatial and temporal variability within the park. Therefore, monitors are typically not placed near sound sources that would dominate and mask other acoustic resources (i.e., birds, insects). Acoustic conditions at the surf were extrapolated using the collected data. The results of the extrapolation were verified and corroborated by published sources (*Disposition of Offshore Cooling Water Conduits SONGS Unit 1 EIR*) and the experiences of park managers.

**TABLE 57. VEHICLE AND SURF NOISE LEVELS AT DISTANCES FROM AN ORV TRACK**

Sound Source	Noise Level at Reference Distance (dBA)	Reference Distance of Measured Noise Level (meters)	Other Distances from an ORV Track in meters (feet)								
			4 (13)	10 (33)	15 (49)	20 (66)	30 (98)	50 (164)	150 (492)	200 (656)	250 (820)
Auto at 15 mph (FHWA)	52	15.24	64.0	56.0	52.5	49.9	46.3	41.7	31.5	28.7	26.4
Ocean surf ambient	55	15	52.8	51.8	51.2	50.6	49.7	48.2	44.4	43.3	42.4
Auto at 25 mph (FHWA)	59	15.24	71.0	63.0	59.4	56.9	53.3	48.7	38.5	35.7	33.4

Source: NPS Natural Sounds Program, September 17, 2009.

- Notes: 1. Distances are in meters and feet from a given ORV track. Assumed distance between ORV track and surf is 21 meters (69 feet).
2. Distance from surf may be calculated by adding the distance from the ORV track to 21 meters (69 feet).
3. Reference distances of sound sources represent locations where values are known based on measured, published data. Other distances from an ORV track are predicted sound levels based on the known, measured levels at the specified reference distances (Stanley pers. comm. 2009).

**TABLE 58. SEAWARD VEHICLE AND SURF NOISE LEVELS AT DISTANCES FROM AN ORV TRACK**

Sound Source	Noise Level at Reference Distance (dBA)	Reference Distance of Measured Noise Level (meters)	Other Distances from an ORV Track in meters (feet)						
			4 (13)	10 (33)	15 (49)	20 (66)	50 (164)	150 (492)	250 (820)
Auto at 15 mph (FHWA)	52	15.24	64.0	56.0	52.5	49.9	41.7	31.5	26.4
Ocean surf ambient	55	15	54.5	56.3	59.0	66.8	N/A	N/A	N/A
Auto at 25 mph (FHWA)	59	15.24	71.0	63.0	59.4	56.9	48.7	38.5	35.7

Source: NPS Natural Sounds Program, September 17, 2009.

- Notes: 1. Distances are in meters and feet from a given ORV track. Assumed distance between ORV track and surf is 21 meters (69 feet).
2. Distance to surf may be calculated by subtracting the distance from the ORV track from 21 meters (69 feet).
3. "N/A" ("not applicable") indicates the receiver is located in the ocean, and surf noise levels are not calculated.
4. Reference distances of sound sources represent locations where values are known based on measured, published data. Other distances from an ORV track are predicted sound levels based on the known, measured levels at the specified reference distances (Stanley pers. comm. 2009).

In addition to determining the impacts to the natural soundscape of the Seashore, considerations were given to visitor use as well as impacts to wildlife from ORV use. Impacts to visitors were evaluated based their ability to experience natural sounds of the Seashore and the effects on their awareness of vehicles.



Research has shown that human activities that generate high levels of anthropogenic noise (including vehicular traffic) can result in adverse impacts to animal physiology and behavior. Impacts to bird species include nest desertion and reduced pairing success (Barber et al. 2010). Noise can cause increased levels of stress hormones and hypertension and inhibit the ability of wildlife to perceive natural sounds, an effect referred to as “masking.” Acoustic masking can interfere with the ability of wildlife to communicate with each other, for example, when sounding a warning to indicate an approaching predator (Barber et al. 2010).

Consideration of the effects of ORV noise on wildlife included the potential for changes in communication by shifting call frequencies away from those typically associated with transportation noise (100 Hz to 1 kHz). Species at greatest risk include the piping plover, black skimmer, Wilson’s plover, least tern, common tern and gull-billed tern. For example, the piping plover’s call is between 1 and 3 kHz, with most energy centered around 2 kHz while the fundamental frequency of the black skimmer’s call is at or below 2 kHz. Similarly, most acoustic energy in the call of the Wilson’s plover occurs below 3 kHz. Therefore, since the acoustic energy of the calls of these bird species may fall within the frequency range associated with transportation noise, studies show that communication may be compromised for these bird species (Slabbekoorn and Boer-Visser 2006). Such an effect on wildlife communication would occur regardless of vehicle speed and the particular alternative implemented.

An additional consideration for wildlife impacts included the potential for reductions in listening area for predators seeking prey and reductions in alerting distance of prey listening for predators. More specifically, a 3 dBA increase in ambient sound levels by ORV noise would reduce a predator’s listening area by half, while the same decibel increase would reduce the alerting distance of prey by 30 percent. Similarly, a 3 dBA increase in ambient sound levels would also reduce, by 50 percent, the area in which humans may listen for birds. For example, under conditions where natural sounds prevail and ORV use is not present as an intrusion, prey listening for a predator may be able to hear a predator as far as 90 feet from said predator. However, if the introduction of ORV noise increases the ambient sound level by a factor of 3 dBA, the distance at which prey can hear the approaching predator reduces to 60 feet. These reduction factors are based on geometric spreading of sound energy in space and are larger for greater increases in the ambient environment. Although the impacts of noise on wildlife cannot be quantified for this analysis, in part because studies on ORV impacts on coastal wildlife were not available, it was assumed that increased ORV access or level of use would result in greater noise impacts to wildlife.

A summary of soundscapes impacts under all alternatives is provided in table 59 at the end of this section. Thresholds for identifying natural soundscapes impacts are defined as follows:

- Negligible:* Natural sounds would prevail; the area would be closed to vehicles or noise generated by the use of ORVs and construction would be infrequent or absent, and mostly not measurable or detectable.
- Minor:* (1) Vehicle noise dominates sound energy to a distance of 30 meters inland from the vehicle or to a distance of 10 meters toward the surf; OR, (2) sound energy from vehicle noise exceeds sound energy from the surf by 3 dBA to a distance of 10 meters from the vehicle in either direction. Noise from construction activities would be short-term, lasting only a few days to a week, and localized and would not occur in ecologically sensitive areas.

*Moderate:* (1) Vehicle noise dominates sound energy to a distance of 60 meters inland from the vehicle, or vehicle noise dominates sound energy to the surf line; OR (2) sound energy from vehicle noise exceeds sound energy from the surf by 3 dBA to a distance of 50 meters inland from the vehicle or 15 meters toward the surf. Noise from construction activities would be short-term, lasting only a few days to a week, but would be more widespread and may occur in ecologically sensitive areas.

*Major:* (1) Vehicle noise dominates sound energy at distances greater than 60 meters inland from the vehicle or sound energy from vehicle noise exceeds sound energy from the surf by 3 dBA beyond 50 meters inland from the vehicle; OR (2) vehicle noise levels at the surf line exceed sound energy from the surf by 3 dBA. Noise from construction activities would occur for over a period of several months in highly ecologically sensitive areas.

*Duration:* Short-term impacts would result from actions occurring over a period of less than one year.

Long-term impacts would result from actions occurring over a period of longer than one year and would occur intermittently over the life of the management plans.

The thresholds were based on representative beach width and represent the portion of the beach that would be subject to noise impacts. Specifically, the distance at which vehicle noise begins to dominate the natural ambient environment (the surf) is important because, at this point, vehicle noise is more likely to be audible to visitors and wildlife, and a situation is created in which natural sounds no longer predominate. Such distances are based on best available judgment, and in part on the area of affect around the vehicle in which the vehicle noise adds at least 3 dBA to the natural ambient environment.

## Study Area

The study area for which soundscape impacts were assessed includes the entire area within the Seashore boundary.

## Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy

Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps). ORV use would also be temporarily prohibited during seasonal closures in front of villages from September 16 to May 14. The speed limit would be 25 mph (unless otherwise posted) on Seashore beaches for public and private vehicles, although the speed limit in front of villages (from September 16 to May 14) would be 10 mph.

According to table 57, a vehicle traveling at 25 mph would dominate the sound energy as far as 50 meters landward from an ORV track, producing a noise level of 48.7 dBA versus 48.2 dBA produced by the natural sound of the surf. Since vehicle noise dominates beyond 30 meters inland from the vehicle, landward impacts from ORV use on the beaches would be moderate adverse. Additionally, as depicted in table 58, a vehicle traveling at 25 mph would dominate the sound energy to a distance of 10 meters from an ORV track toward the surf. At 15 meters seaward, vehicle noise and surf sounds are nearly equivalent, with a vehicle contribution of 59.4 dBA and a contribution from the surf of 59.0 dBA. Since vehicle noise

is still prevalent beyond 10 meters seaward from the ORV track, moderate adverse impacts to the natural soundscape would occur along the beaches between an ORV track and the surf.

In front of village beaches, during seasonal closures between September 16 and May 14, and in areas where an ORV corridor is less than 100 feet wide, when the speed limit is lowered from 25 mph to 10 mph, vehicle noise would be noticeably less and would not dominate the sound energy as far from the ORV track as a vehicle traveling at 25 mph. Comparing vehicle noise levels at 25 mph with those produced at 15 mph (15 mph may be used as a close approximation of noise levels produced by a vehicle traveling 10 mph), noise levels for the lower speed are approximately 7 dBA less for all distances inland and seaward from an ORV track. Additionally, noise emissions from vehicles traveling at 15 mph would dominate the sound energy to a distance of 15 meters inland from an ORV track, at which point vehicle noise levels would be 52.5 dBA while surf sounds would be 51.2 dBA. Thus, moderate adverse impacts occurring at 25 mph speeds would become minor adverse impacts inland from an ORV track when vehicle speeds are limited to 10 mph. Similarly, vehicle noise would dominate the sound energy to a distance of 4 meters from an ORV track toward the surf and become nearly equivalent at 10 meters from the ORV track. Therefore, minor adverse impacts to the natural soundscape would result from ORV use in front of village beaches during seasonal closures and in areas with ORV corridors less than 100 feet wide when speeds are lowered to 10 mph.

As noise from ORV use would add at least 3 dBA to the natural ambient sound levels within the Seashore, wildlife would also experience adverse impacts. Specifically, wildlife may experience impacts to their abilities to detect predators and hunt for prey, such that a predator's listening area and a prey's alerting distance may be reduced. At vehicle speeds of 25 mph, sound energy from the vehicle noise would exceed the sound energy from the surf by at least 3 dBA to a distance of approximately 30 meters inland from an ORV track (see table 57). Similarly, ambient levels would be increased by at least 3 dBA to a distance beyond 10 meters seaward from an ORV track, but not as far as the surf line (see table 58). Therefore, when vehicles are traveling at 25 mph, wildlife on the beaches would experience moderate adverse impacts. When speeds are reduced to 10 mph, increases of at least 3 dBA above the natural ambient would occur closer to ORV tracks, thereby creating adverse impacts to wildlife.

The presence of vehicles on the beaches at the Seashore would also adversely impact visitor use such that a visitor's ability to experience and enjoy the natural soundscape and their awareness of vehicles around them may be affected. Similar to wildlife, adding 3 dBA or more to the natural ambient environment results in a reduction of a visitor's listening area over which they can hear birds and insects and enjoy the sounds of the surf. Further, between ORV tracks and the surf, at distances where the sound of the surf dominates the sound energy, a potential reduction in vehicle awareness by visitors may result. The distance at which surf sounds dominate is further from an ORV track for higher speeds and closer for slower speeds. Therefore, the potential for reductions in visitor awareness actually increase for slower speeds. In relation to visitor enjoyment, a slower travel speed would reduce the potential for reductions in visitor listening areas since the area over which 3 dBA is added to the natural ambient environment would be smaller.

Under alternative A, the majority of beaches would be open to OVR use year-round, except if they are closed for temporary resource, safety, or administrative reasons. Due to the potential for year-round ORV use along most beach routes, impacts to the natural soundscape, wildlife, and visitor use would generally be regarded as long-term minor to moderate adverse but would have the potential to become short-term impacts depending on the length of closure periods. In front of village beaches, where ORV routes are specifically designated as being seasonally closed to ORVs from May 15 through September 15, impacts to the natural soundscape, wildlife and visitor use would be short-term minor to moderate adverse. During this four-month seasonal closure period, or during any closure period that limits ORV activity to less than one year, areas undergoing such closures would also experience short-term benefits due to the temporary

lack of ORV noise. However, during closures, ORVs may potentially be diverted to other routes that remain open. Vehicle diversions would potentially increase the number of ORVs along these open routes and the frequency of occurrence of single ORV pass-by events. Impacts would remain minor to moderate adverse, depending on vehicle speed, but vehicle noise may dominate the sound energy more frequently. Further, as identified in “Table 7, Off-Road Vehicle Routes and Areas” in chapter 2, some seasonal as well as year-round ORV routes have been designated as longstanding safety closures. In such areas, impacts would be negligible such that natural sounds would prevail due to the absence of ORVs. In the event that longstanding safety closures would be lifted, thus re-opening ORV routes in areas with such closures, impacts would be minor to moderate adverse, depending on vehicle travel speeds. The duration of these impacts would be short-term adverse in areas with seasonal ORV routes and long-term adverse in areas with year-round ORV routes. In general, all ORV use, as well as closure periods, would occur intermittently over the length of the management plan, thereby creating long-term minor to moderate adverse impacts, as well as long-term benefits (during closure periods) to the natural soundscape along the beaches of the Seashore.

Under alternative A, there would be no planned construction of new ORV access ramps or reconfigurations of existing ramps. Thus, there would be no construction noise-related impacts under this alternative.

**Cumulative Impacts.** Other past, present and planned future actions within the Seashore have the potential to affect the natural soundscape of the Seashore, which in turn may affect wildlife and visitor use. In recent years, hurricanes, storms, and other events have resulted in roads being overwashed with sand and water, including ramps to beaches and ORV corridors. Depending on the degree of damage following a storm, certain areas of the Seashore and some ORV routes may be closed off to visitors. Weather-related closures, as well as those associated with dredging, would reduce human-induced noise in closed areas. However, such closures would also potentially result in increased concentrations of ORVs and visitors in other areas of the Seashore that would remain open. Weather-related closures would result in minor to moderate adverse impacts regarded as short-term in duration depending on the length of the closure periods. Impacts would also be regarded as long-term as weather events and dredging may recur.

Additional adverse impacts may also result from current increases in vehicle traffic and village events bringing additional visitors to the Seashore. Increased recreational opportunities in the Corridor Management Plan for the Outer Banks Scenic Byway would also potentially attract additional visitors to the Seashore, thereby adding more vehicle traffic and visitor presence. Increased vehicle traffic and visitor presence would potentially increase the ambient sound environment. Adverse impacts would be long-term minor to moderate, depending upon vehicle speed limits. Further, the potential for aircraft overflights associated with military training operations would add an additional source of noise to the ambient environment of the Seashore. Adverse impacts would be short-term minor adverse, only lasting the duration of the overflight operation.

The Bonner Bridge replacement may create construction-related noise; however, as construction activities would be localized, impacts would be long-term minor adverse. Additional construction-related noise is associated with the berm construction under the CCC; however, such activities have occurred in the past. Continued maintenance of berms would potentially create localized, negligible adverse impacts.

The potential long-term minor to moderate adverse impacts from actions described above coupled with the minor to moderate adverse impacts associated with the implementation of alternative A, would result in long-term minor to moderate adverse cumulative impacts on the natural soundscape within the Seashore.

**Conclusion.** Based on predicted vehicle noise levels at distances both landward and seaward from an ORV track for a posted speed limit of 25 mph, vehicle noise would dominate the sound energy to distances between 30 and 60 meters inland from an ORV track and beyond 10 meters from an ORV track toward the surf line. Vehicle noise would also add 3 dBA or more to the natural ambient environment within 50 meters inland and 15 meters seaward of a vehicle traveling at 25 mph. Conversely, for a posted speed limit of 10 mph, vehicle noise would dominate the sound energy between the ORV track and a distance of 30 meters inland from the track and would dominate within 10 meters seaward of the vehicle track. Further, for a 10 mph speed limit, both inland and seaward of a vehicle, vehicle noise would add 3 dBA or more to the natural ambient within 10 meters of the vehicle. As ORV driving is more prominent on the beaches, versus along the sound where visitors typically drive into recreational areas and park their vehicles, impacts to the natural soundscape, visitor use, and wildlife would be negligible on the sound. Therefore, long-term minor to moderate impacts, depending upon vehicle speed would occur along the beaches where most routes are established for ORV driving. While impacts over the majority of the Seashore beaches would be long-term adverse due to greater numbers of designated year-round ORV routes, impacts would be short-term adverse in the areas in front of village beaches, which are only opened seasonally to ORV use. Short-term adverse impacts would also result during other closure periods along any ORV route for resource protection, safety, or administrative purposes. During closures, the potential for increased vehicle concentrations along remaining open ORV routes would increase the frequency of occurrence of single ORV pass-by events. Impacts would remain minor to moderate adverse, depending on vehicle speed, but vehicle noise may dominate the natural soundscape more frequently. In general, as ORV use would continue intermittently over the life of the management plan, vehicle noise would be a recurring, long-term minor to moderate adverse impact in all areas of the Seashore beaches open to ORV driving. Additionally, as closure periods, which have the potential to provide short-term benefits, would be implemented throughout the life of the management plan, long-term benefits would arise.

Cumulative impacts to the natural soundscape would be long-term minor to moderate adverse.

### **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

Under alternative B, areas accessible to ORVs would be similar to alternative A, except that the area from ramp 43 to 0.4 mile north would be open to ORVs year-round instead of just seasonally and large prenesting closures would be established. Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps). Further, vehicle speed limits for ORVs would be similar to those under alternative A, except that under alternative A, speeds would be limited to 25 mph with a reduction to 10 mph in front of villages during the off season (September 16 – May 14). Under alternative B, in general, a reduced speed limit (15 mph) would be imposed from May 15 through September 15 while the speed limit would increase to 25 mph from September 15 through May 14.

As ORV access areas and speed limits are similar to alternative A, during the time period when speed limits are 15 mph, impacts to the natural soundscape would be minor adverse and would become moderate adverse during times when the speed limit is increased to 25 mph. Adverse impacts to wildlife would be similar to those under alternative A. Larger resource protection buffers identified under this alternative would also further decrease the potential for vehicle noise impacts to ground-nesting birds as vehicle noise does not add 3 dBA or more to the ambient environment farther than 30 meters inland of a vehicle, even for higher speeds. Impacts to visitors would also be similar to those described under alternative A, although slower speeds imposed during the peak season when most visitors are on the

beaches would potentially result in greater reductions in visitor awareness as surf sounds would dominate closer to vehicles. The duration of impacts would be long-term adverse along routes open year-round, including along the additional year-round route from ramp 43 to 0.4 mile north established under alternative B. As all ORV routes, including those open year-round, are subject to closures, long-term impacts would potentially become short-term adverse, depending on the length of the specific closure. Short-term benefits would also arise during closure periods that limit ORV activity to less than one year due to the lack of vehicle noise during these periods. Some additional short-term benefits would arise under alternative B due to regulations eliminating night driving over a period of approximately four months. However, similar to alternative A, closure periods present the potential for increased numbers of vehicles in areas where routes remain open, thereby more frequently dominating the sound energy in such areas. In general, all ORV use, as well as closure periods, would occur intermittently over the length of the management plan, thereby creating long-term minor to moderate adverse impacts, as well as long-term benefits (during closure periods) to the natural soundscape along the beaches of the Seashore.

Under alternative B, there would be no planned construction of new ORV access ramps or reconfigurations of existing ramps. Thus, there would be no construction noise-related impacts under this alternative.

**Cumulative Impacts.** Under alternative B, the same past, present and planned future actions within the Seashore have the potential to affect the natural soundscape of the Seashore, which in turn may affect wildlife and visitor use, as under alternative A. These long-term minor to moderate adverse impacts, combined with the long-term minor to moderate adverse impacts of alternative B, would result in long-term minor to moderate cumulative impacts. However, the potential for such cumulative impacts would be somewhat reduced due to the seasonal elimination of night driving.

**Conclusion.** As described under alternative A, impacts to the natural soundscape within the Seashore would be minor to moderate, depending upon vehicle speed. Due to the slower speed limits proposed during the peak season when more visitors would be using beach areas, the potential for a greater reduction in visitor awareness would occur under alternative B as compared to alternative A. On beaches where ORV routes are open year-round, including the additional year-round route established under alternative B, impacts would be long-term adverse, but would potentially become short-term adverse during closure periods. In locations where ORV routes are specifically designated as “seasonal,” impacts would be short-term adverse. As with alternative A, closures of any kind present the potential for increased concentrations of vehicles in areas where ORV routes remain open. In such areas, the potential for vehicle noise to more frequently dominate the sound energy would arise. Aside from the short-term benefits that would occur in areas undergoing closure periods of any kind, additional short-term benefits may occur under alternative B as a result of regulations imposed to seasonally eliminate night driving. In general, all ORV use, as well as closure periods, would occur intermittently over the length of the management plan, thereby creating long-term minor to moderate adverse impacts, as well as long-term benefits (during closure periods), to the natural soundscape along the beaches of the Seashore. Adverse impacts to wildlife would be similar to those under alternative A.

Cumulative impacts to the natural soundscape would be long-term minor to moderate adverse.

### **Impacts of Alternative C: Seasonal Management**

Under alternative C, ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. Areas of high resource sensitivity and high visitor use could be designated as seasonal ORV routes, with restrictions based on seasonal resource and visitor use, or as year-round VFAs. Generally, most areas where there is a seasonally designated ORV route would be open to ORVs from October 15 to March 14. Areas of historically lower visitor use and resource sensitivity

would be designated as year-round ORV routes, subject to temporary resource closures. Additionally, ORV speeds would be limited to 15 mph (unless otherwise posted), with no proposed increases during the off season.

Similar to impacts described under alternatives A and B for a 15 mph speed limit, impacts both inland and seaward along the Seashore beaches would be long-term minor adverse in areas designated for year-round ORV use with the potential to become short-term in duration during temporary resource closures. Further, impacts to the natural soundscape in areas specifically designated for seasonal ORV use would be short-term minor adverse as seasonal closures would generally limit ORV activity in such areas to five months (i.e., ORV routes would generally be open from March 15 to Oct 14). Compared to alternatives A and B, seasonal closures under alternative C would last approximately three months longer, thus providing longer periods for natural sounds to prevail in seasonally closed areas. Unlike alternatives A and B, which allow for ORV access throughout the entire Seashore, the establishment of VFAs year-round under alternative C would result in areas of long-term negligible adverse impacts such that ORV noise is absent, and natural sounds would prevail. The establishment of VFAs and additional seasonally designated ORV areas with longer closure periods under alternative C would create fewer areas open to ORV use as compared to alternatives A and B. Therefore, the spatial extent of short-term benefits would be greater than under alternatives A and B. Conversely, the potential would also exist for increased concentrations of ORVs in areas that would remain open to ORV use. As described under alternatives A and B, diversion of ORVs to open areas would potentially result in vehicle noise more frequently dominating the sound energy in such areas. Given the potential for fewer open ORV areas, vehicle concentrations in open areas under alternative C may be potentially greater than under alternatives A and B, thereby potentially increasing the frequency of vehicle noise in such areas. In general, all ORV use, as well as closure periods, would occur intermittently over the length of the management plan, thereby creating long-term minor adverse impacts, as well as long-term benefits (during closure periods), to the natural soundscape along the beaches of the Seashore where ORV use is allowed.

As described under alternatives A and B for a 15 mph speed limit, adverse impacts to wildlife would occur. However, under alternative C, additional resource protection closures outside of the breeding season, as well as designated VFAs, would be established based on an annual nonbreeding habitat assessment conducted after the breeding season. Such closures and designated VFAs would provide areas of nonbreeding shorebird habitat with reduced human disturbance and additional short-term and long-term benefits. VFAs would also result in some wildlife impacts, with potentials for ORV pass-by events only for administrative purposes. Additional larger resource protection buffers, as compared to alternatives A and B, would also reduce the potential for impacts to ground-nesting birds as they may be located further from vehicles.

Impacts to visitor use would also be similar to alternatives A and B. However, under this alternative, seasonal restrictions on ORV use, as well as designated VFAs based on locations of high visitor use, would potentially reduce the impacts to visitor awareness of vehicles on the beaches, as well as visitors' ability to experience natural sounds.

As part of this alternative, existing ramps would be improved, reconfigured and/or supplemented by new ramps, including the construction of a new ramp 47. As noise from construction activities would be localized and of a short duration, construction and reconfiguration of ramps would create short-term minor adverse impacts.

**Cumulative Impacts.** Under alternative C, the same past, present and planned future actions within the Seashore have the potential to affect the natural soundscape of the Seashore, which in turn may affect wildlife and visitor use, as under the no-action alternatives. These long-term minor to moderate adverse impacts, combined with the long-term minor adverse impacts of alternative C, would result in long-term

minor adverse cumulative impacts, which would potentially be reduced due to seasonal restrictions on ORV use and designated VFAs under this alternative.

**Conclusion.** As described under alternative B, impacts to the natural soundscape resulting from a 15 mph speed limit would be minor adverse. However, the potential for wildlife and visitor use impacts, as well as the extent of such impacts, may be reduced due to seasonal restrictions and designated VFAs. Like under alternatives A and B, impacts would be long-term adverse for year-round ORV areas, potentially becoming short-term subject to temporary resource closures. As seasonal closures would limit ORV activity to less than a year, short-term adverse impacts would result. Closures of any kind, depending on the closure length, would also provide short-term benefits by providing noise-free periods. Under alternative C, there would be areas of negligible impacts due to designated VFAs and greater opportunities for natural sounds to prevail due to longer seasonal closure periods as compared to alternatives A and B. Conversely, fewer open ORV areas and longer seasonal closure periods also present the potential for greater concentrations of ORVs in areas with open ORV routes, thereby increasing the frequency of vehicle noise in such areas. In general, all ORV use, as well as closure periods, would occur intermittently over the length of the management plan, thereby creating long-term minor adverse impacts, as well as long-term benefits (during closure periods), to the natural soundscape along the beaches of the Seashore where ORV use is allowed. Construction activities associated with ramp reconfigurations and improvements, as well as the addition of a new ramp, would be localized and of a short duration. Therefore, construction-related impacts would be minor adverse.

Cumulative impacts to the natural soundscape would be long-term minor adverse.

### **Impacts of Alternative D: Increased Predictability and Simplified Management**

Under this alternative, ORV routes would be determined by identifying areas that historically do not support sensitive resources and areas of lower visitor use. These areas would be designated ORV routes year-round. Unlike under alternative C, areas of historically high resource sensitivity or high visitor use would not be designated as ORV routes. Year-round VFAs would include the area in front of villages and lifeguarded beaches, as well as designated SMAs. Additionally, ORV speeds would be limited to 15 mph (unless otherwise posted), with no proposed increases during the offseason.

Compared to the no-action alternatives, as well as alternative C, the designated ORV use and non-ORV use areas proposed under this alternative would decrease the area over which vehicle noise may potentially impact the natural soundscape of the Seashore. Specifically, alternative D would provide the largest area of long-term negligible impacts along the beaches since approximately 40 miles of beach would become year-round VFAs. In such areas, natural sounds would prevail, thus providing a long-term benefit to the natural soundscape, also over the largest area among all alternatives. Similar to the no-action alternatives and alternative C, in areas designated as year-round ORV routes, impacts would be long-term minor adverse due to the proposed 15 mph vehicle speed limit and potential for ORV activity occurring for more than one year. Impacts may potentially become short-term minor adverse in year-round ORV use areas subject to temporary resource closures. During such closures, short-term benefits would occur due to the lack of ORV noise and would be long-term benefits considering that resource closures would recur throughout the life of the management plan. As with the no-action alternatives and alternative C, closure periods and a reduced number of open ORV routes creates the potential for higher concentrations of vehicles in areas remaining open to ORV use. Due to the greater number of VFAs under this alternative as compared to the no-action alternatives and alternative C, alternative D presents the greatest potential for vehicle noise to dominate the sound energy more frequently (i.e., potential for greater vehicle pass-by events) in these areas.



Similar adverse impacts to wildlife would occur as described under alternatives A and B for a 15 mph speed limit. However, like under alternative C, additional resource protection closures, as well as designated VFAs in SMAs, would be established. Such closures and designated VFAs would provide additional short-term and long-term benefits as compared to the no-action alternatives. Larger designated VFAs would also result in some adverse wildlife impacts as compared to alternative C. Further, larger resource protection buffers, as compared to alternatives A and B, would also reduce the potential for impacts to ground-nesting birds as they may be located farther from vehicles.

The greater number of designated VFAs, particularly in areas of high visitor use, proposed under this alternative provides a greater number of places for visitors to experience and enjoy the natural soundscape of the Seashore without intermittent disturbances from vehicle pass-by events and reduces the potential for impacts to visitor awareness of vehicles. Particularly, residents and visitors staying in the villages would experience long-term negligible adverse impacts and long-term benefits while using village area beaches.

Similar to alternative C, as part of this alternative, existing ramps would be improved, reconfigured, and/or supplemented by new ramps. Impacts from construction-related activities would be localized and of short duration. Therefore, construction related noise impacts would be regarded as minor adverse.

**Cumulative Impacts.** Under alternative D, the same past, present and planned future actions within the Seashore have the potential to affect the natural soundscape of the Seashore, which in turn may affect wildlife and visitor use, as under the no-action alternatives. These long-term minor to moderate adverse impacts, combined with the long-term minor adverse impacts of alternative D, would result in long-term minor adverse cumulative impacts, which would potentially be the lowest level of impact of all alternatives, due to the largest extent of non-ORV use areas under alternative D.

**Conclusion.** As described under alternative A, impacts to the natural soundscape resulting from a 15 mph speed limit would be minor adverse. However, the potential for impacts to wildlife and visitor use from ORV noise would be the least under this alternative, as compared to the no-action and all action alternatives due to larger, year-round areas of designated non-ORV use. Adverse impacts would be long-term for all ORV routes since they are designated for year-round ORV use, but would potentially become short-term subject to temporary resource closures. During resource closures, short-term benefits would occur due to the lack of ORV noise and would also be long-term benefits since closures would recur throughout the life of the management plan. The key difference between this alternative and all other alternatives is that alternative D has the greatest extent of long-term negligible adverse impacts resulting from the number of year-round VFA designations. Alternative D also has the greatest extent of long-term benefits to the natural soundscape, visitors, and wildlife due to these VFAs. However, this alternative would also present the greatest potential for increased ORV pass-by events that dominate the sound energy in designated ORV areas due to the fewer number of open ORV areas in which vehicles may drive. Like under alternative C, construction related noise impacts from ramp improvements and the construction of a new ramp would be minor adverse.

Cumulative impacts to the natural soundscape would be long-term minor adverse.

### **Impacts of Alternative E: Variable Access and Maximum Management**

Management of ORV use under alternative E would be similar to management techniques proposed under alternative C with regards to the methodology for determining locations of ORV routes and vehicle-free areas. Specifically, ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. Areas of high resource sensitivity and high visitor use would generally be designated as seasonal ORV routes with restrictions based on seasonal resource and visitor use or as year-

round VFAs. Generally, most village beach areas where there is a designated seasonal ORV route would be open to ORVs from November 1 to March 31. Most areas of historically lower visitor use and resource sensitivity would be designated as year-round ORV routes, subject to temporary resource closures and limited access periods with ORV pass-through routes during shorebird breeding seasons. Additionally, ORV speeds would be limited to 15 mph (unless otherwise posted), with no proposed increases during the off season.

As alternative E would involve similar ORV management techniques as alternative C, impacts to the natural soundscape would also be similar. Both inland and seaward along the Seashore beaches, impacts would be minor adverse due to the proposed 15 mph speed limit. Like alternative C, in areas designated for year-round ORV use, adverse impacts would be long-term with the potential to become short-term in duration during temporary resource closures. Also, similar to alternative C, adverse impacts to the natural soundscape in areas specifically designated for seasonal ORV use would be short-term, as seasonal closures would generally limit ORV activity in such areas to between five and 6.5 months depending on whether the route is within a SMA. Short-term adverse impacts may also be regarded as long-term as vehicle use would be an intermittent recurring impact over the life of the management plan. Short-term benefits would also occur during seasonal and temporary resource closures due to the lack of ORV noise and would also be regarded as long-term benefits due to the recurrence of such closures over the life of the management plan. Compared to the no-action alternatives and similar to alternative C, this alternative would result in areas of long-term negligible impacts, which would also be regarded as long-term benefits, in beach locations where non-ORV use is specifically designated. However, the extent of such impacts and benefits would not be as large as under alternative D. As described under alternatives C and D, although seasonal and resource closures would provide benefit to areas by eliminating vehicle noise during those times, the potential would arise for increased vehicle concentrations along other routes that would remain open. The diversions to other open routes may not be as significant under this alternative as under alternative C or D given that some seasonal routes are open longer than others, ORV pass-through zones would be established in certain areas, and water taxi service to Bodie Island Spit and South Point would be available as an alternative option to driving. Although water taxi service would potentially create a temporary and occasional source of noise in the areas of the beach nearest the water taxi route, adverse impacts from the water taxis should be considered relative to the benefits associated with the potential reduction in vehicle use on the beach that the available service would provide.

Similar impacts to wildlife would occur as described under alternatives C and D for a proposed 15 mph speed limit. Additional resource protection closures, compared to the no-action alternatives, as well as designated VFAs or seasonally closed ORV routes in SMAs, would be established. Such closures and designated VFAs would provide additional short-term and long-term benefits as compared to the no-action alternatives, but not as much as under alternative D. Further, the establishment of pass-through zones during the shorebird breeding season would potentially result in additional periods of adverse impacts compared to alternatives C and D, although standard resource protection buffers would be applied. Designated VFAs would also result in additional wildlife impacts as compared to the no-action alternatives. Larger resource protection buffers, as compared to the no-action alternatives, would also reduce the potential for impacts to ground-nesting birds as they may be located further from vehicles.

Impacts to visitor use in terms of visitor awareness of vehicles and visitor ability to enjoy the natural soundscape would be as described under alternatives C and D. The establishment of year-round VFAs, under the implementation of alternative E, particularly in areas of high visitor use, would provide opportunities for visitors to experience the natural quiet. Areas open to seasonal use would also provide such opportunities, similar to alternative C, however, the earlier opening of seasonally designated ORV areas in addition to the opportunity for ORV pass-through zones would potentially result in fewer “noise-free” opportunities for visitors and a greater potential for reductions in visitor awareness of vehicles.

As with the other action alternatives, existing ramp relocation would occur, however more new ramps would be constructed. Although the potential exists for additional periods of construction, activities would still be localized and of short duration, thereby making construction-related impacts minor adverse, similar to the other action alternatives.

**Cumulative Impacts.** Under alternative E, the same past, present and planned future actions within the Seashore have the potential to affect the natural soundscape of the Seashore, which in turn may affect wildlife and visitor use, as under the no-action alternatives. These long-term minor to moderate adverse impacts, combined with the long-term minor adverse impacts of alternative E would result in long-term minor adverse cumulative impacts. However, the impact potential would be less than under the no-action alternatives, due to the implementation of seasonal ORV routes and designated VFAs, but greater than under alternative D due to greater extent of ORV access and the establishment of ORV pass-through zones.

**Conclusion.** As described under alternative A, impacts to the natural soundscape on the beaches resulting from a 15 mph speed limit would be minor adverse. However, like under alternative C, the potential for wildlife and visitor use impacts, as well as the extent of such impacts, may be reduced due to seasonal restrictions and designated VFAs. On the other hand, pass-through zones and earlier openings along seasonal routes under this alternative would potentially provide fewer “noise-free” periods for visitors and wildlife. Like under the no-action alternatives and alternatives C and D, impacts would be long-term adverse for year-round ORV areas, potentially becoming short-term subject to temporary resource closures. As seasonal closures would limit ORV activity to less than a year, short-term adverse impacts would result, which would also be regarded as long-term adverse impacts due to the fact that ORV use would recur intermittently over the life of the management plan. Closures of any kind, depending on the closure length, would also provide short-term and long-term benefits by providing temporary noise-free periods that would recur over the life of the management plan. Although areas of negligible impacts would also exist under this alternative due to designated VFAs, their extent would not be as large as under alternative D. Vehicle diversions to other open routes may not be as significant under this alternative as under alternative C or D given that some seasonal routes are open longer than others, ORV pass-through zones would be established in certain areas, and water taxi service would be available as an alternative option to driving. Although under this alternative, more ramps would be constructed, as compared to alternatives C and D, construction-related impacts would remain minor adverse due to the localized nature and short duration of the activities.

Cumulative impacts to the natural soundscape would be long-term minor adverse.

### **Impacts of Alternative F: NPS Preferred Alternative**

Management of ORV use under alternative F would be similar to management techniques proposed under alternatives C and E with regards to the methodology for determining locations of ORV routes and vehicle-free areas. Specifically, ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. Areas of high resource sensitivity and high visitor use would generally be designated as seasonal ORV routes with restrictions based on seasonal resource and visitor use or as year-round VFAs. Generally, most areas where there is a designated seasonal ORV route would be open to ORVs from November 1 through March 31, with several seasonal routes including Bodie Island spit open to ORVs from September 15 through March 14. Most areas of historically lower resource sensitivity would be designated as year-round ORV routes, subject to temporary resource closures and limited access through ORV pass-through zones during shorebird breeding season. Additionally, ORV speeds would be limited to 15 mph (unless otherwise posted), with no proposed increases during the off season.

As management techniques would be similar to those proposed under alternatives C and E, impacts to the natural soundscape would be similar. Both inland and seaward along the Seashore beaches, impacts would be minor adverse due to the proposed 15 mph speed limit. The duration of impacts would also generally be the same, with long-term adverse impacts occurring in regions with year-round ORV routes. Such impacts would potentially become short-term adverse subject to temporary closures. Also similar to alternative C, adverse impacts to the natural soundscape in areas specifically designated for seasonal ORV use would be short term. The duration of seasonal ORV closures would be greater than that under alternatives C and E, such that ORV use would be allowed along seasonal routes for approximately 5 to 6 months, depending on where the seasonal VFA is located. Therefore, the period in which natural sounds would prevail would be greater under this alternative. Short-term adverse impacts may also be regarded as long-term as vehicle use would be an intermittent recurring impact over the life of the management plan. Short-term benefits would also occur during seasonal and temporary resource closures due to the lack of ORV noise and would also be regarded as long-term benefits due to the recurrence of such closures over the life of the management plan. Compared to the no-action alternatives and similar to alternatives C and E, this alternative would result in areas of long-term negligible impacts, which would also be regarded as long-term benefits, in beach locations where vehicle-free use is specifically designated. The extent of long-term negligible impacts and long-term benefits would potentially be greater than alternatives C and E due to the greater number of designated VFAs. However, the extent of such impacts and benefits would not be as large as under alternative D. As described under the other action alternatives, although seasonal and resource closures would provide benefit to areas by eliminating vehicle noise during those times, the potential would arise for increased vehicle concentrations along other routes that would remain open. The time period of potential increased vehicle concentrations may be shorter under this alternative than under the other action alternatives given that seasonal routes are open longer.

As discussed in the other action alternatives, similar adverse impacts to wildlife would occur due to the proposed 15 mph speed limit. Additional resource protection closures, compared to the no-action alternatives, as well as designated year-round or seasonal VFAs would be established. Such closures and designated VFAs would provide additional short-term and long-term benefits as compared to the no-action alternatives, but not as much as under alternative D. Designated VFAs would also result in additional wildlife impacts and benefits as compared to the no-action alternatives. The extent of such impacts and benefits due to VFAs would be greater under this alternative compared to alternatives C and E since there would be a greater cumulative length of VFAs under this alternative. Like under the other action alternatives, larger resource protection buffers, as compared to the no-action alternatives, would also reduce the potential for impacts to ground-nesting birds as they may be located further from vehicles.

Impacts to visitor use in terms of visitor awareness of vehicles and visitor ability to enjoy the natural soundscape would be as described under the other action alternatives. The establishment of year-round VFAs, under the implementation of alternative F, particularly in areas of high visitor use, would provide opportunities for pedestrian users to experience the natural quiet. Areas open to seasonal use would also provide such opportunities, similar to alternatives C and E, however, the earlier opening of seasonally designated ORV areas would potentially result in fewer “noise-free” opportunities for visitors and a greater potential for reductions in visitor awareness of vehicles.

As with alternative E, existing ramp relocation would occur, and more new ramps would be constructed compared to the other action alternatives and the no-action alternatives. Although the potential exists for additional periods of construction, activities would still be localized and of short duration, thereby making construction-related impacts minor adverse.

**Cumulative Impacts.** Under alternative F, the same past, present and planned future actions within the Seashore have the potential to affect the natural soundscape of the Seashore, which in turn may affect wildlife and visitor use, as under the no-action alternatives. These long-term minor to moderate adverse

impacts, combined with the long-term minor adverse impacts of alternative F would result in long-term minor adverse cumulative impacts. Like under the other action alternatives, the impact potential would be less than under the no-action alternatives, due to the implementation of seasonal ORV routes and designated VFAs, but greater than under alternative D due to the greater extent of ORV access. Cumulative impacts may also be greater under this alternative compared to alternatives C and E, as ORV routes would open earlier, thereby providing shorter “noise-free” periods.

**Conclusion.** As described under alternative A, impacts to the natural soundscape on the beaches resulting from a 15 mph speed limit would be minor adverse. Like under alternatives C and E, the potential for wildlife and visitor use impacts from ORV noise may be reduced due to seasonal closures and designated VFAs. Like under the no-action alternatives and the other action alternatives, impacts would be long-term adverse for year-round ORV areas, potentially becoming short-term subject to temporary resource closures. As seasonal closures would limit ORV activity to less than a year, short-term adverse impacts would result, which would also be regarded as long-term adverse impacts due to the fact that ORV use would recur intermittently over the life of the management plan. Closures of any kind, depending on the closure length, would also provide short-term and long-term benefits by providing temporary noise-free periods that would recur over the life of the management plan. Larger areas of negligible impacts due to designated VFAs would also exist under this alternative as compared to the no-action alternatives and alternatives C and E. Vehicle diversions to other open routes may not be as significant under this alternative as under the other action alternatives given that some seasonal routes are open longer than others. Under this alternative construction-related impacts would remain minor adverse due to the localized nature and short duration of the activities.

Cumulative impacts to the natural soundscape would be long-term minor adverse.

**TABLE 59. SUMMARY OF IMPACTS TO SOUNDSCAPES UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Overall, minor to moderate impacts, depending upon vehicle speed would occur along the beaches where most routes are established for ORV driving. While impacts over the majority of the Seashore beaches would be long-term adverse due to greater numbers of designated year-round ORV routes, impacts would be short-term adverse in the areas in front of village beaches, which are only opened seasonally to ORV use. Short-term adverse impacts would also result during other closure periods	As described under alternative A, impacts to the natural soundscape within the Seashore would be minor to moderate, depending upon vehicle speed. Due to the slower speed limits proposed during the peak season when more visitors would be using beach areas, the potential for a greater reduction in visitor awareness would occur under this alternative as compared to alternative A. On beaches where ORV routes are open year-round,	As described under alternative B, impacts to the natural soundscape resulting from a 15 mph speed limit would be minor adverse. However, the potential for wildlife and visitor use impacts, as well as the extent of such impacts, may be reduced due to seasonal restrictions and designated VFAs. Like under alternatives A and B, impacts would be long-term adverse for year-round ORV areas, potentially becoming short-term subject to temporary	As described under alternative A, impacts to the natural soundscape resulting from a 15 mph speed limit would be minor adverse. However, the potential for impacts to wildlife and visitor use from ORV noise would be the least under this alternative, as compared to the no-action and all action alternatives due to larger areas of designated vehicle-free use. During resource closures, short-term benefits would occur due to the lack of ORV noise and would also be	As described under alternative A, impacts to the natural soundscape on the beaches resulting from a 15 mph speed limit would be minor adverse. However, like under alternative C, the potential for wildlife and visitor use impacts, as well as the extent of such impacts, may be reduced due to seasonal restrictions and designated VFAs. On the other hand, pass-through zones and earlier openings along seasonal routes under this alternative would potentially provide	As described under alternative A, impacts to the natural soundscape on the beaches resulting from a 15 mph speed limit would be minor adverse. Like under alternatives C and E, the potential for wildlife and visitor use impacts from ORV noise may be reduced due to seasonal closures and designated VFAs. “Noise-free” periods would be greater than alternatives C and E. Vehicle diversions to other open routes may not be as frequent under

## Chapter 4: Environmental Consequences

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<p>along any ORV route for resource protection, safety or administrative purposes. During closures, the potential for increased vehicle concentrations along remaining open ORV routes would increase the frequency of occurrence of single ORV pass-by events. Impacts would remain minor to moderate adverse, depending on vehicle speed, but vehicle noise may dominate the natural soundscape more frequently. In general, as ORV use would continue intermittently over the life of the management plan, vehicle noise would be a recurring, long-term minor to moderate adverse impact in all areas of the Seashore beaches open to ORV driving. Additionally, as closure periods, which have the potential to provide short-term benefits, would be implemented throughout the life of the management plan, long-term benefits would arise. As noise from ORV use would add at least 3 dBA to the natural ambient sound levels within the Seashore, wildlife would also experience adverse impacts.</p>	<p>including the additional year-round route established under alternative B, impacts would be long-term adverse, but would potentially become short-term adverse during closure periods. In locations where ORV routes are specifically designated as "seasonal," impacts would be short-term adverse. As with alternative A, closures of any kind present the potential for increased concentrations of vehicles in areas where ORV routes remain open. In such areas, the potential for vehicle noise to more frequently dominate the sound energy would arise. Aside from the short-term benefits that would occur in areas undergoing closure periods of any kind, additional short-term benefits may occur under alternative B as a result of regulations imposed to seasonally eliminate night driving. Impacts to wildlife would be similar to those under alternative A.</p>	<p>resource closures. As seasonal closures would limit ORV activity to less than a year, short-term adverse impacts would result. Closures of any kind, depending on the closure length, would also provide short-term benefits by providing noise-free periods. Under alternative C there would be areas of negligible impacts due to designated VFAs and greater opportunities for natural sounds to prevail due to longer seasonal closure periods as compared to alternatives A and B. Conversely, fewer open ORV areas and longer seasonal closure periods also present the potential for greater concentrations of ORVs in areas with open ORV routes, thereby increasing the frequency of vehicle noise in such areas. Construction activities would be localized and of short duration and would be minor adverse.</p>	<p>long-term benefits since closures would recur throughout the life of the management plan. The key difference between this alternative and all other alternatives is that alternative D has the greatest extent of long-term negligible adverse impacts resulting from the number of year-round vehicle-free route designations. Alternative D also has the greatest extent of long-term benefits to the natural soundscape, visitors and wildlife due to these VFAs. However, this alternative would also present the greatest potential for increased ORV pass-by events that dominate the sound energy in designated ORV areas due to the fewer number of open ORV areas in which vehicles may drive. Like under alternative C, construction related noise impacts from ramp improvements and the construction of a new ramp would be minor adverse.</p>	<p>fewer "noise-free" periods for visitors and wildlife. Vehicle diversions to other open routes may not be as frequent under this alternative as under alternative C or D given that some seasonal routes are open longer than others, ORV pass-through zones would be established in certain areas, and water taxi service would be available as an alternative option to driving. Although under this alternative, more ramps would be constructed, as compared to alternatives C and D, construction-related impacts would remain minor adverse due to the localized nature and short duration of the activities.</p>	<p>this alternative as under the other action alternatives given that some seasonal routes are open longer than others. Although under this alternative, more ramps would be constructed, as compared to alternatives C and D, construction-related impacts would remain minor adverse due to the localized nature and short duration of the activities.</p>

## VISITOR USE AND EXPERIENCE

### GUIDING REGULATIONS AND POLICIES

Cape Hatteras National Seashore's authorizing legislation states that the national seashore shall be set apart "for the benefit and enjoyment of the people." The authorizing legislation further states that "except for certain portions of the area, deemed to be especially adaptable for recreational uses, particularly swimming, boating, sailing, fishing, and other recreational activities of similar nature, which shall be developed for such uses as needed, the said areas shall be permanently reserved as a primitive wilderness and no development of the project or plan for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing in this area" (NPS 1937, Section 4). Management goals related to ORV use are included in the Seashore's General Management Plan, which states, "Selected beaches will continue to be open for ORV recreational driving and in conjunction with surf fishing in accordance with the existing use restrictions" (NPS 1984). Providing for this use would occur in the context of the overall planning objective of preserving the cultural resources and the flora, fauna, and natural physiographic condition, while providing for appropriate recreational use and public access to the oceanside and soundside shores in a manner that will minimize visitor use conflict, enhance visitor safety, and preserve Seashore resources.

NPS *Management Policies 2006* (NPS 2006c, sec. 8.2) state that the enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks.

Section 1.5 of NPS *Management Policies 2006* (NPS 2006c, sec. 1.5) states that in its role as steward of park resources, the NPS must ensure that park uses that are allowed would not cause impairment of, or unacceptable impacts on, park resources and values. When proposed park uses and the protection of park resources and values come into conflict, the protection of resources and values must be predominant. Appropriate visitor enjoyment is often associated with the inspirational qualities of the parks. As a general matter, preferred forms of enjoyment are those that are uniquely suited to the superlative natural and cultural resources found in the parks and that (1) foster an understanding of and appreciation for park resources and values, or (2) promote enjoyment through a direct association with, interaction with, or relation to park resources. These preferred forms of use contribute to the personal growth and well-being of visitors by taking advantage of the inherent educational value of parks. Equally important, many appropriate uses also contribute to the health and personal fitness of park visitors. These are the types of uses that the Service will actively promote, in accordance with the *Organic Act*.

As stated in NPS *Management Policies 2006* (NPS 2006c, sec. 8.2.3.1), off-road motor vehicle use in national park units is governed by Executive Order 11644 of 1972 (Use of Off-Road Vehicles on Public Lands, as amended by Executive Order 11989 of 1977). ORV routes and areas may be allowed only in locations where there will be no adverse impacts on the area's natural, cultural, scenic, and esthetic values, and in consideration of other existing or proposed recreational uses. The Executive Orders require that ORV routes and areas be located to minimize conflicts between ORV use and other existing or proposed recreational uses of the same or neighboring public lands and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.

While recreation is a key component of the NPS *Management Policies 2006*, the policies also instruct park units to maintain all native plants and animals as parts of the natural ecosystem. The NPS would achieve this by preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur (NPS 2006c, sec. 4.4.1).

The goals of providing a variety of recreational opportunities while protecting the natural systems at Cape Hatteras National Seashore are evident in the objectives of this plan/EIS. With regard to visitor use and experience, the objectives state that this plan/EIS should:

- Ensure that ORV operators are informed about the rules and regulations regarding ORV use at the Seashore.
- Manage ORV use to allow for a variety of visitor use experiences.
- Minimize conflicts between ORV use and other uses.
- Ensure that ORV management promotes the safety of all visitors.

In addition, the Seashore has identified objectives for communicating with the general public and visitor population that enjoy the recreational opportunities and natural and cultural resources provided by the Seashore. Communication and information sharing is an integral component of ensuring visitor satisfaction. Thus, the proposed plan should also accomplish the following:

- Establish a civic engagement component for ORV management.
- Establish procedures for prompt and efficient public notification of beach access status, including any temporary ORV use restrictions for such things as ramp maintenance, resource and public safety closures, storm events, etc.
- Build stewardship through public awareness and understanding of NPS resources management and visitor use policies and responsibilities as they pertain to the Seashore and ORV management.

## **ASSUMPTIONS, METHODOLOGY, AND IMPACT THRESHOLDS**

The potential for change in visitor experience was evaluated by assessing the limitations and assumed changes to visitor access and associated visitor uses, including ORV use, related to the proposed alternatives, and determining whether these projected changes would affect the visitor experience. The primary sources of data used to determine current visitation were surveys conducted by the NPS (RTI pers. comm. 2009a, 2009b, 2009c), the visitor use survey conducted by the Seashore in 2002 (University of Idaho 2003), and NPS visitor use statistics (NPS 2008e), as described in the “Chapter 3: Affected Environment.” The number of recreational visitors as reported by NPS is not a precise count, but is estimated from a variety of sources (NPS 1993). The estimated range for ORV numbers is based on NPS aerial survey counts adjusted by rental housing data to derive a minimum and maximum conservative estimate for oceanside ORV use.

The likelihood of partial or full beach resource closures and the associated restriction of ORV or pedestrian access were also considered in determining visitor use impacts. These closures are dependent on the breeding habits of specific species, particularly the piping plover, American oystercatcher, and four species of colonial waterbirds, including when the bird species court, establish territory, build nests, and lay eggs, as well as when the young first leave the nest to forage for food, and three species of sea turtles, including when turtles lay nests until turtle hatchlings return to the sea. Also, in evaluating visitor experience, the Seashore’s enabling legislation was considered so that the analysis of visitor experience considered not only the ability of visitors to engage in a desired activity, but if that activity is compatible with the preservation of the unique flora and fauna or the physiographic conditions.

In addition to visitor activities, the analysis of visitor use also considers the viewscape (night sky) and soundscape of the Seashore and potential visitor use conflicts. Soundscapes are covered separately in this



plan/EIS, but noise impacts do influence visitor experience and are therefore mentioned in this analysis where appropriate. The alternatives were qualitatively analyzed and considered if, while engaging in their desired visitor activity, visitors would see and hear the sights and sounds expected under that activity. An important component of this experience that was specifically addressed in the impact thresholds is viewing night skies. The analysis of night skies looks at zones that have been identified in the Seashore by the NPS Night Skies Team (see “Chapter 3: Affected Environment”). The zones represent the conditions that should be occurring at the Seashore in regards to permanent lighting sources, and not necessarily what is occurring currently. For example, in the Naturally Dark Zone (NDZ) and Park Lighting Zone 1 (PLZ1), there is no expectation of artificial lighting. These zones exclude temporary lighting installed less than 60 days for special purposes (not ongoing) and all emergency lighting.

A summary of visitor use and experience impacts under all alternatives is provided in table 60 at the end of this section. The following thresholds for evaluating impacts on visitor use and experience were defined.

*Negligible:* Visitors would likely be unaware of impacts associated with proposed changes. There would be no noticeable change in visitor use and experience or in any defined indicators of visitor satisfaction or behavior.

Any permanent lighting would not change the existing lighting zone designation throughout the Seashore. Visitors would not have a noticeable change in the ability to experience night skies in the NDZ and PLZ1 zones.

*Minor:* Changes in visitor use or experience would be slight and detectable, but would not appreciably limit or enhance any critical characteristics of the visitor experience. Visitor satisfaction would remain stable.

New introduced sources of permanent light may slightly alter the desired lighting zone designation of an area. Visitors would have a noticeable, but slight, change in the ability to experience night skies in the NDZ and PLZ1 zones, but this change would not impact their overall visitor experience.

*Moderate:* A few critical characteristics of the existing visitor experience would change, and the number of visitors engaging in a specified activity would be altered. Some visitors participating in that activity or visitor experience might be required to pursue their choices in other available local or regional areas. Visitor satisfaction at the Seashore would begin to either decline or increase.

New introduced sources of permanent light would create a noticeable change in the desired lighting zone designation of an area. Visitors would have a noticeable change in the ability to experience night skies in the NDZ and PLZ1 zones, and this change would impact their overall visitor experience.

*Major:* Many critical characteristics of the existing visitor experience would change, and visitor satisfaction would be substantially decreased or enhanced. The number of visitors engaging in a specified activity would be substantially altered. Many visitors participating in an activity or visitor experience would not be able to pursue their choices in other local or regional areas.

Visitors would not be able to experience night skies in the NDZ and PLZ1 zones, and this change would impact their overall visitor experience.

*Duration:* Short-term impacts would occur sporadically throughout a year, but would generally last no more than three weeks per year.

Long-term impacts would occur more than three weeks per year and likely for consecutive years.

## Study Area

The geographic study area for the visitor use and experience analysis includes the entire area within the Seashore boundary.

### **Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy**

Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps). Visitors could be restricted from popular areas, such as the points and spits, depending on the duration and extent of the closure, but in most cases, alternative or bypass routes would be identified and used to allow access to the maximum extent possible.

*Resource Closures.* Resource closures for birds would continue to be implemented annually, based on recent breeding activity on the spits, Cape Point, and South Beach and in other Seashore locations. Before implementing a closure, alternate access routes and then bypass criteria would be evaluated. An ORV and pedestrian corridor would be provided adjacent to closure areas unless species activity or safety issues required a full-beach closure. If a bypass is not available, a full-beach closure could limit ORV access through certain sections for a limited period, dependent on species behaviors and conditions.

Recent breeding activity for piping plover has been limited to Bodie Island Spit, Cape Point, South Beach, Hatteras Inlet Spit, and South Point. American oystercatchers nest in these areas as well, but not exclusively. Although the location of recent piping plover breeding areas could restrict large areas of each of the point and spits beginning in April, ORV corridors to the spits and Cape Point would most likely remain open throughout the early parts of the spring and summer. However, a full-beach closure could occur to protect piping plover or American oystercatcher chicks once they vacate the nest and begin foraging. Foraging activity could occur anytime throughout the summer months, and could last from 3 to 5 weeks, until the chicks take flight. As resource closures are closed to all visitor use, ORV users and other visitors would not be able to reach the spits unless alternate access was available via an existing interdunal road or bypass. However, this type of full beach closure is less likely under alternative A than under other alternatives.

Because turtles nest anywhere in the Seashore, partial and full-beach closures could occur anywhere along Seashore beaches throughout the summer and fall months, as hatchlings emerge from the nest. These nest closures generally last from approximately the 55th day after the nest is laid until the nests hatch. Full beach closures would be unlikely, however, since using alternative routes or applying the identified bypass criteria would help ensure that ORV and pedestrian access would continue to the points and spits and other portions of the beaches.

Of particular concern for all visitors is having access to the points and spits, especially for fishing and other recreational pursuits such as walking and beachcombing. The primary access to these areas are through ramp 4 (includes Bodie Island Spit), ramps 43 to ramp 49 (includes Cape Point), ramp 55 (includes Hatteras Inlet Spit), and on Ocracoke ramp 59 (includes North Ocracoke Spit) and ramps 70 and 72 (includes South Point). RTI, International estimates between 100,000 to 395,000 ORVs visit the Seashore annually (RTI pers. comm. 2009a), with an estimated 55%, or approximately 60,500 to 217,250 ORVs, expected to visit Seashore beaches during June through August. As indicated in the assessment of ramp usage for oceanside ramps during July 4 and Memorial Day, 2008, 75% of these ORVs use ramps for access to the points and spits, and therefore, an estimated 45,375 to 162,938 ORVs could be affected by closures. In comparison, vehicle counts conducted April to November in 2009 found that approximately 59% of the total daily vehicle roundtrips, which could include a vehicle making multiple trips over a ramp in the same visit, occurred on ramps near the points and spits (ramps 4, 43-49, 55, 59 and 72) (RTI 2010b). Applying a conservative high estimate of 2.7 passengers per ORV during the summer months (NPS 1993; RTI pers. comm. 2009c), this would represent about 122,000 to 440,000 visitors in ORVs that use the access ramps. Given the approximately 2.2 million visitors each year in recent years, this would have the potential to affect about 5 to 20% of the Seashore visitors annually. This estimate would represent the worst case scenario assuming that 75% of the ORV users are driving to the points and spits, and full beach closures at these access routes.

Therefore, under alternative A, partial-beach resource closures on the spits and points would result in restricting areas where ORV use and recreational pursuits could occur; however, pedestrians and visitors participating in activities such as swimming, sunbathing, beach walking, jogging, and shell collecting would be able to participate in activities outside of any resource closures. Therefore, the effects of partial beach resource closures on the visitor experience would result in long-term negligible to minor adverse impacts. If full-beach resource closures were implemented on the spits or along spit access routes, impacts to users would likely be long-term moderately adverse, even if the closure is temporary, since any full-beach resource closures that restrict ORV access and other visitor use would most likely occur during the summer months, when the majority of visitation occurs, and in areas where the majority of the use occurs. In the unlikely event that more than one spit or point experienced a full beach closure at the same time, impacts would be long-term moderate to major adverse due to the restriction of these highly popular locations for visitor recreational use.

Resource closures for American oystercatchers, colonial waterbirds, and sea turtles may also occur in other areas throughout the Seashore. Besides the spits, American oystercatchers and colonial waterbirds are found along the shore, from Cape Point north to Pea Island and in various areas between Cape Point and Hatteras Inlet and on Ocracoke Island. This breeding habitat occurs in vicinity of ORV access ramps where ORV use is much lighter. Based on aerial surveys conducted on July 4, 2008, the daytime count between ramps 23-38 (south of Salvo through south of Avon) is about 25% of the total oceanside ramp use, much less than the use that occurs at the more popular ramps near the spits. The 2009 vehicle counts conducted from April to November found that these ramps accounted for approximately 22% of daily vehicle roundtrips (RTI 2010b), which was similar to the 2008 findings. Generally, any ORVs and other dispersed recreation users would negotiate around these smaller closures throughout the Seashore, resulting in long-term negligible to minor adverse impacts because ORV and pedestrian accessibility would remain. Although a temporary full-beach resource closure could also occur in areas outside the

spits, the adverse impacts would be long-term minor because the beach would remain open on either side of resource closure and would be accessible from an ORV ramp.

*Safety Closures.* In addition to resource closures, alternative A could continue the four existing safety closures and would continue the two administrative closures near the lighthouse and Buxton Woods. In addition, the village beaches would continue to be closed to ORV use in the busy summer months. These areas include a total of approximately 24 miles, or one-third of the total beach mileage, which would continue to be restricted to ORV users, resulting in long-term minor adverse impacts by limiting the ORV visitor use in these areas. Alternatively, these closures would continue to be a benefit related to protecting visitor safety and to those visitors desiring a vehicle-free experience with more natural views and no vehicle-related noise in more populated areas (e.g., the village beaches, the lighthouse administrative closure area). The 2002 visitor use survey found that visiting the lighthouses was the top reason for visiting the Seashore (followed by beach combing and fishing, and visiting historic sites was the second most popular activity reported by visitors, ranked just below sunbathing/swimming). Therefore, the restriction on ORV use at these administrative areas would continue to provide a long-term benefit to the many visitors that seek the experience of historic site and lighthouse viewing without interference from vehicle traffic and noise.

*Permitting and Carrying Capacity Requirements.* Alternative A does not include any permitting requirements for ORV use, and has no carrying capacity restrictions or associated capacity-related management measures. This is a short-term benefit to visitor experience for most ORV users because it eliminates paperwork and effort needed to get a permit. However, without this permitting program, there is no opportunity to require a mandatory review by ORV users of rules and regulations associated with ORV use at the Seashore. This can lead to ORV users not being aware of or misunderstanding the regulations and accordingly violating the regulations, which can result in short-term negligible to minor adverse impacts to visitor experiences at the Seashore. In addition, without the permit system, if there are violators, there would be no mechanism in place to revoke a permit and, as such, restrict access of violators to the Seashore.

The lack of any type of carrying capacity restrictions would generally be viewed as a benefit to ORV users in that there would be no restriction on the numbers of ORVs allowed on the beach in open areas, so there would be less chance of being turned away or not having the desired access during a beach vacation. However, the 2002 visitor use study (University of Idaho 2003) found that 27% of visitors felt “crowded to extremely crowded” and 43% felt “somewhat crowded,” and 49% of visitor groups reported that crowding “detracted from their park experience.” As such, under the existing conditions, almost half of the visitors indicated that crowding was adversely affecting their visitor experience, and these adverse effects would continue and potentially increase with increases in visitor use as indicated by the relatively steady long-term increase in visitation at the Seashore. Therefore, without carrying capacity limitations, a large number of vehicles could occur in a relatively small area, and short-term minor to moderate adverse impacts to visitor experience or satisfaction could occur if overcrowded conditions are reached, depending on the user’s tolerance for a high density of use.

*Other Recreational Pursuits.* Fishing tournaments, which occur during the spring and fall, would continue to use all the open Seashore beaches, except one-half mile on either side of Cape Point, one-half mile from Hatteras and Ocracoke Inlet, and one-half mile on the north side of Oregon Inlet, and all major nesting areas at the Seashore where resource closures related to bird breeding activity have occurred. Some resource closures could occur, but as explained above, these would not be overly restrictive due to options for providing access through or around turtle nests and the provision of an ORV corridor where possible for bird closures. Therefore, alternative A would result in short-term negligible adverse impacts to visitors participating in fishing tournaments because historical beach access for tournament fishermen would continue.

Pedestrians and other activities, such as swimming, sunbathing, beach walking, jogging, and shell collecting, would be allowed outside of any resource closures. In many cases, the defined ORV and pedestrian corridors would overlap or be the same, raising the possibility of conflict between ORV and non-ORV users and a diminished visitor experience for visitors seeking solitude and freedom from vehicular distractions. Because the width of the ORV corridor would be approximately 150 feet, sufficient room should be available for both ORVs and pedestrians. Because pedestrians and ORVs would be present in the same areas, the noise and the sight of vehicles could decrease the visitor experience for those visitors seeking solitude and a natural setting. Results of the 2002 survey indicated that vehicles on the beach was one of the top 3 factors that received the highest proportion of “detracted from my experience” ratings; however, this was only 18% of the 249 people surveyed. In addition, 34% said vehicles on the beach had no effect on their experience, 20% said they added to their experience, and 29% did not encounter vehicles (University of Idaho 2003). Therefore, impacts would be long-term moderate adverse to pedestrians and visitors who desire an experience without the presence of vehicles on the beach.

Recreational pursuits, such as kite flying and Frisbee and ball throwing, would not be allowed within or above all bird closures. These restrictions would have long-term negligible to minor adverse impacts on visitor use because many other locations exist throughout the Seashore that accommodate these or similar activities. Pets would need to be confined or on a leash at all times in all areas and would be prohibited within any symbolic fencing around any bird closure area. Even on a leash, pets are prohibited from the landward side of ORV corridors at the spits and points. These restrictions would have long-term minor adverse impacts on responsible pet owners because pets would be allowed in the Seashore, but would still need to be restrained following NPS regulations.

*Night Sky.* A somewhat unique aspect of visitor experience is the enjoyment of a dark night sky. Under alternative A, night driving would continue to be permitted, so there would be the possibility of disruption of night sky viewing due to vehicle lights on the beach and lighting from parked campers where people are fishing, especially in areas away from the villages, resulting in minor long-term adverse effects.

*Overall Impact to Visitor Use.* Those looking for an experience at the Seashore that includes ORV use would have long-term negligible to minor adverse impacts as some areas would be closed for resource protection, but alternative A would provide the most ORV access of any alternative. Should there be extensive resource closures in a given year, the potential for long-term moderate impacts exists. Those looking for a vehicle-free experience at the Seashore would experience long-term moderate adverse impacts as alternative A does not provide for a specific separation of uses or designation of VFAs. Since night driving would be permitted under alternative A, there would be short-term minor adverse impacts to night skies.

**Cumulative Impacts.** Other past, present, and planned future activities within the Seashore have the potential to affect visitors and the recreational opportunities supported within the Seashore. In recent years, hurricanes, storms, and other events, as well as the subsequent recovery time required following these events, have adversely impacted visitors. Barrier islands are dynamic and constantly being reshaped by forces of nature, such as weather events. Following these events, roads are often overwashed with sand and water, facilities destroyed, and portions of an island may be lost or reshaped. Visitors cannot consistently depend that the recreation opportunity or visitor experience they enjoyed during a recent or past visit may be available in the future. In addition, following an event, staff and other Seashore resources may be dedicated to recovery efforts rather than to facilitating visitor enjoyment in some areas throughout the Seashore. Depending on the degree of damage following a storm, areas of the Seashore may be closed for a substantial period of time. Thus, weather events may result in short- and long-term minor to major adverse impacts, depending upon the severity of the storm.

Adverse impacts may also result from other activities within the Seashore that restrict visitor use, including the dredging of the federally authorized navigation channel at Oregon Inlet, which causes temporary shoreline closures along Bodie Island, and the implementation of the Seashore's Resources management Plan, which, in the interest of protecting resources, may restrict some visitor opportunities.

Beneficial impacts to visitor experience have occurred, and would continue to occur into the future, from the implementation of the following Seashore plans or actions:

- *Cape Hatteras National Seashore General Management Plan* (NPS 1984), which considers visitor needs in managing Seashore resources.
- Cape Hatteras National Seashore Comprehensive Interpretive Plan, which would identify the interpretive programs and associated facilities necessary to inform and teach the public about the purpose and significance of the Seashore and the many resources and opportunities that comprise the Seashore.
- Bonner Bridge replacement, which would continue to ensure visitors and their vehicles access between Bodie and Hatteras islands along NC-12.

Actions, such as ongoing road maintenance and repair to NC-12 and associated bridges, would most likely provide long-term beneficial impacts to visitor use and experience because of the importance of the road in maintaining access, with short-term minor impacts during construction. The General Management Plan and interpretive plan would most likely provide long-term beneficial impacts because these plans and activities would ensure that visitor opportunities continue within the Seashore.

The potentially adverse impacts of storm events, in combination with the generally minor impacts of alternative A, would result in long-term moderate adverse cumulative impacts to ORV users and other visitors dependent on ORVs for access to particular areas of the Seashore. However, the beneficial impacts of Seashore plans and ongoing road maintenance, when combined with the impacts of alternative A, would result in long-term negligible to minor adverse cumulative impacts for ORV users and long-term moderate adverse cumulative impacts for visitors who desire an experience without the presence of vehicles on the beach.

**Conclusion.** Resource closures on the spits and Cape Point would result in long-term negligible to minor adverse impacts if these closures are partial beach closures where ORVs and other visitors are able to negotiate around closures using ORV corridors and have continued access to favored destinations or fishing locations. Full-beach resource closures at the spits and points would generally result in long-term moderate adverse impacts to those visitors who regularly frequent these locations because of the inability to participate in recreational activities in these areas. In the unlikely event that more than one spit or point experienced a full beach closure at the same time, impacts would be short-term moderate to major adverse.

In areas outside the spits and Cape Point, partial-beach resource closures would result in long-term negligible to minor adverse impacts because ORVs and visitors would negotiate around these smaller closures. Full-beach resource closures in these areas would only be long-term minor adverse because the beach would remain open on either side of a resource closure and would be accessible from an ORV ramp. Because pedestrian use and most other recreational opportunities could occur outside resource closure areas, short-term minor adverse impacts would occur to these users. The lack of permits or a defined carrying capacity would be viewed as a benefit in that there would be no restriction on numbers of ORVs allowed on the beach in open areas and no additional effort to complete the necessary activities for a permit, but could lead to short-term minor to moderate adverse impacts to visitor experience or

satisfaction if overcrowded conditions are reached. Lights associated with ORV use would result in long-term minor adverse effects on night sky, especially in areas away from the villages.

Cumulative impacts would be long-term negligible to minor adverse for ORV users, and long-term moderate adverse for visitors who desire an experience without the presence of vehicles on the beach.

### **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

Under alternative B, areas accessible to ORVs and pedestrians would be similar to alternative A, except that the area from ramp 43 to 0.4 mile north would be open to ORVs year-round instead of just seasonally and large prenesting closures would be implemented. Under this alternative, visitors would be allowed to operate ORVs on all the ocean and inlet shoreline and on the existing soundside routes, 24 hours per day year-round, subject to temporary resource closures, seasonal ORV closures in front of the villages, and temporary ORV safety closures (see figure 2, chapter 2, alternative A and B maps). However, under alternative B, resource closures would be based on buffers established under the consent decree, and these buffer distances are larger than those under alternative A (see table 10, chapter 2). In addition, the consent decree requires increasing resource protection buffer size if an area that was closed is deliberately violated, so buffers may be expanded and result in larger beach closures due to non-compliance. Also, under alternative B, the time of allowable ORV access would be regulated to prohibit night driving from May 1 to September 15, and to restrict it to only those with a permit from September 16 to November 15.

*Resource Closures.* Resource closures for birds would continue to be implemented annually, based on recent breeding activity, and an ORV and pedestrian corridor would be provided adjacent to closure areas unless species activity or safety issues required a closure. Because the resource closure buffers are larger than the buffers under alternative A, visitors could be restricted more often and for longer periods of time during the breeding season. A closure could temporarily limit ORV access through certain sections for an extended certain period, which would result in long-term moderate adverse impacts to users who wish to access a certain area that is closed.

Partial-beach resource closures on the spits and points would be similar to those described under alternative A and would result in long-term minor adverse impacts because ORVs and their passengers would have access around these closures using ORV corridors and would not be impeded from reaching favored recreational destinations or fishing locations. However, if full-beach resource closures were implemented on the spits or along spit access routes, even though the closure may only be temporary, the inability to participate in recreational activities would result in long-term moderate adverse impacts to those visitors who regularly frequent that location. If full-beach closures occurred at more than one spit location at a time, which could occur more often under alternative B due to increased buffer sizes, moderate to major adverse impacts to fishermen and other ORV users accessing these areas could occur, depending upon the location and time frame.

Resource closures for American oystercatchers, colonial waterbirds, and sea turtles may also occur in other areas throughout the Seashore, which would temporarily block access for ORVs and other dispersed recreation users due to buffer size, usually resulting in long-term, minor to moderate and sometimes major impacts, depending upon the location of the closure. Full beach closures due to turtle nesting would sometimes occur after the nest reaches its hatch window. In some cases, using alternative routes or applying the identified bypass criteria would help provide ORV and pedestrian access around the turtle closures. A temporary full-beach resource closure could occur in areas outside the spits, and would be more likely under alternative B than under alternative A because the buffers are larger, and deliberate non-compliance would result in expanded closures. The adverse impacts would be long-term and

moderate because the expanded buffers could make more beaches inaccessible, and continued expansion of buffers due to incidents of deliberate noncompliance could exacerbate the impact.

Regarding time of use, under alternative B, the consent decree includes night-time restrictions to offer additional protection of sea turtles. Vehicles would be prohibited from using the beach during the hours of 10:00 p.m. to 6:00 a.m. from May 1 to September 15 (with commercial fisherman being able to access the Seashore at 5:00 a.m.) and would require a permit to access the beaches with a vehicle during those hours from September 16 to November 15. Night driving would be allowed all other times of the year (November 16 to April 30). These restrictions would have long-term minor to major adverse impacts on visitors, depending on the desired visitor use and experience; for example, those wishing to surf fish at night would not be able to do so during the summer season, which would be considered a major long-term adverse effect on that group of visitors.

*Safety Closures.* Similar to alternative A, alternative B could continue the four existing safety closures, and would continue the two administrative closures near the lighthouse and Buxton Woods, and the village beaches would be closed to ORV use in the busy summer months. These restrictions would cause minor long-term adverse impacts to ORV users and would be a long-term benefit related to protecting visitor safety and to those visitors who desire a vehicle-free beach experience with more natural views and no vehicle-related noise in more populated areas. One area, from ramp 43 to 0.4 mile north, would be open to ORVs year-round instead of just seasonally, which would open up a small area near Cape Point Campground to ORV use. Also, under alternative B, there would be an ORV-free zone established in the ocean backshore where beaches are wide enough to accommodate a nearly 60-foot (20-meter) ORV corridor above the mean high tide from March 15 to November 15. This would allow visitors who desire a vehicle-free beach experience to use an area of the upper beach without any direct disturbance from ORVs trying to access the same area, a small long-term benefit to those visitors. However, since pedestrians and ORVs would be present on the same portion of the beach, the noise and the sight of vehicles would continue to decrease the visitor experience for those visitors seeking solitude and a natural setting, with short-term minor adverse impacts to those users.

*Permitting and Carrying Capacity Requirements.* Similar to alternative A, alternative B does not include any permitting requirements for daytime ORV use, and this would be beneficial to visitor experience for most ORV users because it eliminates paperwork and effort needed to get a permit. However, this alternative does not provide a permitting system or a mandatory review of rules and regulations for ORV users and therefore has no opportunities to ensure that ORV users are knowledgeable about the regulations and also has no “teeth” to revoke permits of regulatory offenders. This could result in a long-term minor adverse impact because of the effects of these violators on the experience of other visitors. Nighttime permits required from September 16 to November 15 would provide educational benefits and be revocable if rules are not followed, a long-term benefit to the Seashore, as well as to visitors.

Alternative B has no formal carrying capacity provisions, although temporary closures could be enforced if traffic is impeded or if disorderly conduct occurs and continues, which has occurred during busy weekends. The lack of a defined carrying capacity would be viewed as a benefit in that there would be no restriction on numbers of ORVs allowed on the beach in open areas, so there would be less chance of being turned away or not having the desired experience during a beach vacation. However, this could lead to crowding, and short-term minor to moderate adverse impacts to visitor experience or satisfaction, depending on the user’s tolerance for a high density of use, as described under alternative A.

*Other Recreational Pursuits.* Similar to alternative A, pedestrian-based activities would be allowed outside of any resource closures. In most cases, the defined ORV and pedestrian corridors would overlap or be the same, raising the possibility of conflict between ORV users and non-ORV users and a diminished visitor experience for visitors seeking solitude and freedom from vehicular distractions. Under



alternative B, the speed limit would be lowered to 15 mph during the busiest tourist months, which would help reduce conflicts, both real and perceived, and accident potential, an issue of concern raised by the public during the scoping process, resulting in long-term benefits. Also, as previously noted, there would be an ORV-free zone established in the ocean backshore where beaches are wide enough to accommodate a 60-foot (20-meter) ORV corridor above the mean high tide from March 15 to November 15. This would slightly reduce the potential for direct conflicts between ORV users and visitors who desire a vehicle-free beach experience, a long-term benefit; however, the lack of designated VFAs would result in long-term moderate adverse impacts to these visitors.

Like alternative A, recreational pursuits, such as kite flying and Frisbee and ball throwing, would not be allowed within or above all bird closures. These restrictions would have long-term negligible to minor adverse impacts on visitor use since many other locations exist throughout the Seashore that accommodate these or similar activities. Pets would need to be confined or on a leash at all times in all areas and would be prohibited within any bird closure area. These restrictions would have long-term minor adverse impacts on pet owners because pets would be allowed in the Seashore, but would still need to be restrained following NPS policy. Also, similar to alternative A, there would be only short-term negligible adverse impacts to visitors participating in fishing tournaments because historical beach access for tournament fishermen would continue.

*Night Sky.* Regarding the visitor experience of viewing the night sky, under alternative B the restriction on night driving from May 15 to September 15 would eliminate impacts during that period of time due to vehicle lights on the beach and lighting from parked vehicles where people are fishing, especially in areas away from the villages, resulting in long-term benefits for night sky experience. However, night driving would still occur under permit in the fall and during the remainder of the year, so impacts to night sky during those months would remain long-term negligible to minor adverse.

*Overall Impact to Visitor Use.* Those looking for an experience at the Seashore that includes ORV use would have long-term moderate to major adverse impacts as one or more spit or point would be closed for an extended period of time during the breeding season. During the remainder of the year, there would be negligible to minor adverse impacts to ORV users as limited areas would be closed for resource protection. Those looking for a vehicle-free beach experience at the Seashore would experience long-term moderate adverse impacts as alternative B does not provide for a specific separation of uses outside of seasonal ORV closures of village beaches and no VFAs would be designated. Since night driving would be seasonally restricted under alternative B, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.

**Cumulative Impacts.** Under alternative B, the same past, present, and planned future activities within the Seashore that have the potential to affect visitors and the recreational opportunities within the Seashore would occur, and impacts would be the same as described under alternative A. The impacts of these actions, in combination with the mostly minor to potentially major impacts of alternative B, would result in long-term moderate to major adverse cumulative impacts to ORV users. However, while there would be some benefits for visitors who desire a vehicle-free beach experience from the night-driving restrictions and reduced speed limits, the lack of designated VFAs and the other actions and restrictions on ORV use under alternative B would result in long-term minor to moderate adverse cumulative impacts for visitors who desire an experience free of motorized vehicle presence, disturbance, lights, or noise.

**Conclusion.** Resource closures on the spits and Cape Point would result in long-term negligible to minor adverse impacts if there are partial resource closures where ORVs are able to negotiate around closure areas using ORV corridors and have continued access to favored destinations or fishing locations. Full-beach resource closures at the spits and points would be more likely than under alternative A and would result in long-term moderate to potentially major adverse impacts to those visitors who regularly frequent

these locations because of the inability to participate in recreational activities. Those users desiring a vehicle-free experience with more natural views and no vehicle-related noise or visual disturbance could experience long-term benefits due to restrictions on nighttime driving and reduced speed limits during busy seasons, and long-term moderate adverse impacts due to the lack of designated VFAs within the Seashore.

Because pedestrian use and most other recreational opportunities could occur outside resource closures, long-term minor to moderate adverse impacts would occur to these users. The lack of a permit system or carrying capacity would be viewed as a benefit in that there would be no restriction on numbers of ORVs allowed on the beach in open areas or needed paperwork to drive an ORV on the beach, but could lead to long-term minor to moderate adverse impacts to visitor experience or satisfaction if conditions reached overcrowded conditions and no traffic-based closures occurred. Lights associated with ORV use would result in long-term negligible to minor adverse effects to those visitors wishing to experience the night sky during the fall and winter periods when night driving is permitted or not restricted, and there would be long-term benefits to night sky viewing during the summer season when night driving is prohibited. The impacts to visitor use and experience prior to the June 2008 modifications to the consent decree would be the same as the impacts after the modification.

Cumulative impacts would be long-term moderate to major adverse for ORV users, and long-term minor to moderate adverse for visitors who desire a vehicle-free beach experience.

### **Impacts of Alternative C: Seasonal Management**

Under alternative C, areas accessible to ORVs and pedestrians would be determined by providing designated ORV use areas and pedestrian-free areas that are based largely on seasonal resource and visitor use characteristics, giving Seashore users a degree of predictability in knowing what areas are opened and what areas are closed. Under this alternative, ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated.

ORV routes and areas would be established seasonally (closed to ORV use from March 15 to October 15) in Rodanthe, Waves, Salvo, Avon, Frisco, Hatteras Village beaches, and Ocracoke Campground beach (0.5 mile northeast to 0.5 mile southwest of ramp 68). The area on Buxton beach south to 0.4 mile north of ramp 43 and the Ocracoke Day Use Area beach from 1.2 miles northeast to 0.5 mile northeast of ramp 70 would be designated as vehicle free year-round. In addition to these areas, SMAs would be established, as described in chapter 2. All SMAs would be seasonally designated for ORV use from March 15 to October 15, consistent with the village beach closures. The majority of SMAs would be managed using ML1 measures, where both ORV and pedestrian activity would be prohibited during breeding activities. Bodie Island Spit, Cape Point, and South Point would be managed under ML2 measures, which would provide a pedestrian corridor during the seasonal ORV closure. Hatteras Inlet Spit and North Ocracoke Spit would be managed under ML1 measures, and closed to pedestrian use seasonally from March 15 until breeding activities are complete.

In areas where ORV use areas are identified, new and/or improved ramps would be added to ensure access to these areas on the oceanside, and existing soundside ramps would remain open. Interdunal roads available to ORV use would be the same as under alternative A, with the addition of providing additional pull-outs or widening where appropriate to provide safe passage. On South Beach, the existing interdunal road would be extended west of ramp 45 to a new ramp 47.

Within the areas open to ORV use, if resource concerns are present, they would be subject to closure using applicable buffer distances (see table 10, chapter 2). These buffer distances are greater than under the no-action alternatives. Also, under alternative C, the time of allowable ORV access would be

regulated to prohibit night driving from May 1 to November 15, between 7:00 p.m. and 7:00 a.m. Because of the seasonal ORV closures, including the popular points and spits, increased buffers and night-driving regulations, visitors could be restricted from popular areas depending on the duration and extent of the closure and the desired time of use, resulting in long-term moderate to major adverse impacts to ORV users because they would not be able to engage in the activity they desire.

*Resource Closures.* Resource closures for birds would continue to be implemented annually, based on recent breeding activity. A pedestrian corridor would be provided adjacent to closure areas in SMAs managed under ML2 procedures (Bodie Island Spit, Cape Point, and South Point) unless species activity or safety issues required a closure. In SMAs designated for the use of ML1 measures (see table 10, chapter 2), pedestrian access would not be allowed in areas with closures, including prenesting closures. Under alternative C, visitors using ORVs would be restricted from the popular points and spits during the summer months. As noted under alternative A, the spits and points are of particular concern for visitors who wish to use these areas for fishing and other recreational pursuits, such as walking and beachcombing. Assuming that to access the points and spits, visitors would use ramps 4, 43-49, 55, 59 and 72, the 2009 vehicle counts conducted from April to November found that these ramps accounted for about approximately 59% of total daily vehicle roundtrips (RTI 2010b). Under alternative C, while ORV users could access some areas around these ramps year-round, they could not use these ramps to access the points and spits, which would be seasonally designated as VFAs. However, ORV users would be able to access the year-round ORV routes between new ramp 47 and ramp 49, and the new interdunal road extension between the Cape Point Campground and new ramps 47 and 48 and ramp 49, except if there is a resource closure. Therefore, seasonal resource-based closures and restrictions under alternative C could affect a majority of oceanside ramp users, and result in long-term moderate to major impacts for users wishing to access these points by ORV in the summer. Three of the point and spit areas would have a pedestrian access corridor, subject to resource closures during the breeding season, resulting in a beneficial impact for visitors looking for solitude and a natural setting at the Seashore.

Resource closures for American oystercatchers, colonial waterbirds, and sea turtles may also occur in other areas throughout the Seashore. Depending upon the location of closures relative to ORV access ramps, and ORVs and other dispersed recreation users would generally negotiate around these smaller closures throughout the Seashore using alternate routes and access points, usually resulting in long-term negligible to minor adverse impacts because ORV accessibility would remain. Full beach closures due to turtle nesting would be lessened by the establishment of traffic detours behind nests, where appropriate. Under alternative C, turtle management activities would include creation of a “nest watch” program that would allow trained volunteers to watch nests that have reached their hatch windows to monitor hatchling emergence success. This would provide a new visitor experience, and one that is desired based on public comment, resulting in long-term beneficial impacts to visitors who seek to participate in such a program.

A temporary full-beach resource closure could occur in areas open to ORV use, but would be much less likely under alternative C than under the no-action alternatives since known breeding/hatching areas are within the SMAs and would generally already be closed to ORV use during the breeding season. As a result, the chance of a full beach closure in areas open to ORVs outside the SMAs is decreased, with the potential for long-term minor to moderate adverse impacts if temporary closures of these areas were to occur as it would further reduce the amount of area open for ORV use under alternative C and concentrate this use in different areas, subject to the parking restrictions.

Alternative C would provide for a special use permit, to be authorized by the Superintendent, which would allow temporary use of an ORV in a VFA. This special use permit would be authorized in the following limited circumstances: temporary emergency ORV use of VFAs if needed to bypass sections of NC-12 that are closed for repairs; temporary non-emergency ORV use of VFAs traditionally used by fishing tournaments that were established prior to January 1, 2009; and temporary non-emergency ORV

use of VFAs in front of villages to transport mobility impaired individuals to join their family or friends on an open beach that is otherwise closed to ORV. In the instance of transporting a mobility impaired individual, ORV use would be limited to the shortest, most direct distance between the nearest designated ORV route and the location of the gathering. By providing for special use permits in these circumstances, short-term beneficial impacts would be realized by these user groups that would otherwise not be able to use an ORV in areas closed year-round or seasonally to ORV use.

To further address and facilitate access into vehicle-free areas, alternative C would include new or expanded parking areas to support pedestrian access as well as the consideration by the Seashore of applications for commercial use authorizations for a beach shuttle service. These elements would provide long-term beneficial impacts and work to mitigate the moderate to major adverse impacts that some user groups may experience as alternative ways to reach the Seashore would be provided if ORV use is not permitted.

Regarding time of use, under alternative C the seasonal night-time restrictions offer additional protection of sea turtles. Vehicles would be prohibited from using the beach during the hours of 7:00 p.m. to 7:00 a.m. from May 1 to November 15. Night driving would be allowed all other times of the year (November 16 to April 30). These restrictions would have long-term beneficial to long-term moderate to major adverse impacts on visitors, depending on the desired visitor use and experience. For example, those visitors wishing to experience the beach at night without ORVs present would have more opportunities to do so. Those visitors wishing to use ORVs to access surf fishing areas at night would not be able to do so during the summer and fall season, which would be considered a major long-term adverse effect on that group of visitors.

*Safety Closures.* Alternative C would establish specific criteria for implementation of a safety closure, including if there is debris on the beach, narrow beaches or congested areas. These closures would preclude ORV access, but allow pedestrian and commercial fishing access. No administrative closures would be established under this alternative. Although there is not an administrative closure at the former site of the Cape Hatteras Lighthouse, no ORV route would be established in this area, thus ORVs would not be permitted and village beaches would be closed during the summer either as a seasonal or as part of a year-round closure.

These areas include a total of approximately 40 miles (13 miles that would be designated as vehicle free year-round and 27 miles that would be seasonally designated for ORV use from October 15 until March 14), or about 60% of the total beach mileage, so these restrictions, particularly during the period from March 15 to October 14, would cause long-term moderate to major adverse impacts to ORV users and would be a long-term benefit related to protecting visitor safety and to those visitors who desire a vehicle-free beach experience with more natural views and no vehicle-related noise in more populated areas. Some areas that have been traditionally closed year-round due to seasonal restrictions and safety closures, such as Frisco Village beach and Hatteras Village beach, would now be open seasonally from October 15 to March 15. Access to these previously closed areas would provide ORV users with a long-term benefit. Since pedestrians and ORVs would be present on the same portion of the beach during the winter/spring season, the noise and the sight of vehicles would continue to decrease the visitor experience for those visitors seeking solitude and a natural setting, with long-term minor to moderate adverse impacts to those users.

Alternative C would include improvements to ramp access areas throughout the Seashore. These improvements would include ensuring that ramps are two-lanes wide and have standard regulatory signs and information boards, gates are installed at all ramps, and a designated air down area (for adjustment of tire pressure on ORVs) with a hardened surface is provided. These improvements to ramps and the

creation of designated air down areas, would have beneficial impacts to ORV users, who noted a desire for these conditions during public scoping.

*Permitting and Carrying Capacity Requirements.* Alternative C would include permitting requirements for all ORV use, and could be viewed as a short-term minor to moderate adverse impact to visitor experience for most ORV users since it would result in paperwork and effort needed to get a permit. Permits would be available in person at designated areas or online and would be valid for 12 months from the purchase date, making the permit easy to obtain on an annual basis. There would be no limit on the number of permits issued, and, therefore, no adverse impacts from a perceived or actual scarcity of permits. The permit system would require ORV owners to complete a short education program in-person or online and pass a basic knowledge test. This requirement could be viewed by those seeking a permit as too cumbersome and would result in short-term minor to moderate adverse impacts to their experience. A fee would be charged to obtain a permit that would be based on cost recovery as described in the NPS Director's Order and Reference Manual 53. Depending on the level of fee, ORV users could experience minor to moderate impacts, depending on if they feel the fee would be cost prohibitive and impact their ability to access the Seashore.

Although some users may feel adverse impacts from implementation of a permit system, other users may see beneficial impacts as those visitors using ORV would be provided education and information with their permits that could influence their behavior and reduce potential for adverse resource impacts and conflicts with visitors who desire a vehicle-free beach experience. Implementation of a permit system would provide the Seashore with a method to address those ORV users who violate Seashore policy, through revocation of permits, which could beneficially affect the experience of visitors through potentially fewer instances of encountering unlawful behavior of other visitor and associated conflicts.

Alternative C would not dictate parking configurations on the beach, but would include formal carrying capacity provisions, including the enforcement of temporary closures of areas once these limits are reached or if disorderly conduct occurs and continues, which has occurred during busy weekends. The implementation of a defined carrying capacity may be viewed as a benefit by those who feel that there are times when conditions are too crowded and that their visitor experience is adversely impacted by these crowded conditions. Others would view implementation of a carrying capacity as a short-term moderate to major adverse impact if they are unable to get to their desired area or are unable to participate in the planned recreational activity because capacity has been reached, as closures due to carrying capacity would be expected to occur for only a few hours on some days during peak use summer holiday weekends, based on past, current, and estimated future use levels. The determined carrying capacity would be subject to periodic review and may address these impacts if they arise.

*Other Recreational Pursuits.* Similar to alternative A, pedestrian-based activities would be allowed outside of any resource closures, but unlike A, this would include seasonal closure to all users of seven SMAs managed under ML1 measures and would allow a pedestrian access corridor, subject to resource closures, at three SMAs managed under ML2 management measures (Bodie Island Spit, Cape Point, and South Point). In most cases, where ORVs are allowed, the defined ORV and pedestrian corridors would overlap or be the same, raising the possibility of conflict between ORV users and visitors who desire a vehicle-free beach experience and a diminished visitor experience for visitors seeking solitude and freedom from vehicular distractions. However, due to the amount of area designated as vehicle free under alternative C, these impacts would be expected to be negligible. Under alternative C, the speed limit would be lowered to 15 mph year-round, which would help reduce conflicts, both real and perceived, and accident potential, an issue of concern raised by the public during the scoping process, resulting in long-term benefits.

Like alternative A, recreational pursuits, such as kite flying and Frisbee and ball throwing, would not be allowed within or above all bird closures. These restrictions would have long-term negligible to minor adverse impacts on visitor use since many other locations exist throughout the Seashore that accommodate these or similar activities. Also, similar to alternative A, there would be only short-term negligible adverse impacts to visitors participating in fishing tournaments because historical beach access for tournament fishermen would continue.

Pets would need to be confined or on a leash at all times in all areas and would be prohibited within any bird closure area. Further restrictions on pets would be implemented under alternative C, including a prohibition on pets within all designated SMAs from March 15 to October 15 and within all nonbreeding shorebird SMAs that are otherwise open to recreational use. These restrictions would have long-term moderate adverse impacts on pet owners because of the limited areas that they would be able to go with their pets at the Seashore. In addition, restrictions would be placed on the use of horses at the Seashore, with a prohibition of horse use in SMAs. While this would be a long-term adverse impact to visitors who want to ride horses within the SMAs, a long-term beneficial impact would also be realized by allowing horses use on village beaches from September 16 to May 14 each year.

Additional restrictions on beach fires would be implemented under alternative C with a non-fee educational permit required in order to have a beach fire. Beach camping would be prohibited and nighttime use would also be addressed through a policy that would restrict any beach equipment on the Seashore at night and direct the NPS to remove this equipment after it has been left for 24 hours. Users may experience short-term minor adverse impacts from these restrictions due to the extra effort required to obtain a beach fire permit and the requirement to remove their beach equipment every night.

*Night Sky.* Regarding the visitor experience of viewing the night sky, under alternative C the restriction on night driving from May 15 to November 15 would eliminate impacts during that period due to vehicle lights on the beach and lighting from parked vehicles where people are fishing, especially in areas away from the villages, resulting in long-term benefits for night sky experience. However, night driving would still occur under permit during the remainder of the year, so impacts to night sky during those months would remain long-term negligible to minor adverse.

*Overall Impact to Visitor Use.* Those looking for an experience at the Seashore that includes ORV use would have long-term moderate to major adverse impacts as the designation of VFAs and the establishment of the SMAs would seasonally preclude ORV use from some areas of the Seashore that are popular ORV use areas. While three areas managed under ML2 procedures would have pedestrian access corridors, no ORV corridors would be provided in the SMAs, resulting in greater impacts to ORV users. Those looking for a vehicle-free beach experience at the Seashore would experience long-term benefits as alternative C provides for pedestrian corridors in three SMAs under ML2 procedures, as well as providing additional VFAs. Since night driving would be seasonally restricted under alternative C, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.

**Cumulative Impacts.** Under alternative C, the same past, present, and planned future activities within the Seashore that have the potential to affect visitors and the recreational opportunities within the Seashore would occur, and impacts would be the same as described under alternative A. The impacts of these actions, in combination with the mostly minor to moderate and potentially major adverse impacts of alternative C, would result in long-term moderate to major adverse cumulative impacts to ORV users. However, the beneficial impacts of other actions and restrictions on ORV use under alternative C would provide long-term cumulative benefits for visitors who desire an experience free of motorized vehicle presence, disturbance, lights, or noise.

**Conclusion.** Designating ORV use areas and closures based on seasonal resource and visitor use patterns would result in long-term moderate to major adverse impacts to ORV users because the areas most used by ORV and favored destinations or fishing locations would be closed to ORV use seasonally. These impacts may be reduced to minor to moderate due to the additional accommodations made for pedestrian use including more parking, a possible beach shuttle, and special use permits to shuttle the mobility impaired. Seashore visitors not using or relying on ORVs would not experience many, if any, adverse impacts from these closures or from other safety closures, and those visitors desiring a vehicle-free beach experience with more natural views and no vehicle-related noise or visual disturbance could experience long-term benefits from the ORV-free areas, restrictions on nighttime driving, and reduced speed limits throughout the Seashore. In addition, visitors desiring an ORV-free experience would have more areas open to them year-round, as well as seasonally, and would experience long-term beneficial impacts.

Because pedestrians and most other recreational opportunities could occur outside seasonally restricted SMAs and other closures, short-term minor adverse impacts would occur to these users. The implementation of an ORV permit system and carrying capacity would be viewed as a benefit by those who would like to see a system in place with consequences for non-law abiding ORV users, as well as those who may perceive crowded conditions that impact their visitor use and experience. For other ORV users, these elements would have a long-term minor to moderate adverse impact as the permit system could be viewed as cumbersome and/or expensive, and short-term, minor to moderate impacts to those who may not be able to access a beach that has reached capacity. Elements that restrict the type of activities (such as kite flying) or the ability of Seashore users to have a campfire or bring pets could have long-term minor to moderate adverse impacts to specific user groups. Lights associated with ORV use would result in long-term negligible to minor adverse effects to those visitors wishing to experience the night sky during winter when night driving is permitted or not restricted, and there would be long-term benefits to night sky viewing during the summer season when night driving is prohibited.

Cumulative impacts would be long-term moderate to major adverse for ORV users, and long-term beneficial for visitors who desire a vehicle-free beach experience.

### **Impacts of Alternative D: Increased Predictability and Simplified Management**

Under alternative D, areas accessible to ORVs and pedestrians would be determined by providing the maximum amount of predictability regarding areas available for ORV use and VFAs for pedestrian use. This would result in applying restrictions to larger areas of the Seashore for longer periods of time to minimize changes in designated ORV routes and VFAs over the course of a year. Under this alternative, ORV access would be prohibited in all areas of the Seashore, except where an ORV route is specifically designated.

All areas designated as a SMA would be closed to ORV use year-round, which would include high use areas such as all points and spits. In addition, all village beaches, lifeguarded beaches, and areas in front of campgrounds would have no ORV use year-round. This would result in approximately 40 miles of beach being designated as vehicle free year-round under alternative D. In areas where ORV use is permitted, ramps to the oceanside would be maintained and new ramps added or expanded. On the soundside, access would remain the same as under the no-action alternatives and there would also be no change to the existing system of interdunal roads. In areas closed to ORV use year-round, new or expanded parking would be added to facilitate pedestrian access. Under alternative D, there would be no consideration of commercial use authorizations for a beach shuttle and no special use permits would be issued for temporary ORV use in VFAs. Although accommodations would be made for pedestrian use with additional parking, the designation of about 60% of the Seashore mileage for no ORV use year-round would have a long-term major adverse impact to those visitors wishing to engage in ORV activities. Without providing seasonal access in SMAs, those wishing to use the spits and points with an

ORV would need to engage in these activities elsewhere, resulting in a long-term major adverse impact. Pedestrians would be able to access SMAs once breeding activities are completed, but ORV use would be prohibited year-round, resulting in long-term benefits for visitors who desire a vehicle-free beach experience.

In areas where ORV use areas are identified, new and/or improved ramps would be added to ensure access to these areas on the oceanside. Within the areas open to ORV use, if resource concerns are present, they would be subject to closure using applicable buffer distances (see table 10, chapter 2). These buffer distances are greater than under the no-action alternatives. Also, under alternative D, the time of allowable ORV access would be regulated to prohibit night driving from May 1 to November 15, between 7:00 p.m. and 7:00 a.m., as described under alternative C; however, under alternative D, this policy would not undergo periodic review as it would under alternative C. Because of the extensive year-round ORV closures, including the popular points and spits, increased buffers and night-driving regulations, ORV users would be restricted from popular areas, as well as other areas typically open to ORV use depending on the duration and extent of the closure and the desired time of use, resulting in long-term major adverse impacts to these users because they are not able to engage in the activity they desire.

As described in “Chapter 3: Visitor Use,” the NPS contracted with RTI to conduct a visitor intercept survey at the oceanside beach areas of the Seashore. As part of this survey, respondents were asked how they would respond to an ORV management scenario similar to alternative D (table 59-1). When presented with a description of ORV management under this scenario, 32.7% of visitors reported that it was unlikely that they would have taken their current trip to the Seashore if this management scenario had been in place. Instead, 12.0% of visitors reported they would have gone to a different beach outside of North Carolina, while 7.9% would have stayed home.

**TABLE 59-1. PREDICTED IMPACT OF MANAGEMENT SCENARIO SIMILAR TO ALTERNATIVE D**

Question	Answer	Mean	95% Confidence Interval	
			Low	High
If the plan on this map had been in place *before* you made any plans or reservations for this trip and before you put down any money on deposits, how likely is it that you would still have taken this trip?	Very Likely/Somewhat Likely	67.3%	49.1%	85.6%
	Somewhat Unlikely/Very Unlikely	32.7%	14.4%	50.9%
What do you think you most likely would have done instead?	Go to Another Part of the Outer Banks	4.8%	0.0%	12.5%
	Go to a Different Beach in North Carolina	0.8%	0.0%	1.9%
	Go to a Different Beach outside North Carolina	12.0%	2.3%	21.7%
	Go to Somewhere Else, But Not an Ocean Beach	0.5%	0.0%	1.5%
	Stay Home	7.9%	0.0%	16.9%
	Don't Know	6.7%	0.0%	18.8%

Source: RTI 2010a

*Resource Closures.* Resource closures for birds would continue to be implemented annually, based on recent breeding activity, but no pedestrian corridor would be provided in areas closed to ORV use



including the points and spits, during the breeding season. Pedestrian access would be permitted on village beaches, campgrounds, and lifeguarded beaches. All SMAs would under ML1 management procedures, and pedestrians or ORVs would not be permitted in these areas once prenesting closures were established until after breeding activity is completed. This means that these areas, including the points and spits (which account for approximately 59% of daily vehicle roundtrips between April and November (RTI 2010b)), would be closed to pedestrians seasonally, so while breeding activities are occurring, these popular areas would not be available to visitors looking for solitude and a more natural setting at the Seashore. This would result in long-term moderate adverse impacts to those visitors looking for a solitude experience as they may need to go elsewhere in the Seashore during this timeframe. Outside the breeding season, the SMAs would provide large areas accessible to pedestrian use only, resulting in beneficial impacts to these users as they would be able to obtain their desired experience in a wide variety of areas.

Resource closures for American oystercatchers, colonial waterbirds, and sea turtles may also occur in other areas throughout the Seashore, and ORVs and other dispersed recreation users would generally negotiate around these smaller closures throughout the Seashore using alternate routes and access points. This would typically result in long-term minor adverse impacts because ORV accessibility would remain, but with limited area available for ORV use. Therefore impacts to ORV users would be greater than under the other alternatives. Full beach closures due to turtle nesting would be lessened by the establishment of traffic detours behind nests, where appropriate. Under alternative D, turtle management activities would include creation of a “nest watch” program that would allow trained volunteers to watch nests that have reached their hatch windows to monitor hatchling emergence success. This would provide a new visitor experience, and one that is desired based on public comment, resulting in long-term benefits to visitors who seek to participate in such a program.

A temporary full-beach resource closure could occur in areas open to ORV use, but would be much less likely under alternative D than under the no-action alternatives since known breeding/hatching areas are within the SMAs and would generally already be closed to ORV use during the breeding season. As a result, the chance of a full beach closure in areas open to ORVs outside the SMAs is decreased, with the potential for long-term minor to moderate adverse impacts if temporary closures of these areas were to occur as it would further reduce the amount of area open for ORV use under alternative D and would concentrate this use in different areas, subject to the parking restrictions.

To further address and facilitate access into vehicle-free areas, alternative D would include new or expanded parking areas to support pedestrian access. As discussed above, this element would provide long-term beneficial impacts.

Regarding time of use, under alternative D the night-time restrictions offer additional protection of sea turtles. Vehicles would be prohibited from using the beach during the hours of 7:00 p.m. to 7:00 a.m. from May 1 to November 15. Night driving would be allowed all other times of the year (November 16 to April 30). These restrictions would have long-term beneficial to long-term moderate to major adverse impacts on visitors, depending on the desired visitor use and experience. For example, those visitors wishing to experience the beach at night without ORVs present would have more opportunities to do so. Those visitors wishing to use ORVs to access surf fishing areas at night would not be able to do so during the summer and fall season, which would be considered a long-term major adverse effect on that group of visitors.

*Safety Closures.* Alternative D would not establish specific safety closures or criteria for safety closures. ORV drivers would be responsible for recognizing and avoiding ORV safety hazards and would drive at their own risk. No administrative closures would be established under this alternative. Although there would be no administrative closure at the Cape Point Lighthouse, no ORV route would be established in this area, thus ORVs would not be permitted and village beaches would be closed during the summer

either as a seasonal or as part of a year-round closure. As with alternative B, the NPS would retain the authority to implement a temporary emergency ORV closure in the case that ORV traffic is backing up on the beach access ramps, either on or off-beach bound, which threatens to impede traffic flow; ORV traffic on the beach is parked in such a way that two-way traffic is impaired; and/or multiple incidents of disorderly behavior are observed or reported. The absence of safety closures and administrative closures would have a long-term beneficial impact by potentially opening up new areas for ORV use, but this impact would be negligible as many of these areas such as village beach and the lighthouse, are year-round VFAs.

Additionally, by restricting ORV use year-round in 60% of the Seashore and restricting pedestrian use in SMAs during the breeding season, visitors would be concentrated in a smaller area. This could create real or perceived concerns for crowding or visitor safety as opportunities for separation of uses is not provided, and result in long-term moderate to major adverse impacts to visitors who perceive crowded conditions or safety concerns.

Alternative D would include improvements to ramp characteristics throughout the Seashore. These improvements would include ensuring that ramps are two lanes wide and have standard regulatory signs and information boards, gates are installed at all ramps, and a designated air down area with a hardened surface is provided. These improvements to ramps and installation of amenities such as an air down area would have long-term beneficial impacts to ORV users, who noted a desire for these conditions during public scoping.

*Permitting and Carrying Capacity Requirements.* Alternative D would include permitting requirements for all ORV use (as described under alternative C, except permits would be valid for a calendar year rather than for 12 months), and could be viewed as a short-term minor to moderate adverse impact to visitor experience for most ORV users since it would result in paperwork and effort needed to get a permit. As described under alternative C, the permit requirement could be viewed by those seeking a permit as too cumbersome and would result in short-term minor to moderate adverse impacts to their experience. Depending on the level of fee associated with the permit, ORV users could experience long-term minor adverse impacts, depending on if they feel the fee would prohibit their access and ability to experience the Seashore. As management costs are decreased under alternative D compared to other alternatives with permits, a lower permit fee and therefore lower level of impact would be expected. Although some users may feel adverse impacts from implementation of a permit system, other users may see long-term beneficial impacts as those visitors using ORV would be provided education and information with their permits that could influence their behavior and reduce potential for conflicts with visitors who desire a vehicle-free beach experience. Implementation of a permit system would provide the Seashore with a method to address those ORV users who violate Seashore policy, through revocation of permits. The permit system would give Seashore staff a system with “teeth” to revoke permits of regulatory offenders, which could beneficially affect the experience of other visitors.

Alternative D requires that parking within ORV routes is only one vehicle deep and would prohibit stacking of vehicles in more than one row. This requirement would create a *de facto* carrying capacity that once the capacity of the one row is reached, no other vehicles would be permitted in that area. The parking restriction and associated carrying capacity would be expected to have long-term moderate to major adverse impacts on ORV users because with only 27 miles of beach potentially open to ORV use year-round, it is likely that this capacity would be reached during peak use periods such as holiday weekends and some users would not be able to reach locations or participate in the activities they desire. This effect would be amplified for those visitors that may be at the Seashore for a short period and do not get the opportunity to engage in their desired activity while they are there, resulting in short and long-term moderate to major adverse impacts, depending on the duration that visitors cannot access a desired area. For those visitors coming to the Seashore without an ORV, the parking and carrying capacity restrictions

may have a long-term beneficial impact as under alternative D all Seashore users would use open beaches, regardless of the activity, and limiting the number of ORVs could reduce the potential for any visitor use conflicts and safety concerns in these areas open to use. Under alternative D, the speed limit would be lowered to 15 mph year-round, which would also help reduce conflicts, both real and perceived, and accident potential, an issue of concern raised by the public during the scoping process.

*Other Recreational Pursuits.* Like alternative A, recreational pursuits, such as kite flying and Frisbee and ball throwing, would not be allowed within or above all bird closures. These restrictions would have long-term minor adverse impacts on visitor use since many other locations exist throughout the Seashore that accommodate these or similar activities. Also, similar to alternative A, there would be only short-term negligible adverse impacts to visitors participating in fishing tournaments because historical beach access for tournament fishermen would continue.

Pets would need to be confined or on a leash at all times in all areas. Further restrictions on pets would be implemented under alternative D with pets prohibited within all designated SMAs year-round. These restrictions would have long-term minor to moderate adverse impacts on pet owners because of the limitations placed on pets in ORV use areas.

Alternative D would not include additional restrictions on beach fires and no permit would be required for this activity. Beach camping would be prohibited and nighttime use would be addressed through a policy that would restrict any beach equipment on the Seashore at night and direct the NPS to remove this equipment after it has been left for 24 hours. Users may experience minor impacts from these restrictions due to the extra effort to remove their beach equipment every night, but would likely feel it is beneficial not to have to obtain a permit for beach fires.

*Night Sky.* Regarding the visitor experience of viewing the night sky, under alternative D the restriction on night driving from May 15 to November 15 would eliminate impacts during that period due to vehicle lights on the beach and lighting from parked vehicles where people are fishing, especially in areas away from the villages, resulting in long-term benefits for night sky experience from May 1 to November 15. However, night driving would still occur under permit during the remainder of the year, so impacts to night sky during those months would remain negligible to minor adverse.

*Overall Impact to Visitor Use.* Those looking for an experience at the Seashore that includes ORV use would have long-term major adverse impacts as all SMAs and village beaches would be designated as VFAs year-round, which would prohibit the use of ORV in many popular visitor use areas. The extent of these impacts were confirmed by the 2010 visitor intercept survey at oceanside beach areas which showed that over 30% of visitors would not have visited the Seashore under a scenario similar to alternative D, with some opting to go to a different beach or to stay home (RTI 2010a). Those looking for a vehicle-free beach experience at the Seashore would experience long-term benefits as alternative D provides for many designated VFAs throughout the Seashore, although pedestrian access would be prohibited in the SMAs during the breeding season. Since night driving would be seasonally restricted under alternative D, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.

**Cumulative Impacts.** Under alternative D, the same past, present, and planned future activities within the Seashore that have the potential to affect visitors and the recreational opportunities within the Seashore would occur, and impacts would be the same as described under alternative A. Other actions, primarily construction-related, would have short-term minor impacts. The impacts of these actions, in combination with the mostly moderate to major impacts of alternative D, would result in long-term major adverse cumulative impacts to ORV users. However, the beneficial impacts of other actions and restrictions on

ORV use under alternative D would provide long-term cumulative benefits for visitors who desire an experience free of motorized vehicle presence, disturbance, lights, or noise.

**Conclusion.** Designating ORV use areas and closures based on simplified management and predictability would result in long-term major adverse impacts to ORV users that would not be able to access SMAs (and other designated VFAs) by ORV year-round. Pedestrians at the Seashore would experience long-term minor adverse impacts during the breeding season when they cannot access SMAs, but long-term benefits the remaining times of the year as the number of vehicle-free beach experiences would increase, with a greater level of benefit to this user group than the other alternatives.

Village beaches, campgrounds, and lifeguarded beaches would still be open to pedestrian use year-round, providing long-term beneficial impacts to visitors who want to use these areas without ORVs during the breeding season. Additional accommodations made for pedestrian use including more parking would also be a long-term beneficial impact.

The implementation of a permit system and carrying capacity would be viewed as a long-term benefit by those who would like to see a system in place with consequences for non-law abiding ORV users, as well as those who may perceive crowded conditions that impact their visitor use and experience. For other ORV users, these elements would have a short-term minor adverse impact as the permit system could be viewed as too cumbersome and/or expensive, and with the lower fees as a result of lower management costs, these impacts would be expected to be mostly minor. Long-term major adverse impacts may be felt by those ORV users who cannot access a beach that has reached capacity. Elements that restrict the type of activities (such as kite flying) or the ability of Seashore users to bring pets could have long-term minor to moderate adverse impacts to specific user groups. Lights associated with ORV use would result in negligible to minor adverse effects to those visitors wishing to experience the night sky during winter when night driving is permitted or not restricted, and there would be long-term benefits to night sky viewing during the summer and fall season when night driving is prohibited.

Cumulative impacts would be long-term major adverse to ORV users, and long-term beneficial for visitors who desire a vehicle-free beach experience.

### **Impacts of Alternative E: Variable Access and Maximum Management**

Under alternative E, areas accessible to ORVs and pedestrians would be determined by a management strategy that ensures that there are a variety of experiences available to all Seashore users, with the necessary controls or restrictions to limit impacts to sensitive resources.

ORV routes and areas would be established seasonally (closed to ORV use from April 1 to October 31) in Rodanthe, Waves, Salvo, Avon, Frisco, Buxton beaches, and Ocracoke Campground beach (0.5 mile northeast to 0.5 mile southwest of ramp 68). Vehicle-free areas would be designated on Bodie Island from ramp 1 to approximately 0.5 mile south of Coquina Beach; Frisco and Hatteras Village beaches; and the Ocracoke Day Use Area beach, from 1.2 miles northeast of ramp 70 to 0.5 mile northeast of ramp 70. Seven SMAs would be closed to ORV use under ML1 measures during the breeding season from March 15 to August 31. Three popular visitor use areas within SMAs (Bodie Island Spit, Cape Point, and South Point) would have an ORV pass-through zone (no stopping of ORVs), subject to resource closures under ML2 measures, to allow visitors opportunities to access these sites during portions of the breeding season. In designated ORV use areas, alternative E would also provide for an ORV corridor above the high tide line March 15 to August 31 on the ocean beach. Where the corridor is at least 30 meters wide, it would be posted 10 meters seaward of the toe of the dune to provide an ocean backshore closure.

In designated ORV use areas, ramps would be added or relocated to ensure access to these areas on the oceanside. Soundside ORV access would be limited to designated boat ramps from the Cable Crossing and the Spur Road. The remaining soundside ramps would be closed to ORV use and small parking areas would be constructed to better accommodate pedestrian access.

Interdunal roads available to ORV use would be the same as under alternative A, with the addition of providing additional pull-outs or widening where appropriate to provide safe passage. In addition, on South Beach, the existing interdunal road would be extended west of ramp 45 to ramp 49, with a new ramp 48 established off of the interdunal road.

Within the areas open to ORV use, if resource concerns are present they would be subject to closure using applicable buffer distances (see table 10, chapter 2). These buffer distances are greater than under the no-action alternatives. Also, under alternative E, the time of allowable ORV access would be regulated to prohibit night driving from May 1 to November 15, between 10:00 p.m. and 6:00 a.m. Between September 16 and November 15, the areas that are closed to nighttime driving would be evaluated and those with low to no density of turtle nests may be reopened to ORV use.

The above measures would result in approximately 32 miles of beach designated for ORV use year-round, 20 miles seasonally designated for ORV use, and approximately 16 miles designated as vehicle free year-round. In three areas closed seasonally (Bodie Island Spit, Cape Point, and South Point), an ORV pass-through corridor would be provided at the start of the breeding season, subject to resource closures, which would allow access during portions of the breeding season and lessen the impact experienced by ORV users at these popular locations. Access provided by the designated routes and areas under alternative E would have long-term minor to moderate adverse impacts on ORV users, depending on the user's ability to reach a certain area and participate in the activities they desire. The nighttime restrictions would have long-term minor to moderate adverse impacts on ORV users as night driving would be restricted seasonally, but the restriction would be for a shorter period than other action alternatives, and there would be an opportunity for night driving to resume in some areas starting in the fall.

*Resource Closures.* Resource closures for birds would continue to be implemented annually, based on recent breeding activity, and an ORV pass-through zone and pedestrian corridor would be provided within three SMAs under ML2 management procedures (Bodie Island Spit, Cape Point, and South Point), unless species activity or safety issues required a closure. In SMAs designated for the use of ML1 measures (see table 10, chapter 2), pedestrian access would not be allowed when resource closures, including prenesting closures, are in effect. Because of the resource closure buffers, visitors with ORVs would be precluded from the majority of the popular points and spits during the summer months. As noted under alternative A, the spits and points are of particular concern for visitors that wish to use these areas for fishing and other recreational pursuits such as walking and beachcombing. Assuming that to access the points and spits, visitors would use ramps 4, 43-49, 55, 59 and 72, the 2009 vehicle counts that occurred between April and November found that these ramps accounted for about approximately 59% of total daily vehicle roundtrips (RTI 2010b). Ramp 59, accounted for 4.7 % of the vehicle roundtrips, though it's not known what percent of these were trips north to the spit (which is a VFA under alternative E) and what percent were trips south along the island shoreline. About 11% of the vehicle roundtrips were over ramp 55. Under alternative E the area between ramp 55 along the ocean beach to 0.2 miles southwest to Bone Road would provide year-round ORV access. From 0.2 miles southeast of Bone Road to the inlet would be a seasonal ORV route, open to ORV between September 1 and March 14. The remaining ramps that could be used to access a point or spit, including 4, 43-49, and 72 include areas that are seasonally designated as VFAs but would also include additional limited ORV routes in these areas, subject to resource closures. Overall the seasonal closures at the points and spits under alternative E could affect a majority of oceanside ORV users; however, there would be ORV access at a number of other locations. Therefore, seasonal restrictions to popular areas of visitation would result in long-term moderate to major

adverse impacts for users wishing to access these points by ORV in the summer. Portions of some of the point and spit areas may be open to pedestrian use during this time, resulting in a long-term beneficial impact for visitors looking for a more solitude experience at the Seashore.

Resource closures for American oystercatchers, colonial waterbirds, and sea turtles may also occur in other areas throughout the Seashore, and ORVs and other dispersed recreation users would generally negotiate around these smaller closures throughout the Seashore using alternate routes and access points. This would typically result in short-term negligible to minor adverse impacts, because ORV accessibility would remain. Full beach closures due to turtle nesting would be lessened by the establishment of traffic detours behind nests, where appropriate. Under alternative E, turtle management activities would include creation of a “nest watch” program that would allow trained volunteers to watch nests that have reached their hatch windows to monitor hatchling emergence success. This would provide a new visitor experience, and one that is desired based on public comment, resulting in long-term beneficial impacts to visitors who seek to participate in such a program.

A temporary full-beach resource closure could occur in areas open to ORV use, but would be much less likely under alternative E than under the no-action alternatives since known breeding/hatching areas would be within the SMAs and would generally already be closed to ORV use during the breeding season. As a result, the chance of a full beach closure in areas open to ORVs outside the SMAs is decreased, with the potential for long-term minor to moderate adverse impacts if temporary closures of these areas were to occur. The conditional ORV access corridors with pass-through zones, which would be allowed at the start of the breeding season in the Bodie Island Spit, Cape Point, and South Point SMAs under alternative E, would be subject to resource closures and would likely be closed to access for some portion of the breeding season, resulting in long-term moderate to major adverse impacts to visitors wanting to access those locations during that period.

Alternative E would provide for a special use permit, to be authorized by the Superintendent, which would allow temporary use of an ORV in a VFA, as described under alternative C. By providing for special use permits in these circumstances, long-term beneficial impacts would be realized by these user groups that would otherwise not be able to use an ORV in areas closed year-round or seasonally to ORV use.

To further address and facilitate access into vehicle-free areas, alternative E would include new or expanded parking areas to support pedestrian access, as well as the consideration by the Seashore of applications for commercial use authorizations for a beach shuttle service. In addition to the shuttle system, under alternative E, the NPS would designate and post boat landing zones (“drop off” area) near the inlet at Bodie Island Spit and South Point that could be used to drop off pedestrians if/when the inlet shoreline is not otherwise closed to protect Seashore resources, with purpose of encouraging a water shuttle service. These elements would provide long-term beneficial impacts and work to mitigate the long-term minor to moderate to major adverse impacts that some user groups may experience as alternative ways to reach the Seashore would be provided if ORV use is not permitted.

Regarding time of use, under alternative E, the night-time restrictions offer additional protection of sea turtles. Vehicles would be prohibited from using the beach during the hours of 10:00 p.m. to 6:00 a.m. from May 1 to November 15, with the potential for some areas to reopen after September 15 if there are no to low density of turtle nests in certain areas of the Seashore. Night driving would be allowed all other times of the year (November 16 to April 30). These restrictions would have long-term benefits or long-term minor to moderate adverse impacts on visitors, depending on the desired visitor use and experience. For example, those visitors wishing to experience the beach at night without ORVs present would have more opportunities to do so. Those visitors wishing to use ORVs to access surf fishing areas at night

would not be able to do so during the summer and fall season, which would be considered a long-term major adverse effect on that group of visitors.

*Safety Closures.* Alternative E would establish specific criteria for implementation of a safety closure, as detailed under alternative C. No administrative closures would be established under this alternative. Although there is not an administrative closure at the Cape Point Lighthouse, no ORV route would be established in this area, thus ORVs would not be permitted. Village beaches would be closed during the summer either as a seasonal or as part of a year-round closure. Alternative E would also implement additional pedestrian safety measures, requiring that village beaches open to ORV use during the winter season be at least 65.6 feet (20 meters) wide from the toe of the dune seaward to the mean high tide line in order to be open for ORV use. The safety closure criteria and beach width requirements in front of villages would provide a long-term beneficial impact to visitor safety with these measures.

These areas include a total of approximately 36 miles (16 designated as vehicle free year-round and 20 seasonally designated for ORV use during the nonbreeding season), or two-thirds of the total beach mileage during the peak summer season, so these restrictions would cause long-term moderate adverse impacts to ORV users and would be a long-term benefit related to protecting visitor safety and to those visitors desiring a vehicle-free beach experience with more natural views and no vehicle-related noise in more populated areas. Some areas that have been traditionally closed to ORVs year-round due to seasonal restrictions and safety closures, such as village beaches, would now be open seasonally from November 1 to March 31. Access to these previously closed areas would provide ORV users with a long-term benefit, but would result in long-term minor to moderate adverse impacts to visitors who desire a vehicle-free beach experience. Since pedestrians and ORVs would be present on the same portion of the beach during the winter/spring season, the noise and the sight of vehicles would continue to decrease the visitor experience for those visitors seeking solitude and a natural setting, with long-term minor to moderate adverse impacts to those users.

Alternative E would include improvements to ramp characteristics throughout the Seashore, as described under alternative C. These improvements to ramps and creation of designated air down areas would have long-term beneficial impacts to ORV users, who noted a desire for these conditions during public scoping.

*Permitting and Carrying Capacity Requirements.* Alternative E would include permitting requirements for all ORV use (as detailed under alternative C), and could be viewed as a short-term minor to moderate adverse impact to visitor experience for most ORV users since it would result in paperwork and effort needed to get a permit. Alternative E would differ from alternative C in that both weekly and 12-month permits would be available, with a lower fee for weekly permits than 12-month permits. This would provide flexibility to the visitor who may only be coming to the Seashore for a short period. Alternative E would also include additional permits that would permit “park-and-stay” overnight at designated locations and self-contained vehicle (SCV) camping at three NPS campgrounds during the off-season. Fees for park-and-stay and SCV camping permits would be determined separately from the ORV use permit.

As with alternative C, the educational and testing requirement under alternative E could be viewed by those seeking a permit as too cumbersome and would result in short-term minor to moderate adverse impacts to their experience. A fee would be charged to obtain a permit that would be based on cost recovery as described in the NPS Director’s Order and Reference Manual 53. Depending on the level of fee, which would be different for type and length of permit, ORV users could experience long-term minor to moderate impacts, depending on if they feel the fee would prevent them from experiencing the Seashore. However, offering a weekly permit in addition to the 12-month permit would offer a lower cost option for short-term visitors and would be a long-term beneficial impact. Although some users may feel adverse impacts from implementation of a permit system, other users may see long-term beneficial

impacts as those visitors using ORVs would be provided education and information with their permits that could influence their behavior and reduce potential for conflicts with visitors who desire a vehicle-free beach experience. For law-abiding visitors, implementation of a permit system would provide the Seashore with a method to address those ORV users who violate Seashore regulations, through revocation of permits. The permit system would give Seashore staff a system with “teeth” to revoke permits of regulatory offenders, which could beneficially affect the experience of law-abiding visitors. Additional long-term beneficial impacts would be realized as park-and-stay and SCV camping permits would allow visitors to engage in a previously prohibited use.

Alternative E would not dictate parking configurations on the beach, but would include formal carrying capacity provisions, which are most likely to take effect a few hours a day, for only a few days, during peak use periods such as summer holiday weekends and which would include the enforcement of temporary closures of areas once these limits are reached or if disorderly conduct occurs and continues, which has occurred during busy weekends. The implementation of a defined carrying capacity may be viewed as a short-term benefit by those who feel that there are times when conditions are too crowded and that their visitor experience is impacted by these crowded conditions. Others would view implementation of a carrying capacity as a short-term moderate to major adverse impact if they are unable to get to their desired area because the capacity has been reached, depending on how often they are unable to access their desired area. As some visitors are only at the Seashore for a limited time during a vacation, not being able to participate in the planned recreational activity because capacity has been reached would result in a long-term major adverse impact for that visitor group. The determined carrying capacity would be subject to periodic review and may address these impacts if they arise.

*Other Recreational Pursuits.* Similar to alternative A, pedestrian-based activities would be allowed outside of any resource closures. Unlike A, ORV routes and VFAs would be formally designated under alternative E. Seven SMAs under ML1 measures would be closed to recreation during the breeding season and three SMAs under ML2 measures would allow an ORV access corridor during the breeding season, subject to resource closures. In areas designated for ORV use, the defined ORV and pedestrian corridors would overlap or be the same, raising the possibility of conflict between ORV users and non-ORV users and a diminished visitor experience for visitors seeking solitude and freedom from vehicular distractions. However, due to the amount of area open to only pedestrian uses under alternative E, these impacts would be expected to be long-term negligible adverse. Under alternative E, the speed limit would be lowered to 15 mph year-round, which would help reduce conflicts, both real and perceived, and accident potential, an issue of concern raised by the public during the scoping process.

Like alternative A, recreational pursuits, such as kite flying and Frisbee and ball throwing, would not be allowed within or above all bird closures. These restrictions would have long-term minor adverse impacts on visitor use since many other locations exist throughout the Seashore that accommodate these or similar activities. Also, similar to alternative A, there would be only short-term negligible adverse impacts to ORV users participating in fishing tournaments because historical ORV access for tournament fishermen would continue.

Restrictions on pets would be the same as alternative C, except that pets would be prohibited within all designated breeding shorebird SMAs, including pass-through zones, from March 15 to August 31. These restrictions would have long-term minor to moderate adverse impacts on responsible pet owners because of the limited areas that they would be able to go with their pets at the Seashore. In addition, restrictions would be placed on the use of horses at the Seashore, with a prohibition of horse use in SMAs. While this would be a long-term minor to moderate adverse impact, a long-term beneficial impact would also be realized by allowing horses use on village beaches from September 16 to May 14 each year.



Additional restrictions on beach fires would be implemented under alternative E with a non-fee educational permit required in order to have a beach fire. Camping and nighttime use would be modified by allowing SCV camping and park-and-stay camping at specific locations in the Seashore that are detailed in table 8 in chapter 2. Although Seashore users may feel a short-term minor adverse impact from the requirement for a beach fire permit, long-term beneficial impacts would be realized from the addition of the park-and-stay and SCV camping options to visitor experience.

*Night Sky.* Regarding the visitor experience of viewing the night sky, under alternative E, the restriction on night driving from May 15 to November 15 would eliminate impacts during that period of time due to vehicle lights on the beach and lighting from parked vehicles where people are fishing, especially in areas away from the villages, resulting in long-term benefits for night sky experience. However, night driving would still occur under permit in the fall and during the remainder of the year, so impacts to night sky during those months would remain negligible to minor adverse from this use. Further night use that would be permitted under alternative E includes the park-and-stay permit option, which would result in vehicles on the beach overnight, and could contribute to interference with the night sky that would be noticeable and result in long-term moderate adverse impacts.

*Overall Impact to Visitor Use.* Those looking for an experience at the Seashore that includes ORV use would have long-term moderate adverse impacts as the designation of VFAs and the establishment of the SMAs would preclude ORV use, either seasonally or year-round, from some areas of the Seashore that are popular visitor use areas. Three SMAs under ML2 management procedures would provide an ORV pass-through corridor at the start of the breeding season, subject to resource closures, lessening the impacts to this user group. Additional recreational opportunities such as park-and-stay and SCV camping would provide long-term benefits to ORV users. Those looking for a vehicle-free beach experience at the Seashore would experience long-term benefits as alternative E provides for designated year-round vehicle-free areas, as well as seasonal ORV closures in areas such as village beaches and some of the SMAs. Since night driving would be seasonally restricted, but allowed until 10:00 p.m., under alternative E, there would be long-term moderate adverse impacts to night skies due to the hours of night driving allowed, implementation of park-and-stay opportunities, with long-term beneficial impacts during times of seasonal night-driving restrictions.

**Cumulative Impacts.** Under alternative E, the same past, present, and planned future activities within the Seashore that have the potential to affect visitors and the recreational opportunities within the Seashore would occur, and impacts would be the same as described under alternative A. Other actions, primarily construction-related, would have short-term minor impacts. The impacts of these actions, in combination with the mostly minor to moderate and potentially major impacts of alternative E, would result in long-term moderate to major adverse cumulative impacts to ORV users. However, the beneficial impacts of other actions and restrictions on ORV use under alternative E would provide long-term cumulative benefits for visitors who desire an experience free of motorized vehicle presence, disturbance, lights, or noise.

**Conclusion.** Designating ORV use areas and closures based on providing maximum flexibility would result in long-term minor to moderate adverse impacts as many areas favored by ORV users, such as the spits and points, are within SMAs that would be seasonally closed to ORV. Major adverse impacts could occur to ORV users of the popular points/spits if pass-throughs would be closed due to resource closures. Long-term beneficial effects would result from the additional accommodations made for pedestrian use including more parking, a possible beach shuttle, and special use permits to shuttle the mobility impaired. Seashore visitors not using or relying on ORVs would not experience many, if any, adverse impacts from these closures or from other safety closures in areas managed under ML2 procedures where a pedestrian corridor would be provided, and those visitors desiring a vehicle-free beach experience with more natural views and no vehicle-related noise or visual disturbance could experience benefits from the ORV-free

areas and restrictions on nighttime driving and reduced speed limits throughout the Seashore. These users would experience long-term moderate adverse impacts in those SMAs managed under ML1 procedures and closed or restricted during the breeding season, but would be able to obtain a vehicle-free beach experience elsewhere at the Seashore during these times.

Because pedestrians and most other recreational opportunities could occur outside seasonal and other closures, as well as in pedestrian corridors in other seasonal closures, short-term minor adverse impacts would occur to these users. The implementation of an ORV permit system and carrying capacity would be viewed as a long-term benefit by those who would like to see a system in place with consequences for non-law abiding ORV users, as well as those who may perceive crowded conditions that impact their visitor use and experience. For other users, these elements would have a short- and long-term minor to moderate adverse impact as the permit system could be viewed as cumbersome and/or expensive, and short-term moderate to major impacts to those who may not be able to access a beach that has reached capacity. Elements that provide both weekly and 12-month permits would be long-term beneficial as the user had some flexibility and choice in regard to permit cost.

Elements that restrict the type of activities (such as kite flying) or the ability of Seashore users to have a campfire or bring pets could have long-term minor to moderate adverse impacts to specific user groups, with the addition of park-and-stay and SCV camping options providing a long-term benefit through new visitor experiences. Lights associated with ORV use would result in long-term negligible to minor adverse effects to those visitors wishing to experience the night sky during winter when night driving is permitted and long-term moderate adverse impacts from implementation of the park-and-stay option or not restricted, and there would be long-term benefits to night sky viewing during the summer season when night driving is prohibited.

Cumulative impacts would be long-term moderate to major adverse to ORV users, and long-term, beneficial for visitors who desire a vehicle-free beach experience.

### **Impacts of Alternative F: NPS Preferred Alternative**

Under alternative F, designation of year-round VFAs and ORV routes, in conjunction with the species management strategies described in table 10-1, would provide for species protection during both the breeding and nonbreeding seasons, and create more balanced distribution between ORV routes and VFAs to support varying visitor uses and desired experiences at the Seashore. There would be year-round and seasonal VFAs for protection of wintering/migrating birds and for the enjoyment of visitors desiring a vehicle-free experience, with increased parking and enhanced pedestrian access provided at many locations.

Village beaches would be seasonally designated vehicle-free, except for Rodanthe north of the pier and Buxton, which would be vehicle free year-round. The ORV open season in front of the villages and Ocracoke Campground would be November 1 to March 31 when visitation and rental occupancy is lowest. When village beaches are open to ORV use, a safety closure would be implemented on portions of a village beach that are not consistently at least 20 meters (66 feet) wide during normal high tides.

Access to the points and spits would be open to pedestrians, except when standards buffers for breeding activity are in effect. Three spits would be designated as VFAs either seasonally or year-round to protect nesting, wintering, or migrating shorebirds and to provide opportunities for visitors who desire a vehicle-free beach experience at some inlet and spit locations. Bodie Island Spit would be vehicle free March 15 through September 14. Like alternative E, alternative F also involves the development of an interdunal pedestrian trail on Bodie Island to provide access to the inlet. At Cape Point and South Point (Ocracoke), year round ORV routes would be designated with 35-meter (115-foot) wide ORV corridors during the

breeding season. However, standard resource-protection buffers would apply to these ORV corridors, and when nests are located near the ORV corridor or unfledged chicks are present, the probability of being able to provide this access would decrease. At Cape Point, the eastern portion of South Beach would be a year-round VFA with pedestrian access from an interdunal road, and the tips of the Hatteras Inlet spits would be vehicle free year-round. Alternative F would include the construction of a short seasonal ORV route to access a new pedestrian trail to the sound on Ocracoke Island.

To facilitate access to designated ORV routes on the ocean beach, alternative F would add four new ramps and relocate two others. Existing soundside access points would remain open, with better maintenance than currently occurs. Alternative F also would involve the addition or expansion of 12 new parking areas with permeable surfaces to facilitate pedestrian access at a number of locations, with several on the sound side.

Within the areas open to ORV use, if resource concerns are present the access route would be subject to closure using applicable buffer distances (see table 10-1, chapter 2). Alternative F buffers are greater than the no-action alternative A buffers. Most buffers for alternative F are the same as those for alternative B, but a few are greater. Also, under alternative F, ORV use would be allowed in designated routes 24 hours per day from November 16 to April 30, but from May 1 through November 15, all potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 9:00 p.m. to 7:00 a.m., except that from September 16 through November 15, ORV routes with no turtle nests remaining (as determined by the NPS) would reopen to night driving, subject to the terms and conditions established under the ORV permit.

The ORV routes and VFAs described in table 7-1 for alternative F were intended to provide a balance between ORV routes and VFAs. The designations would result in about 28 miles designated for ORV use year-round, 13 miles designated for seasonal ORV use, and 26 miles designated as vehicle free year-round. Access provided by the designated ORV routes and areas under alternative F would have long-term minor to potentially major adverse impacts on ORV users, depending on the users' ability to reach a certain area and participate in the activities they desire. While there would be more areas closed to ORV use year-round than under alternatives C or E, there is the potential that access would be provided to some of the popular visitor use areas such as Cape Point and South Point during portions of the summer if resource closures are not required. The night-driving restrictions would have long-term minor to moderate adverse impacts, but the restriction could be for a shorter period than under other action alternatives (alternatives C or D), as there would be an opportunity for night driving to resume in some areas come the fall.

As described in "Chapter 3: Visitor Use," the NPS contracted with RTI to conduct a visitor intercept survey at ocean beach areas of the Seashore. As part of this survey, respondents were asked how they would respond to an ORV management scenario similar to alternative F. When presented with a description of ORV management under this scenario, 93.5% of visitors reported that they would likely still have taken their current trip to the Seashore. 3.3% of beach visitors reported they would have stayed home if a scenario similar to alternative F had been in place before they made plans (table 59-2).

**TABLE 59-2. PREDICTED IMPACT OF MANAGEMENT SCENARIO SIMILAR TO ALTERNATIVE F**

Question	Answer	Mean	95% Confidence Interval	
			Low	High
If the plan on this map had been in place *before* you made any plans or reservations for this trip and before you put down any money on deposits, how likely is it that you would still have taken this trip?	Very Likely/Somewhat Likely	93.5%	86.2%	100.0%
	Somewhat Unlikely/Very Unlikely	6.3%	0.0%	13.6%
	Don't Know	0.2%	0.0%	0.4%
What do you think you most likely would have done instead?	Go to Another Part of the Outer Banks	0.1%	0.0%	0.2%
	Go to a Different Beach in North Carolina	0.2%	0.0%	0.5%
	Go to a Different Beach outside North Carolina	0.5%	0.0%	1.1%
	Go to Somewhere Else, But Not an Ocean Beach	2.3%	0.0%	7.2%
	Stay Home	3.3%	0.0%	8.3%
	Don't Know	0.0%	0.0%	0.1%

Source: RTI 2010a

*Resource Closures.* Resource closures for birds would continue to be implemented annually, based on recent breeding activity. Areas of known suitable habitat for breeding shorebirds would be posted as prenesting closures by either March 15 or April 15 depending on the species. During the shorebird breeding season, pedestrian shoreline access below the high tide line would be permitted in front of (i.e., seaward of) prenesting closures until breeding activity is observed, then standard buffers for breeding activity would apply. Prenesting areas would generally be closed March 15 through July 31 (or August 15 if black skimmers are present), or until two weeks after all chicks have fledged and breeding activity has ceased, whichever comes later.

Cape Point and South Point would be designated as year-round ORV routes, subject to resource closures that could affect access during the breeding season. Hatteras Inlet spit, North Ocracoke and a portion of South Beach (west of Cape Point) would be designated as vehicle free year-round. Bodie Island spit would be designated as a seasonal ORV route from September 15 through March 14, with a pedestrian trail from ramp 4 to the north end of the spit (northeast of the Bait Pond). This combination of designations was proposed to provide for protection of nesting birds and (where vehicle free year-round) in recognition of the value of these areas for migrating and wintering shorebirds, and to provide opportunities for visitors to experience a vehicle-free beach at some inlet and spit locations. All of these areas would be subject to resource closures, primarily during the breeding season. Many of these areas would be accessible on foot, and along South Beach west of Cape Point, unsurfaced, on-sand parking off an interdunal road and access to the shoreline via periodic foot trails would be provided. Pedestrian access and parking would be enhanced at the north point of Ocracoke. At Cape Point and South Point, an ORV corridor would be established, but would be reduced in size from 50 meters (164 feet) during the nonbreeding season to 35 meters (115 feet) during prenesting and breeding seasons. Upon first observation of breeding activity, the standard buffers would apply, which depending on the circumstances may close access corridors. Once breeding activity has ceased, the corridor would return to 50 meters

(164 feet). In all cases, if additional resource closures are necessary, ORV and/or pedestrian use of the access corridors may be temporarily closed.

As noted under alternative A, the spits and points are of particular concern for visitors that wish to use these areas for fishing and other recreational pursuits such as walking and beachcombing. Assuming that to access the points and spits, visitors would use ramps 4, 43-49, 55, 59 and 72, the 2009 vehicle counts conducted between April and November found that these ramps accounted for about approximately 59% of total daily vehicle roundtrips (RTI 2010b). Ramp 59 accounted for 4.7 % of the vehicle roundtrips, though it's not known what percent of these were trips north to the spit (which is a VFA under alternative F) and what percent were trips south along the island shoreline. About 11% of the vehicle roundtrips were over ramp 55. Under alternative F ramp 55 would provide year-round ORV access to the ocean shoreline part of the way south towards the spit, to access points on the soundside shoreline and towards the spit on a short access off Spur Road ending in on-sand parking. The spit itself and part of the adjacent ocean shoreline would be a year-round VFA. Overall the year-round ORV routes to South Ocracoke and Cape Point, seasonal ORV route to Bodie Island Spit, and year-round VFAs at Hatteras Inlet and North Ocracoke are projected to result in long-term moderate adverse impacts to ORV users of spits and points because the number of visitors engaging in this use would likely change and some visitors participating in an activity might have to chose other available Seashore, local or regional areas for the activity. For visitors who desire a vehicle-free beach experience, these closures would have long-term beneficial impacts.

Temporary resource closures for American oystercatchers, colonial waterbirds, and sea turtles may also occur in other areas throughout the Seashore, and ORVs and other dispersed recreation users would generally negotiate around these closures throughout the Seashore using alternate routes and access points. This would typically result in short-term negligible to minor adverse impacts because ORV accessibility would remain. Full beach closures due to turtle nesting would be lessened by the establishment of traffic detours behind nests, where appropriate. Under alternative F, turtle management activities would include creation of a "nest watch" program that would allow trained volunteers to watch nests that have reached their hatch windows to monitor hatchling emergence success. This would provide a new visitor experience, and one that is desired based on public comment, resulting in long-term beneficial impacts to visitors who seek to participate in such a program.

A temporary full-beach resource closure could occur in additional areas open to ORV use, but would be much less likely under alternative F than under the no-action alternatives since known breeding/hatching areas would generally already be closed to ORV use during the breeding season. As a result, the chance of a full beach closure in additional areas open to ORVs would be decreased, with the potential for long-term minor to moderate adverse impacts if temporary closures of these areas were to occur. Impacts on pedestrians along beaches with prenesting areas would be reduced by allowing pedestrians to walk by these areas below the high tide line prior to the observation of breeding activity, then standard buffers would apply, resulting in minor adverse impacts. As the results of a recent visitor intercept survey (detailed in "Chapter 3: Visitor Use and Experience") showed, the most popular activities at the Seashore are swimming, sunbathing, or enjoying the beach and bird/wildlife watching (RTI 2010a) Under alternative F, pedestrian access in VFAs, and ORV and pedestrian access on ORV routes seaward of the prenesting closure, unless a resource closure is present, would provide beneficial impacts to visitors wishing to engage in these activities in these locations.

Alternative F would provide for a special use permit, to be authorized by the Superintendent, which would allow temporary use of an ORV in a VFA in front of the villages, as described under alternative C. By providing for special use permits in these circumstances, long-term beneficial impacts would be realized by those visitors that would otherwise not be able to use an ORV in vehicle-free areas.

To further address and facilitate access into VFAs, alternative F would include 12 new or expanded parking areas with permeable surfaces, with associated trails or boardwalks to provide for beach access, and would support development of an alternative transportation by encouraging applications for commercial use authorizations for a beach or water shuttle service. Alternative F also includes the establishment of two new pedestrian trails. These elements would provide long-term beneficial impacts and work to mitigate the long-term minor to moderate to major adverse impacts that some user groups may experience because alternative ways to reach the Seashore would be provided if ORV use is not permitted but pedestrian use is allowed.

Regarding time of use, under alternative F, the night-time restrictions offer additional protection of sea turtles. Vehicles would be prohibited from using the beach from 9 p.m. to 7 a.m. from May 1 to November 15, with the potential for some areas to reopen after September 15 if there are no turtle nests in certain areas of the Seashore, and permit terms and conditions are followed. Night driving would be allowed all other times of the year (November 16 to April 30). These restrictions would have long-term minor to moderate adverse impacts on ORV users and long-term benefits for visitors desiring a vehicle-free beach experience. For example, those visitors wishing to experience the beach at night without ORVs present would have more opportunities to do so. Those visitors wishing to use ORVs to access surf fishing areas at night or in the early morning hours would not be able to do so during the summer or in some locations during the fall season, which would be considered a major long-term adverse effect on that group of ORV users. The flexibility of this alternative in regards to night driving after September 15 may reduce some visitor impacts.

*Safety Closures.* ORV safety closures could be implemented as conditions warrant and would be evaluated for reopening by NPS law enforcement staff on a weekly basis. ORV safety closures would be applicable only to ORV access; pedestrian and commercial fishing access would generally be maintained through safety closures. Alternative F provides specific guidelines for establishing and removing safety closures. No administrative closures would be established under this alternative. Although there is not an administrative closure at the Cape Point Lighthouse, no ORV route would be established in this area, thus ORVs would not be permitted and village beaches would be closed to ORVs either seasonally for 7 months or in some cases would be vehicle free year-round (e.g., north Rodanthe, Buxton). Alternative F would also implement additional pedestrian safety measures, including lowered speed limits when pedestrians are present and requiring ORVs to yield right-of-way to pedestrians, which would have long-term beneficial impacts as concerns related to safety would be reduced.

Approximately 39 miles (26 miles designated as vehicle free year-round and 13 miles designated for seasonal ORV use), or approximately 60% the total beach mileage would be closed to ORVs during the summer season. These restrictions would cause minor to moderate adverse impacts to ORV users and be long-term beneficial for protecting visitor safety and those visitors desiring a vehicle-free beach experience with more natural views and no vehicle-related noise in more populated areas. Some areas that have been traditionally closed to ORV use due to safety closures, such as the area between ramp 59 and mile marker 62, would now be open to ORV use. ORV access to previously closed areas would provide ORV users with a long-term benefit, but would result in long-term minor to moderate adverse impacts to pedestrians using these areas. Since pedestrians and ORVs would be present on the same portion of the beach, the noise and the sight of vehicles would continue to decrease the visitor experience for those visitors seeking solitude and a natural setting, with long-term minor to moderate adverse impacts to those users.

Alternative F would include improvements to ramp characteristics throughout the Seashore, as described under alternative C, and provide for four new ramps and two relocations. These improvements to ramps and the creation of air down areas, would have long-term beneficial impacts to ORV users.

*Permitting and Carrying Capacity Requirements.* Alternative F would include permitting and education requirements for all ORV use (as detailed in table 8) and could be viewed as a short-term minor to moderate adverse impact to visitor experience for most ORV users since it would result in paperwork and effort needed to get a permit. Alternative F would differ from alternative C in that no basic knowledge test would be required and both 7-day and annual permits would be available, with a lower fee for 7-day permits than annual permits. This would provide flexibility to the visitor who may only be coming to the Seashore for a short period. Alternative F would also address the permitting requirements for night driving from September 16 to November 15 using the standard 7-day or annual permit.

As with alternative C, the educational requirement under alternative F could be viewed by those seeking a permit as too cumbersome and would result in short-term minor to moderate adverse impacts to their experience. A fee would be charged to obtain a permit that would be based on cost recovery as described in the NPS Director's Order and Reference Manual 53. Depending on the level of fee, ORV users could experience long-term minor to moderate impacts, depending on if they feel the fee would prevent them from experiencing the Seashore. Although some ORV users may feel adverse impacts from implementation of a permit system, other visitors may see long-term beneficial impacts as ORV users would be provided education and information with their permits that could influence their behavior and reduce potential for conflicts with visitors who desire a vehicle-free beach experience. For law-abiding visitors, implementation of a permit system would provide the Seashore with a method to address those ORV users who violate Seashore policy, through revocation of permits. The permit system would give Seashore staff a system with "teeth" to revoke permits of regulatory offenders, which could beneficially affect the experience of all visitors.

Under the carrying capacity requirement for alternative F, the maximum number of vehicles allowed on any particular ORV route during peak use periods would be the linear distance of the route divided by 6 meters (20 feet) per vehicle (i.e., the equivalent of 260 vehicles per mile). The allowable number of vehicles in each area would be determined by the space requirements and the beachfront length of the area. In addition, parking within ORV routes would be allowed, but restricted to only one vehicle deep. The implementation of a defined carrying capacity coupled with vehicle spacing requirements may be viewed as a long-term benefit by those who feel that there are times when conditions are too crowded and that their visitor experience is impacted by these crowded conditions. Others would view implementation of a carrying capacity as a short-term moderate to major adverse impact if they are unable to access their desired area because the capacity has been reached, especially if some of their preferred locations are closed (e.g., points and spits). The carrying capacity could be reached in popular locations during peak use periods such as holiday weekends for a few hours on some days. For those ORV users that are only at the Seashore for a limited time during a vacation, not being able to participate in the planned recreational activity because the capacity has been reached would result in a short- and long-term major adverse impact for that visitor group depending on the duration of time they cannot access an area.

*Other Recreational Pursuits.* Similar to alternative A, pedestrian based activities would be allowed outside of any resource closures. Unlike alternative A, ORV routes and VFAs would be formally designated under alternative F. In areas designated for ORV use, the defined ORV and pedestrian corridors would overlap or be the same, raising the possibility of conflict between ORV user and visitors who desire a vehicle-free beach experience and a diminished visitor experience for visitors seeking solitude and freedom from vehicular distractions. However, due to the increased amount of area open to only vehicle-free uses under alternative F, these impacts would be expected to be long-term negligible adverse. Under alternative F, the speed limit would be lowered to 15 mph year-round, which would help reduce conflicts, both real and perceived, and accident potential, an issue of concern raised by the public during the scoping process.

Like alternative A, recreational pursuits, such as kite flying and Frisbee and ball throwing, would not be allowed within or above all bird closures. These restrictions would have long-term minor adverse impacts on visitor use since many other locations exist throughout the Seashore that accommodate these or similar activities. Also, similar to alternative A, there would be only short-term negligible adverse impacts to ORV users participating in fishing tournaments because historical ORV access for tournament fishermen would continue where and when not in conflict with resource closures.

Pets would be permitted throughout the Seashore in accordance with existing NPS regulations that require a six-foot leash. In addition pets would be prohibited in resource closures and in areas of pedestrian shoreline access in areas in front of (i.e., seaward of) bird prenesting areas. These restrictions would have long-term minor to moderate adverse impacts on pet owners because of the limited areas that they would be able to go with their pets at the Seashore.

Horse use would be allowed on designated ORV routes, in some vehicle-free areas, on village beaches from September 16 to May 14, and on a limited number of trails to be designated in the Superintendent's Compendium after ORV routes are determined. Horses would be prohibited in resource closures and in pedestrian shoreline access areas in front of (i.e., seaward of) bird prenesting areas. This would provide more flexibility and options for horse users than in alternative A, resulting in a long-term beneficial impact.

Additional restrictions on beach fires would be implemented under alternative F. Beach fires would be authorized year-round between the hours of 6 a.m. and 10 p.m. (two hours earlier than under other alternatives), with a non-fee educational fire permit. From May 1 to November 15, beach fires would be permitted only in front of Coquina Beach, Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras Village, and Ocracoke day use area to minimize impacts to sea turtles during the nesting season. Visitors would also be prohibited from leaving belongings overnight at the Seashore, and items left for more than 24 hours may be removed. Seashore users may feel a short-term minor to moderate adverse impact from the reduced evening hours for fires, the requirement for a beach fire permit, and being restricted to certain areas during the turtle nesting season, as well as requirements to remove their equipment from the beach each night.

*Night Sky.* Regarding the visitor experience of viewing the night sky, under alternative F, the seasonal restriction on night driving would occur from May 1 to November 15. This would eliminate impacts during that period from vehicle lights on the beach and lighting from parked vehicles where people are fishing, especially in areas away from the villages, resulting in long-term benefits for night sky experience. However, night driving would still occur under permit in the fall and during the remainder of the year, so impacts to night sky during those months would remain long-term negligible to minor adverse.

*Overall Visitor Use Impacts.* Those looking for an experience at the Seashore that includes ORV use would have long-term moderate adverse impacts as the designation of vehicle-free areas would preclude ORV use, either seasonally or year-round, from some areas of the Seashore that are popular ORV use areas including several points and spits. Although visitors would experience these adverse impacts, the results of the visitor intercept survey conducted in 2010 (see table 59-2) showed that over 90% of them would still have taken their trip to the Seashore under a management scenario similar to alternative F (RTI 2010a). Oceanside access would be enhanced by the addition of 6 new or relocated oceanside ORV ramps and 12 parking areas with a permeable surface and with associated pedestrian access, and soundside access would be enhanced by improved maintenance of soundside access routes. Those looking for a vehicle-free beach experience at the Seashore would experience long-term benefits as alternative F provides for an increased amount of year-round vehicle-free areas as well as seasonal ORV closures in areas such as village beaches, two new pedestrian trails, and 12 new or expanded parking facilities with



associated pedestrian access to the beach. Since night driving would be seasonally restricted under alternative F, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.

**Cumulative Impacts.** Under alternative F, the same past, present, and planned future activities within the Seashore that have the potential to affect visitors and the recreational opportunities within the Seashore would occur, and impacts would be the same as described under alternative A.

Other actions, primarily construction-related, would have short-term minor impacts. The impacts of these actions, in combination with the mostly minor to moderate but potentially major adverse impacts of alternative F, would result in long-term moderate to major adverse cumulative impacts to ORV users. However, the beneficial impacts of other actions and restrictions on ORV use under alternative F would provide long-term cumulative benefits for visitors who desire an experience free of motorized vehicle presence, disturbance, lights, or noise.

**Conclusion.** Overall Alternative F would result in long-term moderate adverse impacts to ORV users, ORV access would be permitted year-round at some popular ORV use areas such as Cape Point and South Point, subject to resource closures. However the use of prenesting closures rather than SMAs is expected to result in more likelihood that these areas would remain open longer during the nesting season. Bodie Island spit would be a seasonal ORV route, and North Ocracoke and Hatteras Inlet spit would be VFAs, ORV users who want to drive to these areas could experience major adverse effects. However, there would be long-term beneficial impacts to pedestrians and to those visitors seeking a vehicle-free beach experience due to the increased number of vehicle-free areas, along with 12 additional parking areas with associated pedestrian access to the beach, and the potential development of a beach or water shuttle, special use permits to shuttle the mobility impaired, and the addition of two new pedestrian trails. Seashore visitors not using or relying on ORVs would not experience many, if any, adverse impacts from these closures or from other safety closures where pedestrian corridors are provided, and those users desiring a vehicle-free beach experience with more natural views and no vehicle-related noise or visual disturbance could experience long-term benefits from the ORV-free areas and restrictions on nighttime driving and reduced speed limits throughout the Seashore.

Because vehicle-free areas are also subject to temporary resource closures, primarily during the breeding season, short-term minor adverse impacts would occur to these users. The implementation of an ORV permit system and carrying capacity would be viewed as a long-term benefit by those who would like to see a system in place with consequences for non-law abiding ORV users, as well as those who may perceive crowded conditions that impact their visitor use and experience. For other ORV users, these elements would have a short- and long-term minor to major adverse impact as the permit system could be viewed as cumbersome and/or expensive, and short-term moderate to major impacts to those who may not be able to access a beach that has reached capacity. Elements that provide both 7-day and annual permits would be beneficial and provide the ORV user with some flexibility and choice in regard to permit cost.

Elements that restrict the type of activities (such as kite flying) or the ability of Seashore users to have a campfire or bring pets could have long-term minor to moderate adverse impacts to specific user groups. Lights associated with ORV use would result in long-term negligible to minor adverse effects to those visitors wishing to experience the night sky during winter when night driving is permitted or not restricted, and there would be short-term benefits to night sky viewing during the summer season when night driving is prohibited.

Cumulative impacts would be long-term moderate to major adverse to ORV users, and long-term beneficial for visitors who desire a vehicle-free beach experience.

**TABLE 60. SUMMARY OF IMPACTS TO VISITOR USE AND EXPERIENCE UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<p>Those looking for an experience at the Seashore that includes ORV use would have long-term negligible to minor adverse impacts as some areas would be closed for resource protection, but alternative A would provide the most ORV access of any alternative. Should there be extensive resource closures in a given year, the potential for long-term moderate impacts exists. Those looking for a vehicle-free experience at the Seashore would experience long-term moderate adverse impacts as alternative A does not provide for a specific separation of uses or designation of VFAs. Since night driving would be permitted under alternative A, there would be short-term minor adverse impacts to night skies.</p>	<p>Those looking for an experience at the Seashore that includes ORV use would have long-term moderate to major adverse impacts as one or more spit or point would be closed for an extended period of time during the breeding season. During the remainder of the year, there would be negligible to minor adverse impacts to ORV users as limited areas would be closed for resource protection. Those looking for a vehicle-free experience at the Seashore would experience long-term moderate adverse impacts as alternative B does not provide for a specific separation of uses outside of seasonal ORV closures of village beaches and no VFAs would be designated. Since night driving would be seasonally restricted under alternative B, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p>	<p>Those looking for an experience at the Seashore that includes ORV use would have long-term moderate to major adverse impacts as the designation of VFAs and the establishment of the SMAs would seasonally preclude ORV use from some areas of the Seashore that are popular ORV use areas. While three areas managed under ML2 procedures would have pedestrian access corridors, no ORV corridors would be provided in the SMAs, resulting in greater impacts to ORV users. Those looking for a vehicle-free experience at the Seashore would experience long-term benefits as alternative C provides for pedestrian corridors in three SMAs under ML2 procedures, as well as providing additional VFAs. Since night driving would be seasonally restricted under alternative C, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p>	<p>Those looking for an experience at the Seashore that includes ORV use would have long-term major adverse impacts as all SMAs and village beaches would be designated as VFAs year-round, which would prohibit the use of ORV in many popular visitor use areas. Those looking for a vehicle-free experience at the Seashore would experience long-term benefits as alternative D provides for many designated VFAs throughout the Seashore, although pedestrian access would be prohibited in the SMAs during the breeding season. Since night driving would be seasonally restricted under alternative D, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts during times of seasonal night-driving restrictions.</p>	<p>Those looking for an experience at the Seashore that includes ORV use would have long-term moderate adverse impacts as the designation of VFAs and the establishment of the SMAs would preclude ORV use, either seasonally or year-round, from some areas of the Seashore that are popular visitor use areas. Three SMAs under ML2 management procedures would provide an ORV pass-through corridor at the start of the breeding season, subject to resource closures, lessening the impacts to this user group. Additional recreational opportunities such as park-and-stay and SCV camping would provide long-term benefits. Those looking for a vehicle-free experience at the Seashore would experience long-term benefits as alternative E provides for designated year-round VFAs, as well as seasonal ORV closures in areas such as village beaches and some of the SMAs. Since night driving would be seasonally restricted, but allowed until 10:00 p.m., under alternative E, there would be long-term</p>	<p>Those looking for an experience at the Seashore that includes ORV use would have long-term moderate adverse impacts as the designation of VFAs and carrying capacity limits could or would preclude ORV use, either seasonally or year-round, from some areas of the Seashore that are popular visitor use areas. Improved access would be provided to the soundside under this alternative. Those looking for a vehicle-free experience at the Seashore would experience long-term benefits as alternative F provides for year-round VFAs, as well as seasonal ORV closures in areas such as village beaches, one new pedestrian trail, 12 new or improved parking areas with pedestrian access, and pedestrian access seaward of prenesting closures. Since night driving would be seasonally restricted under alternative F, there would be long-term negligible to minor adverse impacts to night skies, with long-term beneficial impacts year-round in VFAs and seasonally on ORV routes during times of seasonal</p>

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
				moderate adverse impacts to night skies due to the hours of night driving allowed, implementation of park-and-stay opportunities, with long-term beneficial impacts during times of seasonal night-driving restrictions.	night-driving restrictions.

## SOCIOECONOMIC IMPACTS

### ASSUMPTIONS, METHODOLOGY, AND IMPACT THRESHOLDS

The alternatives were evaluated for their potential direct, indirect, and induced impacts on the local economy, small businesses, and preservation values (values held by the general public across the United States for the Seashore and its plant and animal communities that are unrelated to visitor use of the park, also known as existence value or nonuse value in the economics literature). Impacts on the economy and on small businesses were assessed using estimates of change in revenue from any change in visitation that might result from the alternative.

Variation in nesting patterns from year to year makes the socioeconomic impacts of the alternatives more difficult to forecast. Impacts could be low in years when beach closures are minimal or short lived. Impacts would be higher if beach closures are widespread and long lasting. Widespread closures for several years in a row may discourage some visitors from returning in future years, while a series of years with minimal impacts on beach access may invite larger crowds.

The total impact of the proposed alternatives would depend in part on the response of the affected individuals and businesses to the changes brought about by the proposed rule. The effect of the alternatives would depend on the willingness and ability of individuals to visit other, substitute beaches for recreation, either within or outside of the Seashore, and of businesses to adapt to the available opportunities and changes in visitor use patterns under whichever alternative is selected. If individuals visit other sites outside the Seashore, then these regions would experience an increase in business while businesses in the ROI would experience a decrease.

### Assumptions and Methodology

Business revenue within the ROI is influenced by the Seashore management decisions, in addition to a number of other unpredictable factors. A range of impacts on business revenue was forecast for each alternative to address uncertainty. Important unpredictable factors beyond the control of the Seashore contributing to the uncertainty of future business revenue include national and regional economic trends, national and regional demographic trends, meteorological and geological events such as storms and erosion, nesting patterns of birds and turtles, transportation costs, and visitor and business responses to these changes. Considering the dramatic changes in fuel prices, the housing market, and the national economy since 2006, projections based on recent short-term trends are unlikely to yield precise estimates.

A range of possible changes in business revenue was developed based on several sources of information including a survey of local businesses (described further in “Chapter 3: Socioeconomics” and below)

(RTI 2010c), official visitation statistics, economic trends, and a survey of visitors (described further in “Chapter 3: Visitor Use and Experience”) (RTI 2010a). Using both qualitative and quantitative information from these sources, a range of potential revenue changes was developed for four different business categories: commercial fishing in the Seashore, retail sporting goods in the Seashore villages (Ocracoke, Hatteras, Frisco, Avon, Buxton, Salvo, Waves, and Rodanthe), other tourism-related businesses in the Seashore villages, and the remaining tourism related business within the ROI. For each category, the range of revenue changes was applied to 2004 IMPLAN data (Minnesota IMPLAN Group 2004b) for Dare and Hyde counties as described below. IMPLAN is an input-output (I/O) model that simulates how changes in sales and employment in one industry can ripple through the economy, affecting other industries and the regional economy as a whole. IMPLAN is widely used by the NPS for economic analyses (see “IMPLAN” section below for more information). Table 61 lists the low, mid, and high estimates of the impact of each alternative on businesses in different categories (a description of the additional assumptions used to create this table is below the table).

**TABLE 61. RANGE OF PROJECTED ANNUAL BUSINESS REVENUE IMPACTS BY ALTERNATIVE, BUSINESS CATEGORY, AND AREA**

Alternative	Estimate	The Seashore Villages			Rest of ROI
		Commercial Fishing	Sporting Goods	Other	All
A	Low	5%	5%	5%	1%
A	Mid	0%	0%	0%	0%
A	High	-5%	-5%	-5%	-1%
B	Low	0%	0%	0%	0%
B	Mid	-25%	-5%	-5%	-1%
B	High	-50%	-10%	-10%	-2%
C	Low	0%	0%	0%	0%
C	Mid	-25%	-5%	-5%	-1%
C	High	-50%	-10%	-10%	-2%
D	Low	0%	-20%	-15%	-2%
D	Mid	-25%	-30%	-20%	-4%
D	High	-50%	-40%	-25%	-6%
E	Low	0%	0%	0%	0%
E	Mid	-25%	-5%	-5%	-1%
E	High	-50%	-10%	-10%	-2%
F	Low	0%	0%	0%	0%
F	Mid	-25%	-5%	-5%	-1%
F	High	-50%	-10%	-10%	-2%

Another way to estimate the economic impacts is to start with a forecast of visitation under the no-action alternatives for different types of visitors, for example, ORV users and visitors who use vehicle-free beaches. For each of the action alternatives, a range of assumptions about visitation change under the alternative for the different visitor groups would provide an estimate of the incremental change in visitation to the Seashore. Multiplying the incremental change in visitation by average visitor spending on different items would yield an estimate of the incremental change in revenue for different business

categories under each alternative relative to the no-action alternatives. Unfortunately, the data on visitation, especially broken down by different types of Seashore visitors, are not complete enough to provide reliable estimates of baseline visitation. As a result, the data sources discussed below were used to estimate directly the change in revenue under the different alternatives without first estimating the change in visitation.

The following assumptions were used to generate the ranges in table 61 and baseline revenue for the impact analysis:

- **Commercial Fishing.** As of April 2009, 70 licenses had been issued for commercial fishing in the Seashore for FY 2009. To estimate the total revenue generated by commercial fishing in the Seashore, it was assumed that each license was associated with the mean revenue for nonemployer<sup>13</sup> fishing establishments in Hyde County in 2004, \$56,000 (U.S. Census Bureau 2004), which is consistent with comments made during the business survey. Multiplying the number of fishermen by the mean revenue yielded an estimated \$3.9 million in total revenue generated by commercial fishing in the Seashore. This is likely an overestimate, as not all commercial fishing licenses issued are used; however, data on how many licenses go partially or fully unused are unavailable. In addition, not all fishermen received 100% of their revenue from fishing activities in the Seashore. Based on responses to the business survey, a range of possible direct impacts to commercial fishing was set for each alternative. The range is the same across all the alternatives. Commercial fishermen can access any part of the Seashore except lifeguarded beaches and when a full resource closure is in effect for breeding season, regardless of restrictions on recreational ORV use. Resource closures vary somewhat in length and location under the different alternatives depending on whether areas are managed under ML1 or ML2 (alternatives C, D, and E); however, the differences are not expected to be large enough to fall outside the range of direct impacts estimated from the business survey.
- **Tourism-Related Business Categories.** The IMPLAN 2004 estimate of economic output for Dare and Hyde counties was used to estimate economic impacts in the ROI. IMPLAN sectors were bridged to industries coded by the North American Industry Classification System (NAICS) (MIG 2004a). For the ROI, tourism-related business categories in IMPLAN include the following:
  - Real estate.
  - Hotels and motels.
  - Other amusement, gambling, and recreation industry.
  - Food services and drinking places.
  - Food and beverage stores.
  - Gasoline stations.
  - Sporting goods, hobby, book and music stores.
  - Other accommodations.

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<sup>13</sup> From <http://www.census.gov/econ/nonemployer/intro.htm>: "Nonemployers are typically self-employed individuals operating very small businesses, which may or may not be the owner's principal source of income...Data are primarily comprised of sole proprietorship businesses filing IRS Form 1040, Schedule C, although some of the data are derived from filers of partnership and corporation tax returns that report no paid employees."

- **Adjustments to County-Level IMPLAN Data.** The ROI and the Seashore villages include only parts of Dare and Hyde counties. To estimate the portion of the economic output in Dare and Hyde counties generated in the ROI and, within the ROI, the amount generated in the Seashore villages for each business sector, the county level values were adjusted by the percentage of employment by business sector in the ROI and the Seashore villages using block group data from the 2000 Census. In table 62, the first two columns define the industry sector by name and NAICS codes. The third column lists the number of employees by sector in all of Dare and Hyde counties. The following four columns compare employment by sector in the ROI and in the Seashore Villages to the total for all of Dare and Hyde counties. Census block groups are smaller geographical units than counties, with the ROI and the Seashore villages composed of several blocks groups. Table 63 provides the total estimated economic output (based on the IMPLAN data). According to the data, the categories “Food service and drinking places” and “Real estate” are the largest areas of the economy that would be impacted by proposed alternatives. These two categories alone account for an estimated 15% of the economic output in Dare and Hyde counties, 16.5% of the economic output in the ROI, and 20.7% of the estimated output in the Seashore villages (table 63).
- **Adjustments to the Real Estate Category.** In addition, the estimate of economic output in the “Real estate” category was adjusted to estimate more accurately the economic output of vacation rentals within the ROI. The vacation rental companies in the business survey included offices of real estate agents (NAICS 5312), a subset of real estate (NAICS 531). The 2002 ratio for Dare County of revenue generated by offices of real estate to the revenue generated by the real estate category as a whole (58.7%) was used to adjust the IMPLAN estimate of real estate economic output for the ROI (real estate data for Hyde County data were not disclosed in the 2002 Economic Census). Further, several offices of real estate agents (NAICS 5312) in the InfoUSA database (a geocoded database of businesses) and located within the ROI were not included in the business survey because they do not manage vacation rental properties. The estimated economic output from real estate was further adjusted by the ratio of sales by real estate agents included in the survey (those with vacation property management) to the total sales by real estate agents in the ROI (48.5%) (InfoUSA 2008). Thus, the economic output associated with vacation rentals is estimated to be 28.5% of the total real estate economic output within the ROI.

**TABLE 62. EMPLOYMENT BY BUSINESS SECTOR AND AREA WITHIN DARE AND HYDE COUNTIES**

Industry Sector	NAICS	Employment in Dare and Hyde Counties	Employment in ROI (number of employees)	Employment in ROI (percent of employees) <sup>a</sup>	Employment in the Seashore Villages (number of employees)	Employment in The Seashore Villages (percent of employees) <sup>a</sup>
Agriculture; forestry; fishing and hunting	11	889	491	55%	167	19%
Mining	21	4	4	100%	0	0%
Utilities	22	187	162	87%	63	34%
Construction	23	2,322	2,102	91%	308	13%
Manufacturing	31-33	933	764	82%	73	8%
Wholesale trade	42	486	414	85%	83	17%
Retail trade	44-45	2,532	2,296	91%	367	14%
Transportation and warehousing	48-49	466	365	78%	122	26%
Information	51	416	379	91%	25	6%
Finance and insurance	52	443	365	82%	19	4%
Real estate and rental and leasing	53	1,167	1,078	92%	196	17%
Professional; scientific; and technical services	54	695	688	99%	88	13%
Management of companies and enterprises	55	0	0	—	0	—
Administrative and support and waste management services	56	488	432	89%	60	12%
Educational services	61	1,147	986	86%	120	10%
Health care and social assistance	62	1,108	890	80%	145	13%
Arts; entertainment; and recreation	71	476	453	95%	53	11%
Accommodation and food services	72	1,955	1,857	95%	328	17%
Other services (except public administration)	81	818	714	87%	115	14%
Public administration	92	1,400	992	71%	67	5%
Total	—	17,932	15,432	86%	2,399	13%

Source: U.S. Census Bureau 2000; generated by RTI International; using American FactFinder; "Census 2000 Summary File 3 (SF3) – Sample Data" <<http://factfinder.census.gov>>; (December 5, 2008).

<sup>a</sup> Employment by sector in the ROI and Seashore Villages as a percent of total sector employment in all of Dare and Hyde counties.

**TABLE 63. ESTIMATED TOTAL ECONOMIC OUTPUT OF AFFECTED INDUSTRIES BY AREA**

Description	IMPLAN Codes	NAICS	Dare and Hyde Counties	ROI	The Seashore Villages
Fishing	16	11	\$29.9	\$16.5	\$3.1
Real estate (vacation property rental only) <sup>a</sup>	431	53	\$209.4	\$193.4	\$32.5
Hotels and motels, including casino hotels	479	72	\$38.8	\$36.9	\$6.2
Other amusement, gambling, and recreation	478	71	\$23.5	\$22.4	\$2.5
Food services and drinking places	481	72	\$258.9	\$245.9	\$41.3
Food and beverage stores	405	44-45	\$43.3	\$39.3	\$5.7
Gasoline stations	407	44-45	\$28.5	\$25.9	\$3.7
Sporting goods, hobby, book and music stores	409	44-45	\$19.0	\$17.3	\$2.5
Other accommodations	480	72	\$13.1	\$12.5	\$2.1
Totals	Total	—	\$3,094.4	\$2,663.0	\$356.3

Source: MIG 2004b

<sup>a</sup> Real estate modified to reflect portion of output attributable to rental properties.

**Business Survey.** To provide information for the economic analysis, RTI International conducted a survey of selected categories of potentially affected businesses (RTI 2010c). This survey took place between June and September 2009. Businesses in the following categories were interviewed: Rental Agencies; Lodging Other than Rental Homes; Recreational Supply and Activities; and Commercial Fishermen. The results from interviews with all the sectors, except commercial fishing, were used to generate the range of impacts for other tourism-related businesses that were not part of the business survey such as food service, food and beverage stores, and gasoline stations. Table 64 shows the three-digit NAICS codes used to filter the InfoUSA database for these business categories.

**TABLE 64. BUSINESS CATEGORIES BY THREE-DIGIT NAICS**

Business Category	NAICS	NAICS Definition
Rental agencies	531	Real estate
Lodging other than rental homes	721	Accommodation
Recreational supply	451	Sporting goods, hobby, book and music stores
Recreational supply	487	Scenic and sightseeing transportation
Recreational supply	713	Amusement, gambling, and recreation industries

Source: RTI 2010c

Lists of all businesses in the selected categories were compiled using the yellow pages, web sites such as outerbanks.org, input from members of the Committee, Seashore staff, and InfoUSA (InfoUSA 2008). The lists were then manually filtered using web searches to determine if the businesses fit the business category definitions and if the business was still active. Duplicates and additional locations were excluded to ensure one entry per entity. The Seashore provided the list of commercial fishermen with licenses to fish in the Seashore as of April 2009. From this list of businesses, the sample of businesses to be interviewed included all the Seashore commercial fishermen, all the relevant recreation businesses in the Seashore villages and all the rental agencies in the Seashore villages. Random samples of the remaining



business categories and regions were selected. Table 65 provides the sample size for each category and the response rate. All the businesses in the sample were sent a letter and contacted by telephone. Multiple attempts were made to contact businesses and arrange interviews.

**TABLE 65. SAMPLE SIZE AND RESPONSE RATE BY BUSINESS CATEGORY**

Location	Business Category	Sample Size	Response Rate
The Seashore Villages	Commercial Fishermen <sup>a</sup>	20	30%
	Recreational Supply	47	47%
	Realty	10	60%
	Lodging	39	56%
Rest of ROI	Recreational Supply	18	33%
	Realty	17	24%
	Lodging	21	29%

<sup>a</sup> 28 commercial fishermen with licenses to fish in the Seashore in 2009 had unlisted telephone numbers. They were mailed a letter about the survey with contact information, but no responses were received.

Source: RTI 2010c

The business survey consisted of general questions regarding revenue and number of employees and how these numbers changed from 2007 to 2008 when the consent decree (alternative B) went into effect. At the time the survey was written, draft versions of alternatives D and E represented the two extremes of management. The major features of these two action alternatives were used as the basis for questions about the possible impact of the alternatives on revenue in the future relative to revenue in 2008. The questions were designed to capture the features of the alternatives that might have the biggest impact on visitation. The responses provided information for analysis of alternatives C and F because of their similarity to alternative E. The alternatives were not discussed in detail to keep the interview short enough to complete in a reasonable amount of time and reduce the burden on respondents.

Even businesses that reported no decrease or an increase in revenue in 2008 under the consent decree were concerned about the long-term impacts of the alternatives, even alternatives similar to the consent decree. These businesses cited reasons why they thought that revenue would decrease in the future including: visitors did not know about the closures when they came in 2008, visitors had made down payments for 2008 so they came despite the closures, the business increased prices, and the business changed their inventory. Although the survey questions asked respondents to forecast the possible impacts of the two alternatives relative to 2008, many businesses also discussed 2009. In some cases, businesses said that visitors came in 2008 not knowing about the beach closures and did not return in 2009. However, some businesses reported that while business in the spring was down, they were seeing increased bookings for the fall or expected business in the fall to increase. Some visitors may reschedule trips from the spring to the fall to visit areas likely to be closed in the spring and early summer. Because the business survey was conducted during the summer, businesses did not have information about revenue in the fall 2009.

Business owners were generally worried about the future impacts of the action alternatives. In addition, businesses who want to influence the debate over the alternatives have an incentive to exaggerate the expected impacts of more restrictive alternatives on their revenue. This possibility was recognized, and the survey included questions to probe for the reasoning behind answers to some questions.

Some respondents were hesitant to give specific numbers on possible changes in revenue that could be attributed to ORV management actions because of the many other factors affecting the economy in the last few years, uncertainty about shorebird and turtle nesting patterns, and uncertainty about the long-term reactions of visitors to changes in visitor access to the Seashore. The ranges of possible impacts, which are large in some cases, reflect the uncertainty expressed by businesses and variation present in the survey data.

**Publicly Available Data.** According to NPS visitation statistics, visitation to the Seashore has remained relatively steady during implementation of the Interim Strategy and the consent decree. In 2007, the year in which the Interim Strategy was implemented, annual visitation was similar to the average annual visitation over the previous five years (within one standard deviation from the mean) and an increase of 5.3% over the 2006 visitation (NPS 2008e). Visitation in 2008 was 4.1% lower than 2007 visitation, but 1.0% higher than 2006 visitation (NPS 2008e). Visitation in 2009 was 7.4% higher than 2006, 2.0% higher than 2007, and 6.3% higher than 2008 (table 66).

While this does not provide information of what visitation might have been without the Interim Strategy or consent decree or how the mix of visitor spending may have changed in that time, the information does not support projections of decreases in visitation under the no-action alternatives, or under action alternatives with similar ORV restrictions. If the trends seen in the publicly available data continue, the economic impacts of the alternatives would likely occur in the lower range of projected impacts.

**TABLE 66. VISITATION AT CAPE HATTERAS NATIONAL SEASHORE**

Visitation	2002–2006 Average	2004–2006 Average	2007	2008	2009	2010
Through July	2,021,046	1,812,343	1,943,264	1,835,599	1,936,738	1,291,965
Annual	2,435,650	2,197,941	2,237,378	2,146,392	2,282,543	NA

Source: NPS 2009I

Similarly, the unemployment patterns for Dare and Hyde counties compared to North Carolina as a whole discussed in chapter 3 do not display a disproportionate increase in either county during the spring, summer and fall of 2007, 2008 or 2009 when the ORV restrictions were in place. The lack of a visible impact does not mean that there was not an impact, just that these unemployment data do not support this conclusion.

Data on gross receipts from lodging and meals from 2006 to 2009 provide a comparison between the Seashore villages and Dare County as a whole (Outer Banks Visitors Bureau 2010a, 2010b). As displayed in chapter 3, the percent of total Dare County receipts generated by the Seashore villages has remained relatively stable across years (data on percent of total Dare County receipts is presented, rather than absolute numbers because changes in the taxes prevent direct comparison of the absolute numbers). Again, the data do not provide evidence of a disproportionate change in revenue for the Seashore villages relative to the rest of Dare County in 2008 and 2009 when stricter ORV restrictions were in place.

### Adaptation over Time

It is difficult to predict how visitors will change behavior over the long run in response to a particular alternative. The business community that caters to tourists has evolved over time as different activities rise and fall in popularity and as Seashore management affects the range of visitor experiences available. For example, kite surfing is an activity that has increased in popularity over the years that did not previously exist in the Seashore. If the alternatives further shift the mix of visitors who come to the

Seashore over the next decade, the mix of businesses in the community may change as well. In the short-term, as the adjustment takes place, particular business sectors may experience significant impacts. In the long-term, adaptation by the business community may mitigate long-term adverse impacts on the regional economy. A study of other parks that took measures to protect piping plovers provides some insight (Industrial Economics, Inc. 1998). In the case studies, anglers and ORV users suffered the biggest impacts from plover management actions. The amount of economic impact varied, but there was no evidence of significant long-term impacts or business closures from plover management. The parks examined in the case studies were very different from the Outer Banks and the study was completed in 1998, so the study does not provide proof that the economy will adapt. The study does provide examples of businesses that adapted over time to changes in ORV management.

### Methodology

The following methods were used to assess impacts on the regional economy including the ROI and the Seashore villages, small businesses and preservation values.

- Regional economic impacts were calculated using the IMPLAN model as customized for the NPS (Michigan State University n.d.).
- Small business impacts were assessed using the range of forecast revenue changes in different industries and information on the size of local businesses. The assessment compares the impacts on small and large businesses.
- Preservation impacts were evaluated qualitatively and related back to the impact findings for threatened and endangered species.

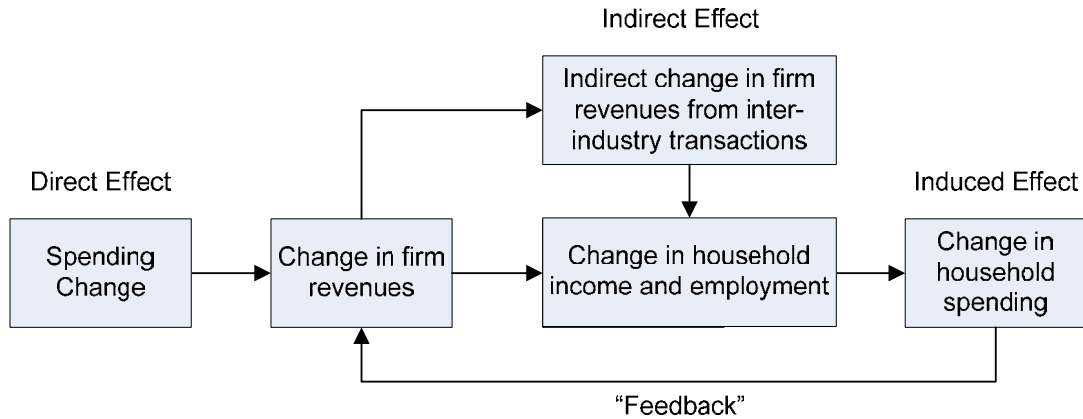
### IMPLAN

Economic impact analyses trace the flows of spending associated with the affected industries to identify changes in sales, income, jobs, and tax revenues resulting from a policy action. An economic impact analysis typically examines the effect of a change in policy on the economy of a particular region. Economic impact analysis differs from benefit-cost analysis, which focuses on the change in economic efficiency resulting from a change in policy and includes both market and nonmarket values.

To measure the economic impacts of the proposed alternatives, IMPLAN was used, an I/O model that simulates how changes in sales and employment in one industry can affect other industries and the regional economy as a whole. The process for generating the impacts in the I/O model is illustrated in figure 33. This process can be separated into three types of impact:

- **Direct Impacts**—the immediate consequences in industries that experience a change in sales.
- **Indirect Impacts**—responses in other industries to changes in the industries experiencing direct impacts.
- **Induced Impacts**—responses by households to the change in income received as the economy changes. Since wage payments adjust as the economy experiences impacts, households purchase more or less goods and services, which leads to greater expansion or contraction of the economy.

Note that the direct effects defined by the IMPLAN model do not imply that under NEPA the businesses would be considered directly regulated or impacted by the alternatives. The alternatives would directly regulate the activities of visitors and would indirectly impact businesses through changes in visitor behavior.



**FIGURE 33. FEEDBACK PROCESS THAT GENERATES A PROGRAM'S TOTAL ECONOMIC IMPACT**

For this analysis, 2004 I/O model of the economy of Dare and Hyde counties was used that was constructed using IMPLAN economic modeling software. IMPLAN was used because it is one of the most widely used I/O modeling software packages in economic impact analysis, and has been used frequently in economic impact studies for the NPS (see examples of applications of IMPLAN to National Parks at <http://web4.canr.msu.edu/mgm2/>).

To apply IMPLAN, the analyst must estimate the direct impacts of an economic activity or policy and provide them as input. IMPLAN contains a data file with information on the region of interest that provides information, such as ratios of jobs to sales for each sector, the proportion of spending by individuals and firms located within the region, the amount that is spent within the region, and the amount that each sector purchases from all the other sectors within the region per unit of output. Applying the multipliers generated from the data file allows the IMPLAN program to estimate the total regional impacts resulting from a given direct impact.

The economic database that IMPLAN uses comes from official government statistics (e.g., the National Income and Product Accounts [NIPA] published annually by the Bureau of Economic Analysis [BEA], the BEA I/O accounts for the United States, along with numerous other data sources). These data are constructed to be internally consistent (i.e., county data sum to state totals and state data sum to national totals). In some cases, regional values are created where no data previously exist, and for other categories new values are calculated to replace existing data. Thus, IMPLAN contains comprehensive and consistent regional accounts but at the cost of making alterations to existing data and creating new data (Crihfield and Campbell 1991). Because of this IMPLAN may not match data on economic output from other reports. NPS did not calibrate the IMPLAN data for the tourism sectors of the economy to other, external data because all the data in IMPLAN is generated using the same assumptions, providing consistency across sectors.

### Small Business Impacts

The management of the Seashore would potentially affect the economic welfare of area businesses, organizations, and governmental jurisdictions, large and small through increases or reductions in revenue, taxes, and employment. However, small entities may experience larger impacts than large entities because of decreased flexibility to respond to changes. Small businesses, such as recreation equipment, lodging, and restaurants, comprise the majority of businesses relying directly on ORV users as a large source of revenue. These small businesses may not have the resources to respond to increased fluctuation in visitation from year to year, and they may be disproportionately affected relative to large businesses.

The Small Business Administration sets general size standard definitions by industry (defined by their NAICS code) based on a company's revenue or number of employees, as described in "Chapter 3: Affected Environment." In 2008, the ROI contained 768 establishments in affected industries, with 222 located in Hatteras villages (InfoUSA 2008). Assuming each location is an independent company, 95% of these could be small entities of the ROI, and 98% could be small entities in the Seashore villages (U.S. SBA 2008). Nationally, a lower percent of the businesses in the different businesses categories are small when compared to the ROI. Applying the national average of establishments operated by small entities in each business category would suggest that between 78%–84% of establishments are operated by small entities in the ROI and 80%–84% in the Seashore villages (SUSB 2002).

The threshold for impacts on small businesses is lower than for the regional economy. Some federal agencies use a 3% threshold for the cost to sales ratio of a regulation to identify what they define as significant impacts (major impacts under NEPA analysis). Alternatively, a major impact can be defined based on industry profit margins. Profit margins derived from 2005 tax data for the affected industries range in the ROI from 1.43% to 13.49% (IRS 2005), which would imply different thresholds for each affected industry. The impact analysis uses the 3% threshold, but includes qualitative discussion on where impacts might be larger or smaller.

### **Preservation Values**

Individuals who hold preservation values for the plant and animal communities in the Seashore suffer adverse impacts when those communities are subject to adverse impacts. The impact on preservation values will be proportionate to the impact on protected species. Piping plover impacts were used as the benchmark for preservation values.

Preservation values can be assessed by examining willingness to pay, or the value that people place on goods not normally traded in the marketplace, i.e., what they are willing to pay for these goods, given their level of income. There are studies that have tried to quantify preservation values, particularly for protected species (see the discussion in chapter 3); however, no studies have been done for the protected turtles and birds in the Seashore.

### **Thresholds**

A summary of socioeconomic impacts under all alternatives is provided in table 81 at the end of this section. The following thresholds for evaluating impacts on socioeconomic resources were defined.

*Negligible: Regional Economic Impacts.* The effect would not be detectable and would not change the socioeconomic environment, including individuals, businesses, and communities with economic linkages to the Seashore. An overall change in employment and personal income of less than 1%.

*Small Business Impacts.* No impact on small businesses.

*Preservation Value Impacts.* General population in Outer Banks and in U.S. unaware of changes.

*Minor: Regional Economic Impacts.* At the county level, the effects would be considered minor if there could be an overall change in employment and personal income of 1% to less than 6%.

*Small Business Impacts.* Very small impact on small businesses, ratio of change in revenue to total sales less than 1%. No business closures or disproportionate impacts on small businesses would result.

*Preservation Value Impacts.* Population aware of changes; however, they perceive that the changes would be minor.

*Moderate: Regional Economic Impacts.* At the county level, the effects would be considered moderate if there could be an overall change in employment and personal income greater than or equal to 6% but less than 10%.

*Small Business Impacts.* Noticeable impact on small businesses, ratio of change in revenue to total sales between 1% and 3% (based on standards used by some federal agencies for small business impact analysis under the *Regulatory Flexibility Act of 1980*, as amended in 1996). No business closures or disproportionate impacts on small businesses would result.

*Preservation Value Impacts.* Population aware of changes and perceive possibility of moderate impacts on Seashore resources.

*Major: Regional Economic Impacts.* The effect would be substantial, highly noticeable, potentially permanent influence on the socioeconomic environment. At the county level, the effects would be considered major if there could be an overall change in employment and personal income of greater than 10%.

*Small Business Impacts.* Significant impact on substantial number of small businesses, ratio of change in revenue to total sales over 3% (based on standards used by some federal agencies for small business impact analysis under the *Regulatory Flexibility Act*). Business closures or disproportionate impacts on small businesses are possible.

*Preservation Value Impacts.* Population aware of changes and perceive possibility of major impacts on Seashore resources.

*Duration:* Short-term: Temporary and typically transitional impacts associated with implementation of an action.

Long-term: Permanent impacts on the social and economic environments.

### **Impacts of Alternative A: No Action—Continuation of Management under the Interim Protected Species Management Strategy**

*Regional Economic Impacts.* The impacts of alternative A depend on how the alternative would affect the number of visitors to the Seashore over the next 10 years and the activities these visitors would pursue. Using the experience with alternative A in 2007 to forecast future visitation trends as a result of alternative A in isolation is difficult because of the many other factors that influence visitation from year

to year. However, alternative A would allow the most potential for access to the Seashore by ORVs compared to the other alternatives.

Beach closure to ORVs would be contingent upon bird and turtle nesting behavior except for prenesting closures at the points and spits and administrative and safety closures. As discussed in “Visitor Use and Experience,” restrictions on large areas of each of the spits would likely begin in April as a result of prenesting closures for shorebirds, but ORV corridors and pedestrian paths to the spits and Cape Point would most likely remain open throughout the early parts of the spring and summer. Full-beach closures are most likely to occur in July or August and could last from 3 to 5 weeks at the spit and point areas and a few other areas of the beach, based on past shorebird breeding seasons. ORV users and, in many cases, pedestrians would not be able to reach these areas for fishing or other recreational pursuits unless alternate access were available via an existing interdunal road or bypass.

Turtle nests can cause partial and full-beach closures anywhere along Seashore beaches throughout the summer and fall months. Full beach closures would be unlikely because using alternative routes or applying the identified bypass criteria, when appropriate, would increase the chances that ORV and pedestrian access would continue to the spits, Cape Point, and South Beach.

Under alternative A, the amount of beach ORV users and pedestrians can access would change from year to year. In 2007, the year in which the Interim Strategy was implemented, annual visitation was similar to the average annual visitation over the previous five years (within one standard deviation from the mean) and an increase of 5.3% over the 2006 visitation (NPS 2008e). While visitation did not decrease in 2007, implementation of alternative A could lead to decreases in visitation in future years if there were widespread and/or long-lasting closures due to changes in the nesting behavior of shorebirds and turtles. Visitor uncertainty about which areas of the Seashore would be open for ORV use may also deter potential ORV users from planning trips in advance. Conversely, several years with shorter closures due to changes in breeding/nesting behavior could lead to increases in visitation. Visitors who enjoy using beaches without ORVs may also increase their visitation to the area. The true effect on visitation may lag the implementation and would depend on breeding/nesting patterns in the future as visitors incorporate the uncertainty of beach closure into their decision to visit.

The impact of alternative A on commercial fishermen would be less than for recreational ORV users. Commercial fishermen have access to Seashore beaches except during full resource closures for breeding and at lifeguarded beaches.

As shown in table 67, the range of forecast revenue impacts by business category over the next 10 years under alternative A would vary from an increase of 5% to a decrease of 5% in the Seashore villages (the villages bordering the Seashore), and an increase of 1% to a decrease of 1% in the rest of the ROI. The low impact end of the range, an increase in revenue of 5% in the Seashore villages (1% in the rest of the ROI), reflects the 5% increase in visitation in 2007 versus 2006 and the possibility that recreation without ORVs could increase in the future as a result of the ORV management changes. The mid value for the impacts was set at 0% or no change based on feedback from the businesses that responded to the business survey, who reported little or no impact from implementation of the Interim Strategy in 2007. The high end of the range, a 5% decrease in revenue in the Seashore villages (or 1% in the rest of the ROI), captures the possibility that 2007 was not a typical year for nesting-related beach closures and that in future years closures could be more widespread and longer lasting, which would reduce visitation.

**TABLE 67. RANGE OF PROJECTED ANNUAL BUSINESS REVENUE IMPACTS FOR ALTERNATIVE A BY BUSINESS CATEGORY AND AREA**

Revenue Impact Estimate	The Seashore Villages			Rest of ROI
	Commercial Fishing	Sporting Goods	Other	All
Low	5%	5%	5%	1%
Mid	0%	0%	0%	0%
High	-5%	-5%	-5%	-1%

The changes in revenue were input into IMPLAN to calculate the direct, indirect, and induced changes in economic output and employment. Table 68 presents the direct impacts, the total impacts (the sum of direct, indirect, and induced impacts) on output and employment and the impacts as a percent of total economic output and employment in Dare and Hyde counties. The Seashore villages would experience the majority of the direct impacts (the direct changes in revenue from changes in visitation). The direct impacts range from a 0.4% (\$10 million) increase to a 0.4% decrease in total economic output, and a gain or loss of 0.5% of employment (135 employees) in the ROI. Total impacts in Dare and Hyde counties, which include direct, indirect, and induced impacts, are a 0.5% (\$13.5 million) increase or decrease to economic output, and a gain or loss of 0.4% (170) in employment.

**TABLE 68. ECONOMIC IMPACT SUMMARY ESTIMATED BY IMPLAN**

Revenue Impact Estimate	Direct Output Impact (in millions of dollars) <sup>a</sup>	Total Output Impact (in millions of dollars)	Impact as a percent of total for Dare and Hyde Counties	Direct Employment Impact <sup>a</sup>	Total Employment Impact	Impact as a percent of total for Dare and Hyde Counties
Low	\$9.99	\$13.48	0.4%	135	170	0.5%
Mid	\$0.00	\$0.00	0.0%	0	0	0.0%
High	-\$9.99	-\$13.48	-0.4%	-135	-170	-0.5%

<sup>a</sup> Fifty percent of the direct impacts are expected to occur in the Seashore villages.

The economic impact of alternative A would likely vary from year to year with varying breeding/nesting behavior resulting in different areas of the Seashore being available to ORV and pedestrian use. The regional economy may experience long-term negligible adverse or beneficial impacts depending on breeding/nesting patterns. It is possible that in a year when there are long, widespread beach closures there could be bigger declines in visitation causing larger, but short-term adverse impacts. On the other hand, in years when closures are fewer, visitation increases could be larger, causing larger, but short-term beneficial impacts.

**Small Business Impacts.** Under alternative A, small businesses would experience long-term negligible to minor adverse impacts or beneficial impacts over the next 10 years. The thresholds for impacts on small businesses are much lower than for the regional economy (see methodology section above). Small businesses may not have the resources to adjust to changes or new regulations compared to larger businesses, so impacts may have a larger effect on small businesses. From table 68, a 0.5% decrease would be a minor impact for small businesses, but only a negligible impact for the regional economy. As with the regional economy, negligible adverse or even beneficial impacts would occur if alternative A



resulted in no change or an increase in visitation, which would be consistent with the 2007 visitation data. However, a minor adverse impact would occur if visitation declined during or after years in which there were more widespread and long lasting beach closures from nesting. In addition, small businesses may suffer larger, short-term impacts if breeding/nesting patterns resulted in widespread and extended beach closures for ORVs and pedestrians that reduced visitation or changed the composition of visitors in a way that reduced revenue for particular small businesses. Businesses that depend on visitors using specific beach access ramps, in particular fishing supply and some food service businesses may experience localized impacts that could be larger or smaller than small businesses in the rest of the ROI depending on year to year variation in breeding/nesting by shorebirds and turtles at specific ramps.

**Preservation Value Impacts.** The impact of alternative A on preservation values depends on the impact alternative A has on protected species. For piping plover, alternative A would result in long-term minor to moderate adverse impacts from resources management activities and long-term moderate to major adverse from ORV and other recreational use. This implies that under alternative A, the overall impact on preservation values for the United States as a whole could be long-term moderate adverse.

**Cumulative Impacts.** Other past, present and future trends and activities could affect the socioeconomic resources in the region. Because the economic health of the area depends on tourism, the trends and actions, beneficial and adverse, discussed in “Visitor Use and Experience” would have an impact on the economy of the ROI.

In the future, a number of Seashore initiatives would likely affect visitation and the local economy. Based on “Visitor Use and Experience,” future actions that result in an increase in Seashore visitors should also have positive impacts on the local economy, while actions that decrease visitation could have negative impacts. Other planning actions in the area include the development of Cape Lookout National Seashore ORV Management Plan/EIS, the Corridor Management Plan for the Outer Banks Scenic Byway, and the Land Use Development Plans for Dare and Hyde counties. The implementation of these plans would affect visitor use in the ROI, with long-term benefits from improved access, but indeterminate beneficial or adverse impacts relating to limits placed on ORV use and land development under county plan revisions if they further restrict or encourage ORV use, or provide any new visitor opportunities. The extent of the impacts would depend on the final plans. Other actions planned for the region that would also affect visitation and the local economy include the Bonner Bridge replacement, continued maintenance of NC-12 and NC-12 improvements on Bodie Island, all of which should have very short-term negligible adverse impacts on tourism numbers due to construction delays or inconveniences, short-term beneficial impacts related to employment during construction, and long-term benefits because of the provision of reliable and continued access for tourists and local businesses.

Storms can affect visitation and the local economy. In recent years, hurricanes and storms and the subsequent recovery time required following these events have adversely affected visitor attendance, resulting in short-term minor to major adverse impacts on tourism and fishing and associated businesses.

In addition, current and future national economic conditions would affect the ROI as they affect the entire United States. Tourism is sensitive to the cost of fuel, and gasoline prices increased to more than \$4.00 per gallon during summer 2008. The current economic recession is also hurting the regional economy. The effects of national economic conditions would vary over time, but those similar to what has been experienced in 2008–2009 are expected to have a long-term minor to moderate adverse impact on the ROI.

In the long-term, cumulative impacts from all other actions affecting the regional economy would be beneficial based on economic growth despite storms and plans that would improve visitor access to the beaches in the future. However, a continued economic recession at the national level could cause long-term minor to moderate adverse impacts. These impacts, combined with the potential long-term negligible adverse or beneficial impacts associated with the actions under alternative A, would have long-term negligible to minor adverse or beneficial cumulative impacts in the ROI due to the normal and uncertain fluctuation in Seashore visitation and depending on national economic conditions.

**Conclusion.** Businesses linked to ORV use at the Seashore would experience uncertain impacts based on protected wildlife nesting behavior changes from year to year. The impact on these businesses, either positive or negative, may ripple through the economy on the Outer Banks as a whole. This uncertainty may impact small businesses disproportionately. Overall, it is expected that the regional economy would experience long-term negligible adverse or beneficial impacts depending on the extent of beach closures. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Small businesses could experience long-term negligible to minor adverse impacts or long-term beneficial impacts over the next 10 years.

The long-term impact of alternative A would depend in part on how current and future visitors adjust their trips and spending in response to the management changes and the adaptations made by the business community to these changes. To the extent that businesses adapt to changing visitation patterns, the long-term impacts on the overall economy would be lessened. The impact on individual businesses would vary more than the impacts on the regional economy as a whole if the mix of visitors changes. Some businesses may experience a long-term decrease in customers, while others may experience no change or a long-term increase.

Preservation value impacts would depend on the success of alternative A in protecting the environment and threatened and endangered species, but are expected to be long-term moderate adverse.

Cumulative impacts could be long-term negligible to minor adverse or beneficial, depending on national economic conditions.

### **Impacts of Alternative B: No Action—Continuation of Management under Terms of the Consent Decree**

**Regional Economic Impacts.** Alternative B would allow less ORV access to the Seashore than alternative A, due to restrictions on night driving and an increased probability of beach closures due to overall increased buffer distances and mandated increases in buffers that occur when resource closures have been violated.

Beach closure to ORVs and pedestrians would be contingent upon bird and turtle nesting behavior and would not follow a pre-determined closure pattern, except for administrative and safety closures, as described under alternative A, with prenesting closures beginning 15 days earlier than alternative A for both piping plovers and American oystercatchers. Under alternative B, there would be potential for full-beach closures in April to August that could last several months, with past closures lasting as long as 3.5 months at Cape Point. Due to increased buffers under alternative B, the chance of a full-beach closure is greater than under alternative A. The potential for beach closures from turtle nests under alternative B would be slightly higher than under alternative A. The impact of these closures would be a potential change in visitation by those who come to the Seashore to visit but cannot reach their desired destination because the beaches are closed in popular visitor use areas (decreased visitation) and visitors who want an

ORV-free experience (increased visitation), the direct impact of their change in spending in the region, and the subsequent indirect and induced impacts on the regional economy.

The amount of beach that ORV users can access would change from year to year under alternative B, as would occur under alternative A. In 2008, the year in which the consent decree was implemented, annual visitation was similar to the average annual visitation over the previous five years (within one standard deviation from the mean). Visitation in 2008 was 4.1% lower than 2007 visitation, but 1.0% higher than 2006 visitation (NPS 2008e). Uncertainty about visitor experience and which areas of the Seashore would be open for ORV use may deter potential ORV users from planning trips in advance. At the same time, visitors who enjoy using beaches without ORVs may increase their visitation to the area. The true effect on visitation may lag the implementation and would depend on breeding/nesting patterns in the future as visitors incorporate the uncertainty of beach closure into their decision to visit.

The seasonal night-driving restrictions in alternative B, which are not present in alternative A, would impact commercial and recreational anglers who would otherwise fish for longer hours (in 2009 the consent decree was modified to allow commercial fishermen to access the Seashore beaches at 5:00 a.m. rather than 6:00 a.m. when the general public is allowed back on the beach). Commercial fishermen raised this concern during the business survey. The night-driving restrictions may also deter potential recreational anglers from visiting the Seashore, resulting in a direct loss of their spending on regional businesses, and the subsequent indirect and induced impacts on the regional economy

The impact of alternative B on commercial fishermen would be less than for recreational ORV users. Commercial fishermen have access to Seashore beaches except during full resource closures for breeding and at lifeguarded beaches, so they would not be substantially affected by the longer seasonal closures. In areas outside of existing resource closures, the Superintendent would be able to modify the night-driving restrictions (by allowing access at 5:00 a.m. rather than 6:00 a.m.), subject to terms and conditions of the fishing permit, for commercial fishermen who are actively engaged in authorized commercial fishing activity and can produce fish house receipts from the past 30 days. Such modifications would be subject to review, but would not have systematic periodic review, as under the action alternatives.

As presented in table 69, the range of direct impacts by business category would be projected to vary from 0% to a 50% decrease for commercial fishermen, from 0% to a 10% decrease for other businesses in the Seashore villages, and from 0% to a 2% decrease in the rest of the ROI under alternative B over the next 10 years. These results were confirmed by the business survey conducted by RTI (RTI 2010c) which found that in all business categories, the majority of businesses reported that revenue fell between 2007 and 2008. However, the majority also reported hiring the same number of full and part-time employees in both years. In addition, businesses north of the Seashore in Nags Head, Kill Devil Hills, and Kitty Hawk overall expected smaller impacts from any change in ORV management relative to the Seashore villages (RTI 2010c) which supports the finding of a lower percentage of decrease of revenue in the rest of the ROI.

**TABLE 69. RANGE OF PROJECTED ANNUAL BUSINESS REVENUE IMPACTS FOR ALTERNATIVE B BY BUSINESS CATEGORY AND AREA**

Revenue Impact Estimate	The Seashore Villages			Rest of ROI
	Commercial Fishing	Sporting Goods	Other	All
Low	0%	0%	0%	0%
Mid	-25%	-5%	-5%	-1%
High	-50%	-10%	-10%	-2%

The low impact of no change (0% increase or decrease) reflects the visitor statistics for 2008, which were within normal yearly variation. Under the low impact assumptions, visitation changes during 2008 are assumed to be mostly the result from an increase in fuel prices and national economic conditions. The low impact scenario also assumes there may be fewer closures in years to come, and that visitors, businesses, and commercial fishermen would adjust to changes in beach access. Isolated businesses may experience adverse impacts, but the number of affected businesses would be too low to have an impact on the regional economy.

The mid scenario reflects a decline in revenue across all sectors and areas of the ROI. The percent impacts reflect responses from the business survey and a comparison between 2007 and 2008 visitation data. For commercial fishermen, the mid scenario reflects a situation in which closures are longer and the night-driving restrictions have a bigger impact.

The high impact scenario forecasts larger losses in revenue. The scenario incorporates the upper end of revenue changes mentioned in the business survey. It assumes that after 2008, as visitors became aware of the ORV restrictions, visitation would decline further and would not recover. The high impact scenario could also occur if there were widespread and long-lasting resource closures based on nesting patterns that lasted several years. Longer closures could have a bigger impact on visitation and the ability of commercial fishermen to access the beach.

The distribution of economic impact estimates across different economic sectors for alternative B are presented by sector in table 70.<sup>14</sup> The values in table 70 represent the mid estimates from table 69 for changes in output in millions of dollars and changes in employment in full and part time jobs estimated by IMPLAN by sector. The range of economic impacts for output and employment under alternative B are provided in table 71.

<sup>14</sup> Because the mid estimate of change for alternative A was 0%, a more detailed table for alternative A was not prepared. However, the pattern of impacts across different sectors of the economy predicted for alternative B would be similar under alternative A.

TABLE 70. ECONOMIC IMPACTS OF THE MID REVENUE IMPACT FOR ALTERNATIVE B BY INDUSTRY ESTIMATED BY IMPLAN (\$2008)

NAICS		Direct Output Impacts (in millions of dollars)	Indirect Output Impacts (in millions of dollars)	Induced Output Impacts	Total Output Impacts	% of NAICS Output in Dare and Hyde Counties	Direct Employment Impacts	Indirect Employment Impacts	Induced Employment Impacts	Employment Total	% of NAICS Employment in Dare and Hyde Counties
11	Agriculture, forestry, fishing and hunting	-\$0.98	-\$0.03	\$0.00	-\$1.01	-1.0%	-30	0	0	-30	-2.1%
21	Mining	\$0.00	\$0.00	\$0.00	\$0.00	—	0	0	0	0	—
22	Utilities	\$0.00	-\$0.14	-\$0.05	-\$0.18	-0.4%	0	0	0	0	0.0%
23	Construction	\$0.00	-\$0.24	-\$0.02	-\$0.25	-0.1%	0	-5	0	-5	-0.1%
31-33	Manufacturing	\$0.00	-\$0.08	-\$0.02	-\$0.10	-0.1%	0	0	0	0	0.0%
42	Wholesale trade	\$0.00	-\$0.15	-\$0.07	-\$0.22	-0.4%	0	0	0	0	0.0%
44-45	Retail trade	-\$1.30	-\$0.12	-\$0.30	-\$1.72	-0.6%	-20	0	-5	-25	-0.7%
48-49	Transportation and warehousing	\$0.00	-\$0.09	-\$0.02	-\$0.11	-0.5%	0	0	0	0	0.0%
51	Information	\$0.00	-\$0.17	-\$0.07	-\$0.24	-0.4%	0	0	0	0	0.0%
52	Finance and insurance	\$0.00	-\$0.14	-\$0.11	-\$0.25	-0.2%	0	0	0	0	0.0%
53	Real estate and rental and leasing	-\$3.23	-\$0.45	-\$0.12	-\$3.81	-0.5%	-25	-5	0	-30	-0.5%
54	Professional, scientific, and technical services	\$0.00	-\$0.17	-\$0.05	-\$0.22	-0.3%	0	0	0	0	0.0%
55	Management of companies and enterprises	\$0.00	-\$0.01	\$0.00	-\$0.01	-0.5%	0	0	0	0	0.0%
56	Administrative and support and waste management and remediation services	\$0.00	-\$0.14	-\$0.02	-\$0.16	-0.2%	0	-5	0	-5	-0.3%

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NAICS		Direct Output Impacts (in millions of dollars)	Indirect Output Impacts (in millions of dollars)	Induced Output Impacts	Total Output Impacts	% of NAICS Output in Dare and Hyde Counties	Direct Employment Impacts	Indirect Employment Impacts	Induced Employment Impacts	Employment Total	% of NAICS Employment in Dare and Hyde Counties
61	Education services	\$0.00	\$0.00	-\$0.01	-\$0.01	-0.3%	0	0	0	0	0.0%
62	Health care and social assistance	\$0.00	\$0.00	-\$0.20	-\$0.20	-0.3%	0	0	-5	-5	-0.5%
71	Arts, entertainment, and recreation	-\$0.32	-\$0.03	-\$0.04	-\$0.40	-1.0%	-5	0	0	-5	-0.6%
72	Accommodation and food services	-\$4.93	-\$0.07	-\$0.17	-\$5.18	-1.7%	-85	0	-5	-90	-1.7%
81	Other services (except public administration)	\$0.00	-\$0.06	-\$0.11	-\$0.16	-0.2%	0	0	0	-5	-0.3%
Other	Misc. industries (including public administration)	\$0.00	-\$0.07	-\$0.39	-\$0.47	-0.1%	0	0	0	0	0.0%
<b>Total</b>		<b>-\$10.77</b>	<b>-\$2.16</b>	<b>-\$1.77</b>	<b>-\$14.70</b>	<b>-0.5%</b>	<b>-160</b>	<b>-20</b>	<b>-15</b>	<b>-200</b>	<b>-0.6%</b>

TABLE 71. RANGE OF ECONOMIC IMPACTS OF ALTERNATIVE B ESTIMATED BY IMPLAN (\$2008)

Revenue Impact Estimate	Direct Output Impact (in millions of dollars)	Total Output Impact (in millions of dollars)	Impact as a Percent of Total for Dare and Hyde Counties	Direct Employment Impact <sup>a</sup>	Total Employment Impact	Impact as a Percent of Total for Dare and Hyde Counties
Low	\$0.00	\$0.00	0.0%	0	0	0.0%
Mid	-\$10.77	-\$14.70	-0.5%	-160	-200	-0.6%
High	-\$21.54	-\$29.40	-1.0%	-320	-400	-1.2%

<sup>a</sup> Fifty-four percent of the direct impacts are expected to occur in the Seashore villages.

Adverse direct impacts of the mid revenue scenario for alternative B are expected to occur in retail, recreation, lodging and food service and real estate businesses, as well as the fishing industry if unpredictability in beach closures reduces Seashore visitation. Most industries may face some decrease in output through indirect impacts, totaling \$2.16 million lost. The waste management, real estate, and construction industries would also experience adverse indirect employment impacts amounting approximately 20 jobs lost. While many industries may face some reduction in output through induced impacts, only the retail, healthcare and accommodation and food service industries are predicted to experience additional job loss due to reduced spending.

The greatest total adverse effects under the mid revenue scenario on output and employment are estimated to occur in the accommodation and food services industry, with a \$5.18 million reduction in output and the loss of 90 jobs estimated under the middle scenario. Real estate, retail, and fishing in Dare and Hyde counties are also estimated to have output losses of \$1 million or more.

The projected range of business impacts for alternative B across the three scenarios, presented in table 71, is estimated to result in direct impacts of between no change and a 0.8% (\$21.54 million) decrease to economic output, and no change to a loss of 1.1% in employment (320 employees) in the ROI. Total impacts resulting from the direct impacts, which include indirect and induced impacts, would be between a no change and \$29.4 million decrease to economic output, and no change to a loss of 400 employees. These total impacts would represent no change to a 1% decrease relative to the total economic output in Dare and Hyde counties and no change to a 1.2% loss of employment.

The economic impact of alternative B would likely vary from year to year with the nesting behavior of protected species. The ROI may experience long-term negligible to minor adverse economic impacts and Seashore villages may experience larger short-term adverse impacts if there are years with long-lasting and widespread beach closures or larger short-term beneficial impacts in years with minimal closures.

**Small Business Impacts.** Under alternative B, small businesses would experience long-term negligible to moderate adverse impacts. The night-driving restrictions and higher probability of beach and/or ramp closures due to larger required buffers would result in an upper end of moderate adverse impacts compared to minor adverse impacts in the high impact scenario for alternative A. Based on current visitation statistics there is a greater likelihood of negligible or minor impacts.

**Preservation Value Impacts.** The increased required buffers and introduction of seasonal night-driving restrictions under alternative B would lessen the impacts to preservation values relative to alternative A with long-term minor to moderate adverse impacts from resources management activities and long-term moderate adverse impacts from ORV and other recreational use to piping plovers. Based on the impacts predicted for piping plovers, the impacts to preservation value would be long-term minor to moderate adverse.

**Cumulative Impacts.** Socioeconomic impacts of cumulative actions unrelated to ORV management under alternative B would be the same as those under alternative A. In the long-term, cumulative actions affecting the regional economy would be negligible to minor and beneficial based on economic growth despite storms and plans that would improve visitor access to the beaches in the future. However, a continued economic recession at the national level could cause long-term minor to moderate adverse impacts. These impacts, combined with the potential long-term negligible to minor adverse impacts to the regional economy of the ROI associated with the actions under alternative B, would have long-term negligible to minor adverse or beneficial cumulative impacts in the ROI, depending on national economic conditions.

**Conclusion.** Businesses linked to ORV use at the Seashore would experience variable impacts based on the location and extent of species closures from year to year. The impact on these businesses may ripple through the economy on the Outer Banks as a whole. This uncertainty may impact small businesses disproportionately.

Overall, it is expected that businesses in the ROI would experience long-term negligible to minor adverse impacts. The Seashore villages would bear a larger share of the impacts, with the additional potential for larger impacts on individual businesses located in the Seashore villages that are tied most directly to ORV users and to traffic at vehicle access ramps. Small businesses are expected to experience long-term negligible to moderate adverse impacts. Based on the visitation statistics, the probability of negligible to minor impacts is greater than the probability of moderate adverse impacts.

The long-term impact of alternative B would depend in part on how current and new visitors adjust their trips and spending in response to the proposed management changes and the adaptations made by the business community to these changes. To the extent that businesses adapt to changing visitation patterns, the long-term impacts on the overall economy would be lessened. The impact on individual businesses would vary more than the impacts on the regional economy as a whole if the mix of visitors changes. Some businesses may experience a long-term decrease in customers, while others may experience no change or a long-term increase.

Preservation value impacts would depend on the success of alternative B in protecting the environment and threatened and endangered species, but could be long-term minor adverse.

Cumulative impacts could be long-term negligible to minor adverse or beneficial, depending on national economic conditions.

### **Impacts of Alternative C: Seasonal Management**

**Regional Economic Impacts.** Similar to other alternatives, under alternative C, the local economy would be impacted primarily through a change in the trend of the number of visitors to the region or a change in the activities visitors participate in while in the region. This alternative would provide for less ORV access to the Seashore than the no-action alternatives, due to designated year-round VFAs (SMAs) and the specified seasonal closures that would be larger in area and duration than alternatives A and B.



Under alternative C, areas of high resource sensitivity, e.g., points and spits, and areas of high visitor use, e.g., village beaches, would be closed to ORVs from March 15 to October 14. For areas of high resource sensitivity, this alternative would impose prenesting bird closures in the spring similar to the those under alternative B. ORV closures, however, would be more restrictive under alternative C than the no-action alternatives in the fall months, with closures extending to October 14. This may affect the extent to which visitors who cancel their spring trips to the Seashore decide to reschedule their trips to the fall. Peak-use limits on the number of vehicles parked in a location might limit visitation by ORV users on holiday or crowded summer weekends for a short period of time, but would improve the visitor experience for those who were on the beaches because of the decrease in crowding.

Other areas and pedestrian use of the Seashore would not be managed similarly to the no-action alternatives as buffers for protected species would be larger and ramp 27-30 would be an SMA. Pedestrian access corridors at Bodie Island Spit, Cape Point, and South Point, as well as the construction and relocation of ORV access ramps, would improve access to open beaches relative to the no-action alternatives, particularly alternative B. Alternative C would also require users to purchase an ORV use permit, the fee of which would be based on NPS guidelines for cost recovery. For visitors who prefer beaches without ORVs, alternative C provides more vehicle-free beach than alternative B.

Reduced ORV access to areas of high resource sensitivity in the fall and areas of high visitor use in the spring and fall, as well as the addition of the ORV permit system, would adversely affect visitation by ORV users relative to the no-action alternatives because of reduced vehicular access and the introduction of a new cost associated with the ORV permit. The addition of pedestrian access corridors and construction and relocation of ORV access ramps, as well as increased predictability of ORV access, could beneficially impact visitation relative to alternative B, but likely less than alternative A, which provided for pedestrian access throughout the Seashore. The net impacts of these actions relative to the no-action alternatives are uncertain.

The seasonal night-driving restrictions in alternative C relative to alternative A, and even alternative B, would impact commercial and recreational anglers who would otherwise fish for longer hours, since the restrictions would be from 7:00 p.m. to 7:00 a.m. from May 1 to November 15, with the option to modify (reduce) the restricted hours for commercial fishermen. Commercial fishermen raised this concern during the business survey. The night-driving restrictions may also deter potential recreational anglers from visiting the Seashore, resulting in a direct loss of their spending on regional businesses, and the subsequent indirect and induced impacts on the regional economy.

The impact of alternative C on commercial fishermen would be less than for recreational ORV users. Commercial fishermen have access to Seashore beaches except during full resource closures for protected species and at lifeguarded beaches, so they would not be affected by the longer seasonal closures. Commercial fishermen would not be required to obtain the ORV permit that would be required for recreational ORVs. In areas outside of existing resource closures, the Superintendent would be able to modify the night-driving restrictions, subject to terms and conditions of the fishing permit, for commercial fishermen who are actively engaged in authorized commercial fishing activity and can produce fish house receipts from the past 30 days. Such modifications would be subject to periodic review.

Similar to alternative B, the range of direct impacts by business category is projected to vary from 0% to -50% for commercial fishermen, 0% to -10% for other businesses in the Seashore villages, and 0% to -2% in the rest of the ROI under alternative C (table 72). The longer seasonal closures make the probability of higher impacts greater under alternative C differ compared to alternatives A and B for the reasons discussed above.

**TABLE 72. RANGE OF PROJECTED ANNUAL BUSINESS REVENUE IMPACTS FOR ALTERNATIVE C BY BUSINESS CATEGORY AND AREA**

Revenue Impact Estimate	The Seashore Villages			Rest of ROI
	Commercial Fishing	Sporting Goods	Other	All
Low	0%	0%	0%	0%
Mid	-25%	-5%	-5%	-1%
High	-50%	-10%	-10%	-2%

The projected range of business impacts for alternative C is estimated by IMPLAN to result in direct impacts of between no change and a 0.8% (\$21.54 million) decrease to economic output, and no change to a loss of 1.1% in employment (320 employees) in the ROI (table 73). Total impacts resulting from the direct impacts, which would include indirect and induced impacts, would be between a no change and \$29.4 million decrease to economic output, and no change to a loss of 400 employees. These total impacts would represent no change to a 1% decrease relative to the total economic output in Dare and Hyde counties and no change to a 1.2% loss of employment.

**TABLE 73. RANGE OF ECONOMIC IMPACTS OF ALTERNATIVE C ESTIMATED BY IMPLAN (\$2008)**

Revenue Impact Estimate	Direct Output Impact (in millions of dollars)	Total Output Impact (in millions of dollars)	Impact as a Percent of Total for Dare and Hyde Counties	Direct Employment Impact <sup>a</sup>	Total Employment Impact	Impact as a percent of total for Dare and Hyde Counties
Low	\$0.00	\$0.00	0.0%	0	0	0.0%
Mid	-\$10.77	-\$14.70	-0.5%	-160	-200	-0.6%
High	-\$21.54	-\$29.40	-1.0%	-320	-400	-1.2%

<sup>a</sup> Fifty-four percent of the direct impacts are expected to occur in the Seashore villages.

Similar to alternative B, the economy could experience long-term negligible to minor adverse impacts, and the Seashore villages may experience larger short-term adverse impacts if there are longer, more widespread closures or beneficial short-term impacts if closures are less wide-spread. However, due to increased fall ORV closures, larger adverse impacts would be more likely under alternative C than alternatives A or B.

**Small Business Impacts.** Similar to alternative B, under alternative C, it is expected that small businesses would experience long-term negligible to moderate adverse impacts.

**Preservation Value Impacts.** Alternative C would provide benefits to piping plovers relative to A and B due to more protective resources management measures, as well as long-term minor adverse impacts from ORV and other recreational use. Adverse impacts to preservation values would be less under alternative C, relative to alternatives A and B, and overall impacts to preservation values would be long-term minor adverse, with long-term beneficial impacts from the measures taken to protect sensitive species at the Seashore. The increased seasonal night-driving restrictions under alternative C would increase the probability of beneficial impacts to preservation values relative to alternative A or B.

**Cumulative Impacts.** Socioeconomic impacts of cumulative actions unrelated to ORV management under alternative C would be the same as those under alternative A. In the long-term, the impact of cumulative actions affecting the regional economy would be beneficial based on economic growth despite storms and plans that would improve visitor access to the beaches in the future. However, a continued economic recession at the national level could cause long-term minor to moderate adverse impacts. These cumulative actions, when combined with the potential long-term negligible to minor adverse impacts to the regional economy of the ROI associated with the actions under alternative C, would have long-term negligible to minor adverse or beneficial cumulative impacts in the ROI, depending on national economic conditions.

**Conclusion.** Businesses linked to ORV use at the Seashore would experience uncertain adverse impacts based on protected animal nesting behavior changes from year to year. The impact on these businesses may ripple through the economy on the Outer Banks as a whole; however, the economy would likely adapt over time to the implementation of this alternative. This uncertainty may impact small businesses disproportionately.

Overall, it is expected that the regional economy of the ROI would experience long-term negligible to minor adverse impacts. The Seashore villages would bear a larger share of the impacts, with the additional potential for larger short-term impacts in the Seashore villages. Efforts to improve access through pedestrian corridors, when compared to alternative B, and changes to access ramps would decrease the impacts on businesses that rely on visitors using the beaches affected by the new corridors and ramps relative to alternative B. However, the longer ORV closure in the fall months may reduce visitation under alternative C relative to B and make the mid to high impact scenarios more likely. Small businesses are expected to experience long-term negligible to moderate adverse impacts.

The long run impact of the alternative would depend in part on how current and new visitors adjust their trips and spending in response to the management changes and the adaptations made by the business community to these changes. To the extent that businesses adapt to changing visitation patterns, the long-term impacts on the overall economy would be lessened. The impact on individual businesses would vary more than the impacts on the regional economy as a whole if the mix of visitors changes. Some businesses may experience a long-term decrease in customers, while others may experience no change or a long-term increase.

Adverse impacts to preservation values would be less under alternative C, relative to alternatives A and B, and overall impacts to preservation values would be long-term minor adverse, with long-term beneficial impacts from the measures taken to protect sensitive species at the Seashore. The increased seasonal night-driving restrictions under alternative C would increase the probability of beneficial impacts to preservation values relative to alternative A or B.

Cumulative impacts in the ROI could be long-term negligible to minor adverse or beneficial, depending on national economic conditions.

## Impacts of Alternative D: Increased Predictability and Simplified Management

**Regional Economic Impacts.** Similar to other alternatives, under alternative D, the local economy would be impacted primarily through a change in the trend of the number of visitors to the region or a change in the activities visitors participate in while in the region. This alternative would provide for the least ORV access to the Seashore relative to the other alternatives, as well as reduced access for pedestrians as all SMAs would be under ML1 management measures and would be seasonally closed to pedestrians until protected species breeding activity ceases.

Under alternative D, areas of high resource sensitivity and visitor use would not be designated as ORV routes and would be managed under ML1 measures during the breeding season. This would result in all points and spits at the Seashore being closed year-round to ORV use and closed during the breeding season to pedestrian use. Similar to the alternative B, beaches open to ORV use would still be subject to temporary resource closures according to protected species behavior, which could result in larger areas of resource closure when compared to alternative A. Relative to the other action alternatives, alternative D would have the most certainty and least costly ORV permits. This alternative would decrease visitation by ORV users relative to the other alternatives.

Seasonal night-driving restrictions in alternative D, relative to alternatives A and B, would impact commercial and recreational anglers who would otherwise fish for longer hours, since the restrictions would be from 7:00 p.m. to 7:00 a.m. from May 1 to November 15. Commercial fishermen raised this concern during the business survey. The night-driving restrictions may also deter potential recreational anglers from visiting the Seashore, resulting in a direct loss of their spending on regional businesses, and the subsequent indirect and induced impacts on the regional economy. However, as alternative D would close all points and spits year-round to ORV use, the impacts of night driving under this alternative would be secondary compared to the impacts from the establishment of year-round SMAs at all points and spits under ML1 management procedures.

The impact of alternative D on commercial fishermen would be less than for recreational ORV users. Commercial fishermen have access to Seashore beaches except during full resource closures and at lifeguarded beaches, so they would not be affected by the year-round closures. Commercial fishermen would not be required to obtain an ORV permit that would be required for recreational ORVs, but would be managed under the commercial fishing special use permit. In areas outside of existing resource closures, the Superintendent would be able to modify the night-driving restrictions, subject to terms and conditions of the fishing permit, for commercial fishermen who are actively engaged in authorized commercial fishing activity and can produce fish house receipts from the past 30 days. Such modifications would be subject to periodic review.

The range of direct impacts by business category is projected to vary from no change to a decrease of 50% for commercial fishermen, a decrease of 15% to a decrease of 40% for businesses in the Seashore villages, and a decrease of 2% to a decrease of 6% in the rest of the ROI under alternative D (table 74). The impacts on individual businesses that depend on visitors to SMAs could be larger. The impacts on revenue from alternative D would depend on how visitors react to the closure of SMAs to ORVs year-round and how visitors and potential visitors adjust to the new conditions over time. With year-round ORV closures, there are no opportunities for visitors to reschedule their trips to the fall as in the other alternatives. As part of the survey of small businesses, described in detail in “Chapter 3: Socioeconomics,” businesses were asked if ORV management was implemented under a scenario similar to alternative D, compared to 2008, would they expect their business to increase or decrease, or not have much effect. Responses to this question showed that the median change in expected revenue compared to 2008 ranged from a decrease of 0% to 25% (RTI 2010c). In addition, based on results from the visitor intercept survey (RTI 2010a), an estimated 33% of respondents stated that they would have been

“Somewhat Unlikely” or “Very Unlikely” to have taken their current trip under implementation of alternative D, suggesting impacts on the higher end of the stated spectrum as originally found in the DEIS.

**TABLE 74. RANGE OF PROJECTED ANNUAL BUSINESS REVENUE IMPACTS FOR ALTERNATIVE D BY BUSINESS CATEGORY AND AREA**

Revenue Impact Estimate	The Seashore Villages			Rest of ROI
	Commercial Fishing	Sporting Goods	Other	All
Low	0%	-20%	-15%	-2%
Mid	-25%	-30%	-20%	-4%
High	-50%	-40%	-25%	-6%

The economic impact estimates for the mid value of revenue impacts from table 74 for different industry sectors under alternative D are presented in table 75. The values in table 75 represent the mid estimates for changes in output in millions of dollars and changes in employment in full and part time jobs estimated in IMPLAN. The range of economic impacts for output and employment under alternative D are provided in table 76.

**TABLE 75. ECONOMIC IMPACTS OF ALTERNATIVE D FOR MID RANGE REVENUE IMPACTS BY INDUSTRY ESTIMATED BY IMPLAN (\$2008)**

NAICS		Direct Output Impacts (in millions of dollars)	Indirect Output (in millions of dollars)	Induced Output Impacts	Total Output Impacts	% of NAICS Output in Dare and Hyde Counties	Direct Employment Impacts	Indirect Employment Impacts	Induced Employment Impacts	Employment Total	% of NAICS Employment in Dare and Hyde Counties
11	Agriculture, forestry, fishing and hunting	-\$0.98	-\$0.11	-\$0.01	-\$1.10	-1.1%	-30	-5	0	-35	-2.4%
21	Mining	\$0.00	\$0.00	\$0.00	\$0.00	—	0	0	0	0	—
22	Utilities	\$0.00	-\$0.56	-\$0.17	-\$0.72	-1.6%	0	0	0	0	0.0%
23	Construction	\$0.00	-\$0.53	-\$0.06	-\$0.58	-0.1%	0	-5	0	-5	-0.1%
31-33	Manufacturing	\$0.00	-\$0.33	-\$0.07	-\$0.39	-0.2%	0	0	0	0	0.0%
42	Wholesale trade	\$0.00	-\$0.44	-\$0.25	-\$0.69	-1.2%	0	-5	-5	-5	-0.9%
44-45	Retail trade	-\$5.46	-\$0.42	-\$1.09	-\$6.97	-2.4%	-80	-5	-15	-100	-2.6%
48-49	Transportation and warehousing	\$0.00	-\$0.23	-\$0.07	-\$0.30	-1.3%	0	-5	0	-5	-1.4%
51	Information	\$0.00	-\$0.68	-\$0.24	-\$0.92	-1.4%	0	-5	0	-5	-1.8%
52	Finance and insurance	\$0.00	-\$0.54	-\$0.40	-\$0.94	-0.8%	0	0	0	-5	-0.8%
53	Real estate and rental and leasing	-\$12.93	-\$1.76	-\$0.46	-\$15.15	-2.0%	-95	-15	-5	-110	-2.0%
54	Professional, scientific, and technical services	\$0.00	-\$0.66	-\$0.19	-\$0.85	-1.1%	0	-5	0	-10	-1.2%
55	Management of companies and enterprises	\$0.00	-\$0.02	\$0.00	-\$0.02	-1.8%	0	0	0	0	0.0%
56	Administrative and support and waste management and remediation services	\$0.00	-\$0.54	-\$0.09	-\$0.63	-0.9%	0	-15	0	-15	-0.9%

NAICS		Direct Output Impacts (in millions of dollars)	Indirect Output (in millions of dollars)	Induced Output Impacts	Total Output Impacts	% of NAICS Output in Dare and Hyde Counties	Direct Employment Impacts	Indirect Employment Impacts	Induced Employment Impacts	Employment Total	% of NAICS Employment in Dare and Hyde Counties
61	Education services	\$0.00	\$0.00	-\$0.03	-\$0.03	-1.0%	0	0	0	0	0.0%
62	Health care and social assistance	\$0.00	\$0.00	-\$0.74	-\$0.74	-1.0%	0	0	-10	-10	-1.1%
71	Arts, entertainment, and recreation	-\$1.29	-\$0.11	-\$0.15	-\$1.55	-3.8%	-15	-5	-5	-20	-2.5%
72	Accommodation and food services	-\$19.74	-\$0.29	-\$0.64	-\$20.66	-6.6%	-335	-5	-10	-355	-6.7%
81	Other services (except public administration)	\$0.00	-\$0.22	-\$0.40	-\$0.62	-0.7%	0	-5	-10	-10	-0.6%
Other	Misc. industries (including public administration)	\$0.00	-\$0.23	-\$1.45	-\$1.69	-0.5%	0	0	0	0	0.0%
<b>Total</b>		<b>-\$40.40</b>	<b>-\$7.65</b>	<b>-\$6.52</b>	<b>-\$54.57</b>	<b>-1.8%</b>	<b>-560</b>	<b>-75</b>	<b>-65</b>	<b>-700</b>	<b>-2.1%</b>

TABLE 76. RANGE OF ECONOMIC IMPACTS OF ALTERNATIVE D (\$2008)

Revenue Impact Estimate	Direct Output Impact (in millions of dollars)	Total Output Impact (in millions of dollars)	Impact as a percent of total for Dare and Hyde Counties	Direct Employment Impact <sup>a</sup>	Total Employment Impact	Impact as a percent of total for Dare and Hyde Counties
Low	-\$24.53	-\$33.01	-1.1%	-330	-415	-1.3%
Mid	-\$40.40	-\$54.57	-1.8%	-560	-700	-2.1%
High	-\$56.27	-\$76.13	-2.5%	-790	-985	-3.0%

<sup>a</sup> Between 47-59% of the direct impacts are expected to occur in the Seashore villages.

Adverse direct impacts of alternative D are expected to occur in largest in retail, recreation, lodging and food service and real estate businesses, as well as the fishing industry. Most industries may face some decrease in output and employment through indirect and induced impacts, totaling \$14.17 million and 140 jobs lost.

The greatest total adverse effects on output and employment are estimated to occur in the accommodation and food services industry, with a \$20.66 million reduction in output and the loss of 355 jobs estimated under the mid scenario. Real estate and retail in Dare and Hyde counties are also estimated to have output losses of \$15 and \$7 million, respectively.

This projected range of business impacts for alternative D is estimated to result in direct impacts of between a 0.9% (\$24.53 million) and a 2.1% (\$56.27 million) decrease to economic output, and a loss of 1.2% of employment (330 employees) to a loss of 2.8% of employment (790 employees) in the ROI. Total impacts resulting from the direct impacts, which include induced impacts, would be between a \$33.01 million to \$76.13 million decrease to economic output, and between a 415 and 985 loss of employees. These total impacts would represent a 1.1% to a 2.5% decrease relative to the total economic output in Dare and Hyde counties and a 1.3% to a 3.0% loss of employment. Compared to alternative A, the mid value of the range of losses is 1.8% (\$54.57 million) larger for alternative D. The regional economic impact of alternative D is expected to be long-term minor adverse in the ROI. Seashore villages could experience larger short-term adverse impacts.

**Small Business Impacts.** Under alternative D, it is expected that small businesses would experience long-term moderate to major adverse impacts.

**Preservation Value Impacts.** Alternative D would provide enhanced long-term protection for the plant and animal communities with the year-round closure of sensitive areas to ORV use in the Seashore. The impact on preservation values would be long-term beneficial for the United States as a whole as a result of more extensive resources management measures. Adverse impacts to preservation values would be less under alternative D, relative to alternatives A and B, and the overall impact to preservation values would be long-term minor adverse, with the closure of sensitive areas to ORVs under alternative D year-round substantially increasing the probability of long-term beneficial impacts relative to all other alternatives.

**Cumulative Impacts.** Socioeconomic impacts of cumulative actions unrelated to ORV management under alternative D would be the same as those under alternative A. In the long-term, cumulative actions affecting the regional economy would be beneficial based on economic growth despite storms and plans that would improve visitor access to the beaches in the future. However, a continued economic recession at the national level could cause long-term minor to moderate adverse impacts. These cumulative actions, in addition to the potential long-term minor adverse impacts to the regional economy of the ROI



associated with the actions under alternative D, would have long-term negligible to minor adverse or beneficial cumulative impacts on the ROI, depending on national economic conditions.

**Conclusion.** Businesses linked to ORV use at the Seashore would experience adverse impacts under alternative D. The impact on these businesses would ripple through the economy on the Outer Banks as a whole, although the Seashore villages would bear a larger share of the impacts. Overall, it is expected that the ROI could experience long-term minor adverse impacts, and the impacts on the Seashore villages could be larger. Under alternative D, it is expected that small businesses would experience long-term moderate to major adverse impacts.

The long run impact of alternative D would depend in part on how current and new visitors adjust their trips and spending in response to the management changes and the adaptations made by the business community to these changes. To the extent that businesses adapt to changing visitation patterns, the long-term impacts on the overall economy would be lessened. The impact on individual businesses would vary more than the impacts on the regional economy as a whole if the mix of visitors changes. Some businesses may experience a long-term decrease in customers, while others may experience no change or a long-term increase.

Adverse impacts to preservation values would be less under alternative D, relative to alternatives A and B, and the overall impact to preservation values would be long-term minor adverse, with the closure of sensitive areas to ORVs under alternative D year-round substantially increasing the probability of long-term beneficial impacts relative to all other alternatives.

Cumulative impacts in the ROI could be long-term negligible to minor adverse or beneficial depending on national economic conditions.

### **Impacts of Alternative E: Variable Access and Maximum Management**

**Regional Economic Impacts.** Similar to other alternatives, under alternative E, the local economy would be impacted primarily through a change in the trend of the number of visitors to the region or a change in the activities visitors participate in while in the region. Alternative E would provide similar ORV and pedestrian access to the Seashore as alternative B, by providing flexibility in what areas are opened or closed seasonally and providing a wide range of experiences for Seashore users year-round.

Under alternative E, beach closure to ORVs and pedestrians would be contingent upon protected species breeding/nesting behavior, as well as by pre-determined seasonal closures. Areas of high resource sensitivity would follow seasonal ORV closures from March 15 to August 31 under designated SMAs; however, additional pedestrian and ORV access would be facilitated by construction and relocation of access ramps, designation of ORV pass-through zones, and the promotion of water taxi service to popular areas. Areas of high visitor use (outside of SMAs) would either be open to ORVs seasonally from November 1 to March 31 or closed to ORVs. Similar to the no-action alternatives, beaches open to ORV use would still be subject to temporary resource closures according to protected species behavior, with the potential for a full beach closure greater than under alternative A.

The seasonal night-driving restrictions in alternative E would be similar to those under alternative B and would impact commercial and recreational anglers who would otherwise fish for longer hours. Commercial fishermen raised this concern during the business survey. The night-driving restrictions may also deter potential recreational anglers from visiting the Seashore, resulting in a direct loss of their spending on regional businesses, and the subsequent indirect and induced impacts on the regional economy

Alternative E would include implementation of an ORV permit system, with the fee based on cost recovery per NPS guidelines. The addition of the ORV permit system would adversely affect visitation by ORV users relative to the no-action alternatives because of the introduction of a new costs associated with ORV use in the Seashore. The addition of pedestrian access corridors, construction, and relocation of ORV access ramps, other efforts to improve beach access would beneficially impact visitation relative to the no-action alternatives.

The impact of alternative E on commercial fishermen would be less than for recreational ORV users. Commercial fishermen would have access to Seashore beaches except during full resource closures for breeding and at lifeguarded beaches, so they would not be affected by the ORV-specific closures. Commercial fishermen would not be required to obtain an ORV permit that would be required for recreational ORVs. In areas outside of existing resource closures, the Superintendent would be able to modify the night-driving restrictions, subject to terms and conditions of the fishing permit, for commercial fishermen who are actively engaged in authorized commercial fishing activity and can produce fish house receipts from the past 30 days. Such modifications would be subject to periodic review.

Similar to alternative B, the range of direct impacts on revenue by business category is projected to vary from 0% to a decrease of 50% for commercial fishermen, 0% to a decrease of 10% for other businesses in the Seashore villages, and 0% to a decrease of 2% in the rest of the ROI under alternative E (table 77). The range of revenue impacts is the same as alternatives B and C. Compared to alternative C and D, alternative E provides for more ORV access and the impacts would likely be on the lower end of the range.

**TABLE 77. RANGE OF PROJECTED ANNUAL BUSINESS REVENUE IMPACTS FOR ALTERNATIVE E BY BUSINESS CATEGORY AND AREA**

Revenue Impact Estimate	The Seashore Villages			Rest of ROI
	Commercial Fishing	Sporting Goods	Other	All
Low	0%	0%	0%	0%
Mid	-25%	-5%	-5%	-1%
High	-50%	-10%	-10%	-2%

This projected range of business impacts for alternative E is estimated to result in direct impacts of between no change and a 0.8% (\$21.54 million) decrease to economic output, and no change to a loss of 1.1% of employment (320 employees) in the ROI (table 78). Total impacts resulting from these direct impacts, which include indirect and induced impacts, are between a no change and \$29.4 million decrease to economic output, and no change to a loss of 400 employees. These total impacts represent no change to a 1% decrease relative to the total economic output in Dare and Hyde counties and no change to a 1.2% loss of employment. The detailed breakdown of impacts by industry sector would be the same as alternative B (table 70). Similar to alternative B, the economy may experience long-term negligible to minor adverse impacts while Seashore villages may experience larger short-term adverse impacts.

TABLE 78. RANGE OF ECONOMIC IMPACTS OF ALTERNATIVE E ESTIMATED BY IMPLAN (\$2008)

Revenue Impact Estimate	Direct Output Impact (in millions of dollars)	Total Output Impact (in millions of dollars)	Impact as a Percent of Total for Dare and Hyde Counties	Direct Employment Impact <sup>a</sup>	Total Employment Impact	Impact as a Percent of Total for Dare and Hyde Counties
Low	\$0.00	\$0.00	0.0%	0	0	0.0%
Mid	-\$10.77	-\$14.70	-0.5%	-160	-200	-0.6%
High	-\$21.54	-\$29.40	-1.0%	-320	-400	-1.2%

<sup>a</sup> Fifty-four percent of the direct impacts are expected to occur in the Seashore villages.

**Small Business Impacts.** Under alternative E, it is expected that small businesses would experience long-term negligible to moderate adverse impacts. The impacts would be similar to alternative B, but would be larger than the impacts under alternative A. The ORV corridors with pass-through zones and modification to vehicle access ramps would increase the probability that impacts would be lower under alternative E than under alternative B.

**Preservation Value Impacts.** Alternative E would provide long-term benefits to piping plovers relative to A and B from resources management activities. However, continued ORV and other recreational use would have long-term minor to moderate adverse impacts to the piping plover population. The seasonal night-driving restrictions under alternative E would increase the probability of beneficial impacts to preservation values relative to alternative A. More beach access by ORVs compared to alternatives C and D would increase the probability of lower benefits for alternative E. Adverse impacts to preservation values would be less under alternative E, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse, with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status, species.

**Cumulative Impacts.** Socioeconomic impacts of cumulative actions unrelated to ORV management under alternative E would be the same as those under alternative A. In the long-term, cumulative actions affecting the regional economy would have negligible to minor adverse or beneficial based on economic growth despite storms and plans that would improve visitor access to the beaches in the future. However, a continued economic recession at the national level could cause long-term minor to moderate adverse impacts. These impacts, combined with the potential long-term negligible to minor adverse impacts to the regional economy of the ROI associated with the actions under alternative E, would have long-term negligible to minor adverse or beneficial cumulative impacts on the ROI, depending on national economic conditions.

**Conclusion.** Businesses linked to ORV use at the Seashore would experience uncertain adverse impacts based on protected species nesting behavior changes from year to year. The impact on these businesses may ripple through the economy on the Outer Banks as a whole; however, the economy would likely adapt over time to the implementation of this alternative. This uncertainty may impact small businesses disproportionately. Overall, it is expected that the ROI would experience long-term negligible to minor adverse impacts and the Seashore village businesses would experience long-term negligible to moderate adverse impacts, with the potential for larger short-term impacts especially for businesses that cater directly to ORV users in the Seashore villages. Alternative E is more structured and predictable and with the establishment of SMAs would be more protective of resources than alternative B, but is similar in some respects to alternative B. Based on the visitation statistics for 2008, the probability of negligible

impacts is greater than the probability of minor adverse impacts. Small businesses are expected to experience long-term negligible to moderate adverse impacts.

The long run impact of the alternative would depend in part on how current and new visitors adjust their trips and spending in response to the management changes and the adaptations made by the business community to these changes. To the extent that businesses adapt to changing visitation patterns, the long-term impacts on the overall economy would be lessened. The impact on individual businesses would vary more than the impacts on the regional economy as a whole if the mix of visitors changes. Some businesses may experience a long-term decrease in customers, while others may experience no change or a long-term increase.

Adverse impacts to preservation values would be less under alternative E, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse, with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status, species.

Cumulative impacts in the ROI could be long-term negligible to minor adverse or beneficial depending on national economic conditions.

### **Impacts of Alternative F: NPS Preferred Alternative**

**Regional Economic Impacts.** Similar to the no-action alternatives, beach closure to ORVs and pedestrians would be contingent upon protected species breeding/nesting behavior, but unlike the no-action alternatives, alternative F would establish a number of year-round or seasonal VFAs. However, additional pedestrian and ORV access would be facilitated by construction and relocation of access ramps, construction of additional parking areas with associated pedestrian access, and designated year-round ORV routes at Cape Point and South Point (subject to resource closures). Although Cape Point and South Point would be designated as ORV routes year-round (subject to resource closures), some other areas of high visitation, including other points and spits would be closed to ORVs seasonally (Bodie Island Spit) or year-round (Hatteras Inlet Spit and North Ocracoke Spit). Similar to alternative B and the other action alternatives, beaches open to ORV use, as well as vehicle-free areas, would still be subject to temporary resource closures according to protected species behavior.

The length of seasonal night-driving restrictions in alternative F falls between the other alternatives. Seasonal night-driving restrictions would be in effect between May 1 and November 15, with night driving permitted after September 15 in locations with no turtle nests remaining, and would prohibit ORV use from 9:00 p.m. to 7:00 a.m. Night-driving restrictions would impact commercial and recreational anglers who would otherwise fish for longer hours. Commercial fishermen raised this concern during the business survey. Under alternative F commercial fishermen, who are actively engaged in haul seine or gill net fishing and are able to present fish house receipts for the previous 30 days, would be authorized to enter the beach at 5 a.m. when night driving restrictions are in effect for the general public, which may partially mitigate impacts to those commercial fishermen. The night-driving restrictions may also deter potential recreational anglers from visiting the Seashore resulting in a direct loss of their spending on regional businesses, and the subsequent indirect and induced impacts on the regional economy.

The addition of the ORV permit system would potentially reduce visitation by ORV users relative to the no-action alternatives because of the introduction of a new cost associated with ORV use in the Seashore. The construction, and relocation of ORV access ramps, pedestrian parking areas, trails and boardwalks, and other efforts to improve beach access would beneficially impact visitation relative to the no-action alternatives. Peak use limits (carrying capacity) for ORVs on busy holiday and summer weekends could

limit visitation for short periods of time, but would also improve the experience for ORVs using the restricted areas.

The impact of alternative F on commercial fishermen would be less than for recreational ORV users. Commercial fishermen have access to Seashore beaches except during full resource closures for breeding and at lifeguarded beaches, so they would not be affected by the longer seasonal closures. Commercial fishermen would not be required to obtain an ORV permit that would be required for recreational ORVs, and would continue to be managed by the commercial fishing special use permit. In areas outside of existing resource closures, the Superintendent would be able to modify the night-driving restrictions, subject to terms and conditions of the fishing permit, for commercial fishermen who are actively engaged in authorized commercial fishing activity and can produce fish house receipts from the past 30 days. Such modifications would be subject to periodic review.

The range of direct impacts by business category is projected to vary from 0% to a decrease of 50% for commercial fishermen, 0% to a decrease of 10% for other businesses in the Seashore villages, and 0% to a decrease of 2% in the rest of the ROI under alternative F (table 79). Alternative F provides less access by ORVs to the beach compared to alternatives A or B, and has more areas designated as vehicle free than alternative E. However, popular ORV routes such as Cape Point and South Point that would likely be closed during portions of the breeding season would likely reopen to ORV use sooner under alternative F than under alternative E. There are more VFAs for pedestrians, as well as increased parking. Compared to the no-action alternatives, these measures could increase visitation and increase the probability that revenue impacts would be at the low end of the estimated range rather than the high end. As part of the survey of small businesses, described in detail in “Chapter 3: Socioeconomics,” businesses were asked if ORV management was implemented under a scenario similar to alternative F, compared to 2008, would they expect their business to increase or decrease, or not have much effect. Responses to this question showed that the median change in expected revenue compared to 2008 ranged from a decrease of 12% to no change (RTI 2010c). In addition, based on results from the visitor intercept survey (RTI 2010a), an estimated 6% of respondents stated that they would have been “Somewhat Unlikely” or “Very Unlikely” to have taken their current trip under a scenario that was similar to alternative F. The results of the business survey and the visitor intercept survey show impacts in the middle of the stated spectrum, consistent with the findings in the DEIS.

**TABLE 79. RANGE OF PROJECTED ANNUAL BUSINESS REVENUE IMPACTS FOR ALTERNATIVE F BY BUSINESS CATEGORY AND AREA**

Revenue Impact Estimate	The Seashore Villages			Rest of ROI
	Commercial Fishing	Sporting Goods	Other	All
Low	0%	0%	0%	0%
Mid	-25%	-5%	-5%	-1%
High	-50%	-10%	-10%	-2%

The projected range of business impacts for alternative F is estimated to result in direct impacts of between no change and a 0.8% (\$21.54 million) decrease to economic output, and no change to a loss of 1.1% of employment (320 employees) in the ROI (table 80). Total impacts, which include direct, indirect, and induced impacts, are between no change and a \$29.4 million decrease to economic output, and no change to a loss of 400 employees. These total impacts represent no change to a 1% decrease relative to the total economic output and no change to a 1.2% loss of employees in Dare and Hyde counties. Again, the detailed changes by industry would be similar to alternative B (table 70). Similar to alternative B, the

economy may experience long-term negligible to minor adverse impacts, while the Seashore villages may experience larger short-term adverse impacts.

**TABLE 80. RANGE OF ECONOMIC IMPACTS OF ALTERNATIVE F ESTIMATED BY IMPLAN (\$2008)**

Revenue Impact Estimate	Direct Output Impact (in millions of dollars)	Total Output Impact (in millions of dollars)	Impact as a Percent of Total for Dare and Hyde Counties	Direct Employment Impact <sup>a</sup>	Total Employment Impact	Impact as a Percent of Total for Dare and Hyde Counties
Low	\$0.00	\$0.00	0.0%	0	0	0.0%
Mid	-\$10.77	-\$14.70	-0.5%	-160	-200	-0.6%
High	-\$21.54	-\$29.40	-1.0%	-320	-400	-1.2%

<sup>a</sup> Fifty-four percent of the direct impacts are expected to occur in the Seashore villages.

**Small Business Impacts.** Under alternative F, it is expected that small businesses would experience long-term negligible to moderate adverse impacts. The extra efforts to increase ORV access and pedestrian access should increase the probability that the impacts are low rather than high compared to alternatives D and E.

**Preservation Value Impacts.** Alternative F would provide long-term benefits to piping plover relative to alternative A. However, continued ORV and other recreational use would result in long-term minor to moderate adverse impacts to the piping plover population. The increased seasonal night-driving restrictions under alternative F would increase the probability of beneficial impacts to preservation values relative to alternatives A and B. More beach access by ORVs compared to alternatives C and D would increase the probability of lower benefits for preservation under alternative F. Adverse impacts to preservation values would be less under alternative F, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse, with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status, species.

**Cumulative Impacts.** Socioeconomic impacts of cumulative actions unrelated to ORV management under alternative F would be the same as those under alternative A. In the long-term, cumulative actions affecting the regional economy would be negligible to minor and beneficial based on economic growth despite storms and plans that would improve visitor access to the beaches in the future. However, a continued economic recession at the national level could cause long-term minor to moderate adverse impacts. These actions, combined with the potential long-term negligible to minor adverse impacts to the regional economy of the ROI associated with the actions under alternative F, would have long-term negligible to minor adverse or beneficial cumulative impacts to the ROI, depending on national economic conditions.

**Conclusion.** Businesses linked to ORV use at the Seashore would experience uncertain adverse impacts based on protected animal nesting behavior changes from year to year. The impact on these businesses may ripple through the economy on the Outer Banks as a whole; however, the economy would likely adapt over to the implementation of this alternative. This uncertainty may impact small businesses disproportionately.

Overall it is expected that the ROI could experience long-term negligible to minor adverse impacts, and the Seashore villages would bear a larger share of the impacts. In addition, the Seashore villages could experience larger short-term impacts especially for businesses that cater directly to ORV users in the

Seashore villages. Alternative F is more structured and predictable and with the establishment of consistent seasonal and year-round VFAs would be more protective of resources than alternative B, but is similar in some respects to alternative B. Based on the visitation statistics from 2008, the probability of negligible impacts is greater than the probability of minor adverse impacts. Small businesses are expected to experience long-term negligible to moderate adverse impacts.

The long run impact of the alternative would depend in part on how current and new visitors adjust their trips and spending in response to the management changes and the adaptations made by the business community to these changes. To the extent that businesses adapt to changing visitation patterns, the long-term impacts on the overall economy would be lessened. The impact on individual businesses would vary more than the impacts on the regional economy as a whole if the mix of visitors changes. Some businesses may experience a long-term decrease in customers, while others may experience no change or a long-term increase.

Adverse impacts to preservation values would be less under alternative F, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse, with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status, species.

Cumulative impacts in the ROI could be long-term negligible to minor adverse or beneficial depending on national economic conditions.

**TABLE 81. SUMMARY OF IMPACTS TO SOCIOECONOMICS UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
Region of Influence					
<p>The ROI is expected to experience long-term negligible adverse impacts or long-term beneficial impacts depending on the extent of beach closures. The Seashore villages (the villages bordering the Seashore) would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users.</p>	<p>The ROI is expected to experience long-term negligible to minor adverse impacts depending on the extent of beach closures. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Based on the current visitation statistics, the probability of negligible impacts is greater than the probability of minor adverse impacts.</p>	<p>The ROI is expected to experience long-term negligible to minor adverse impacts. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Efforts to improve access through pedestrian corridors, when compared to the no-action alternatives, and changes to access ramps would decrease the impacts on businesses that rely on visitors using the beaches affected by the new corridors and ramps relative to the no-action alternatives. However, the longer ORV closures in the fall months may reduce visitation under alternative C relative to the no-action alternatives and make the mid to high impact scenarios more likely.</p>	<p>The ROI is expected to experience long-term minor adverse impacts. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Compared to the other alternatives, alternative D provides the least access to the beach by Or's, resulting in larger projected adverse impacts.</p>	<p>The ROI is expected to experience long-term negligible to minor adverse impacts. Based on the visitation statistics for 2008, the probability of negligible impacts is greater than the probability of minor adverse impacts. The Seashore villages would experience the majority of the impacts. Like alternative B, alternative E provides for more ORV access and the impacts would likely be on the lower end of the range compared to alternatives C and D.</p>	<p>The ROI is expected to experience long-term negligible to minor adverse impacts. The Seashore villages would experience the majority of the impacts with the potential for larger short-term impacts to specific businesses that cater most directly to ORV users. Alternative F provides less access by ORVs to the beach compared to the no-action alternatives, especially with 28 miles of the Seashore designated as year-round VFAs. However, some popular ORV areas including Cape Point and South Point would be designated as year-round ORV routes, subject to resource closures. There are more VFAs for pedestrians because of the ORV closures as well as increased parking for pedestrian access. Compared to the no-action alternatives, these measures could increase overall visitation and increase the probability that revenue impacts would be at the low end of the estimated range rather than the high end.</p>



Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<b>Small Business</b>					
Small businesses may experience long-term negligible to minor adverse impacts or long-term beneficial impacts depending on the extent of beach closures. Based on visitation statistics in 2007, there is a greater likelihood of negligible impacts.	Small businesses may experience long-term negligible to moderate adverse impacts depending on the extent of beach closures. Based on current visitation statistics there is a greater likelihood of negligible or minor impacts.	Small businesses may experience long-term negligible to moderate adverse impacts, with a greater likelihood of adverse impacts relative to the no-action alternatives due to increased fall ORV closures.	Small businesses may experience long-term moderate to major adverse impacts. The adverse impacts are projected to be larger relative to the other alternatives because of the limits on beach access for ORVs.	Small businesses may experience long-term negligible to moderate adverse impacts, with a likelihood of adverse impacts in the lower end of the range relative to alternatives C and D due to increased ORV access closures.	Small businesses would experience long-term negligible to moderate adverse impacts. The extra efforts to increase ORV access and pedestrian access should increase the probability that the impacts are on the low rather than high end of the range.
<b>Preservation Value Impacts</b>					
As a result of the long-term minor to major impacts to protected species, impacts to preservation values would be long-term moderate adverse.	As a result of the long-term minor to moderate impacts to protected species, and addition of protection from seasonal night-driving restrictions, impacts to preservation values would be long-term minor to moderate adverse.	Adverse impacts to preservation values would be less under alternative C, relative to alternatives A and B, and overall impacts to preservation values would be long-term minor adverse with long-term beneficial impacts from the measures taken to protect sensitive species at the Seashore.	Adverse impacts to preservation values would be less under alternative D, relative to alternatives A and B, and the overall impact to preservation values would be long-term minor adverse, with the closure of sensitive areas to ORVs under alternative D year-round substantially increasing the probability of long-term beneficial impacts relative to all other alternatives.	Adverse impacts to preservation values would be less under alternative E, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status species.	Adverse impacts to preservation values would be less under alternative F, relative to alternatives A and B, and overall preservation values would be long-term minor to moderate adverse, with long-term beneficial impacts from the measures taken by the Seashore to protect threatened and endangered, as well as special status species.

## SEASHORE MANAGEMENT AND OPERATIONS

### GUIDING REGULATIONS AND POLICIES

Direction for management and operations at the Seashore is set forth in the *Organic Act*, the Seashore's enabling legislation, General Management Plan (NPS 1984), Strategic Plan (NPS 2005b), and the current Superintendent's Compendium. Specifically, related to the ORV management plan/EIS, the General Management Plan includes the following management objectives for the Interpretation and Resources Management divisions (NPS 1984):

- foster awareness, appreciation, and understanding of the natural and cultural resources of the Outer Banks and their interrelationships;
- make visitors aware of the hazards associated with living and recreating in a coastal environment;
- encourage visitors to safely pursue only those recreational activities that are compatible with and not detrimental to the natural and cultural resources;
- provide, through an active education program, for the no consumptive use of the Seashore as an outdoor classroom by educational organizations;
- strengthen within visitors and Seashore employees an environmental ethic;
- promote understanding of and support for NPS goals and policies; and
- preserve the dynamic physiography and characteristic ecological communities of the Outer banks.

The General Management Plan also states that the Seashore would review and update as necessary an existing "action plan" regulating ORV use to reduce visitor conflicts and to protect dunes, vegetation, wildlife, and cultural resources. The "action plan" would designate ORV routes as well as sensitive resource areas periodically closed to ORV use. It is believed that the "action plan" mentioned in the GMP referred to the 1978 draft interim ORV management plan, which was never finalized or issued as a special regulation.

The Strategic Plan identified the following goals in relation to the ORV management plan/EIS (NPS 2005a):

- identify and assess native plant and animal species of management concern (SMC) populations and identify needed management actions to sustain the populations;
- ensure that 85% of the 2005 species habitat protection protocols are in place;
- continue to make progress on an ORV management plan to ensure species breeding/germination habitats are able to function under natural processes; and
- ensure Seashore visitor satisfaction with the appropriate Seashore facilities, services, and recreational opportunities.

The Superintendent's Compendium: Closures, Permit Requirements, and Other Restrictions (NPS 2009f) sets forth the closure and public use limits that the Seashore staff are required to enforce, thus determining levels of Seashore operations. For the purposes of this plan/EIS, applicable sections of Title 36 CFR include but are not limited to the following:

- Section 1.1: Purpose
- Section 1.2: Applicability and Scope
- Section 1.3: Penalties
- Section 1.4: Terms
- Section 1.5: Closure and Public Use Limits
- Section 1.6: Permits
- Section 2.1: Preservation of natural, cultural, and archeological resources
- Section 2.2: Wildlife Protection
- Section 2.3: Fishing
- Section 2.4: Fires
- Section 2.15: Pets
- Section 2.22: Property
- Section 2.30: Misappropriation of Property and Services
- Section 2.31: Trespassing, tampering, vandalism
- Section 2.32: Interfering with agency functions
- Section 2.33: Report of injury or damage
- Section 2.34: Disorderly conduct
- Section 2.35: Alcoholic beverage and controlled substances
- Section 4.2: State Law Applicable (regarding vehicles and traffic safety)
- Section 4.10: Travel on Roads and Designated Routes
- Section 4.15: Safety belts
- Section 4.21: Speed Limits
- Section 4.22 Unsafe operation
- Section 4.23: Operating under the influence of alcohol or drugs

## **ASSUMPTIONS, METHODOLOGY, AND IMPACT THRESHOLDS**

Seashore management and operations, for the purpose of this analysis, refer to the quality and effectiveness of Seashore staff to maintain and administer Seashore resources and provide for an appropriate visitor experience. This includes an analysis of the projected need for staff time and materials in relationship to ORV management under each of the alternatives, as well as the various funding mechanisms available to implement these alternatives. The analysis also considers trade-offs for staff time or the budgetary needs required to accomplish the proposed alternatives and discusses each alternative in terms of its impacts to Seashore Management (the superintendent's staff), and the divisions of Administration, Interpretation, Resource Management, Facility Management (Maintenance), and Visitor Protection at the Seashore. Seashore staff from each of the divisions were members of the interdisciplinary team and were consulted regarding expected staffing and funding needs under each alternative. The impact analysis is based on the current description of Seashore operations presented in "Chapter 3: Affected Environment" of this document. The required level of effort is discussed in terms of "full-time equivalents" or FTE, which represent the hours worked by staff. One FTE equals 2080 hours, the equivalent of one person working full-time year-round, or two part-time staff each working 6 months of the year.

A summary of seashore management and operations impacts under all alternatives is provided in table 88 at the end of this section. The following thresholds for evaluating impacts on Seashore management and operations were defined and applied to adverse impacts.

*Negligible:* Seashore or agency operations would not be impacted or the impact would not have a noticeable or measurable impact on Seashore or agency operations.

*Minor:* Impacts would be noticeable and would result in a measurable, but small, change in Seashore or agency operations. Any required changes in Seashore staffing and funding could be accommodated within normal budget cycles and expected annual funding without appreciably affecting other operations within the Seashore. Current levels of funding and staffing would not be reduced or increased, but priorities may need to be changed.

*Moderate:* Impacts would be readily apparent and would result in a substantial change in Seashore or agency operations that would be noticeable to staff and the public. Required changes in Seashore staffing and/or funding could not be accommodated within expected annual funding and would measurably affect other operations within the Seashore by shifting staff and funding levels between operational divisions. Increases or decreases in staff and funding would be needed or other Seashore operations would have to be reduced and/or priorities changed.

*Major:* Impacts would be readily apparent and would result in a substantial change in Seashore operations that would be noticeable to staff and the public and would be markedly different from existing operations. These changes in Seashore staffing and/or funding could not be accommodated by expected annual funding and would require the Seashore to readdress its ability to sustain current Seashore operations. Increases or decreases in staff and funding would be needed and/or other Seashore programs would have to be substantially changed or eliminated.

*Duration:* Short-term effects would be one fiscal year.

Long-term effects would continue beyond one fiscal year indefinitely into the future.

## Study Area

The study area for Seashore management and operations is the units of the Outer Banks Group: Cape Hatteras National Seashore, Wright Brothers National Memorial, and Fort Raleigh National Historic Site. All units were considered because of shared staff and funding sources.

## Impacts of Alternative A: No-action—Continuation of Management under the Interim Protected Species Management Strategy

Table 82 provides the total staffing and funding needs under alternative A.

TABLE 82. STAFFING AND FUNDING—ALTERNATIVE A

Division	Assumptions	Annual Costs
Seashore Management / Administration	4.75 FTE would be required to account for overhead costs to provide overall program support. No materials would be required.	Staff = \$428,750 Supplemental Costs = \$0 Total Annual Costs = \$428,750
Visitor Protection	13.0 FTE for 13 law enforcement rangers would be required, as well as vehicles to support this staff. No other equipment or materials would be required.	Staff = \$1,047,500 Supplemental Costs = \$100,000 Total Annual Costs = \$1,147,500
Resources Management	9.5 FTE would be needed, which could include one full-time wildlife biologist, seasonal biological technicians, and administrative support. Vehicles, signs, and field gear would be required to support these staff.	Staff = \$423,500 Supplemental Costs = \$85,000 Total Annual Costs = \$508,500
Facility Management	0.6 FTE would be needed, which could include the facility manager, heavy equipment operators, mechanics, and other maintenance workers.	Staff = \$45,600 Supplemental Costs = \$10,000 Total Annual Costs = \$55,600
Interpretation	1.5 FTE would be needed, which could include the division chief, interpretive rangers, and a visual information specialist. Other costs would include printing and distributing informational materials.	Staff = \$58,500 Supplemental Costs = \$10,000 Total Annual Costs = \$68,500
<b>Total Staffing and Annual Costs</b>	<b>29.35 FTE</b>	<b>Total Staff Costs = \$2,003,850</b> <b>Total Supplemental Costs = \$205,000</b> <b>Total Annual Costs = \$2,208,850</b>

**Seashore Management / Administration.** Under alternative A, Seashore management staff would be directly involved in ORV management activities and all divisions would require administrative support. This support reflects overhead costs such as payroll, human resource functions, involvement of the superintendent, and other similar costs. Support would also include assisting in distributing weekly updates of ORV access areas during the spring and summer months. Actions under alternative A would require approximate 4.75 FTE, or almost five full-time staff, to support field operations related to ORV management. Total approximate costs of these staff would be \$428,750 with no additional materials required. Under alternative A, Seashore management and administrative functions related to ORV management would be accomplished within the existing Seashore budget, resulting in long-term negligible adverse impacts to Seashore management and administrative operations at the Seashore.

**Visitor Protection.** Under alternative A, Seashore law enforcement rangers would be responsible for enforcing visitor compliance with ORV regulations and resource closures. Law enforcement staff would perform routine patrols of beach areas, respond to violations, conduct investigations, and assist in public education through visitor contacts.

No restrictions on night driving would occur; however, 24-hour coverage would not be provided. Resource closures under alternative A would be subject to change on a regular basis, and the areas open to ORV use would be unpredictable, resulting in a need for a high level of enforcement related to ORV management. All recreational users would have access to this area, and there would be variation in the areas available for ORV use, resulting in some users not having advance notice of what areas are open or closed. Under this alternative, the opportunity for resource closure violations would be relatively high due

to this unpredictability. Law enforcement would also continue existing resource protection activities such as fielding violation calls and responding to violation incidents.

In order to accomplish the above activities, as well as enforce all applicable regulations at the Seashore, 13 FTE would be required, which would be filled by law enforcement rangers. Total approximate labor for these positions would equal \$1,047,500 a year with an additional \$100,000 needed for materials (vehicles, travel, field supplies, fuel, radio support, and training costs) for these rangers, for a total approximate annual cost to the law enforcement division of \$1,147,500. The Seashore would use currently available funding to fill the 13 field law enforcement positions, which would be able to address all needs related to ORV management under alternative A.

Under alternative A, visitor protection functions related to ORV management would be accomplished within the existing Seashore budget, resulting in long-term negligible adverse impacts to visitor protection operations at the Seashore.

**Resources Management.** Under alternative A, resources management staff would be responsible for all monitoring and establishment of buffers for protected birds, turtles, and seabeach amaranth. Resources management staff would also be responsible for determining monitoring requirements, hiring, training and supervising field staff, and conducting all field surveys. These staff would also provide input into the weekly resources management report updates and access updates that are provided to the public.

For birds, resources management staff would be responsible for conducting an annual habitat assessment in February or March of each year and establish prenesting resource closures based on this assessment and the known breeding habitat over the past three years. While these prenesting closures may be used by any species, they would be based on the data and habitat for piping plover only. Surveying of piping plover by resources management staff would begin by March 15 and occur at least once a week, and increase to three times a week on April 1. Other species would be observed twice a week. If no bird activity is observed by July 15, or after the area has been abandoned for a two-week period, whichever comes later, the prenesting closures would be reopened by resources management staff.

After prenesting, surveying requirements of the resources management staff would vary based on the species and the life stage of the species and range from observing unfledged piping plover chicks continuously during daylight hours for the first week, to observing three times a week for courtship and mating behavior (for all bird species). In addition to observations, resources management staff would establish buffers for protection of these bird species, again with the size and adjustments of these closures related to the bird species in question, as well as the life stage of the bird species. These buffers could be relatively stable once established, such as the 164-foot buffer established for nesting piping plovers, or highly variable, such as buffers for nesting American oystercatchers, which would be based on bird disturbance and behavior.

Resources management staff under alternative A would also be responsible for conducting daily surveys for sea turtles nesting from May 1 to September 15 each year, with periodic surveys (e.g., every two to three days) extending to November 15 in areas of high visitation. Once a nest is found, resources management staff would establish a 30-foot by 30-foot buffer around the nest, and expand this closure to the shoreline approximately 50 to 55 days into incubation. Some nest relocation occurs by resources management staff, following the guidance in the NCWRC handbook.

Surveying requirements for seabeach amaranth would occur starting April 1 of each year and would be done during surveying for other species, with an annual survey of potential habitat occurring in August. If a plant is found, resources management staff is responsible for establishing a 30-foot by 30-foot (9.1-meter by 9.1-meter) buffer around the plant.

In addition to regular surveying, monitoring, and establishment of closures, resources management staff would also dedicate time to predator management under alternative A.

In order to accomplish the above activities, the resources management division would require approximately 9.50 FTE, which could include the chief of resources management, a wildlife biologist, seasonal or full-time biological technicians, a GIS specialist, and seasonal administrative assistant support. These positions would equal approximately \$423,500 in labor costs. In order to support these positions, overhead costs, computers, uniforms, vehicles, and other equipment (e.g., signs, field gear, UTVs) would be needed, resulting in approximately \$85,000 in support costs. The total approximate cost of implementing alternative A to the resources management division would be \$508,500.

Under alternative A, resources management functions related to ORV management would be accomplished within the existing Seashore budget, resulting in long-term negligible adverse impacts to resources management operations at the Seashore.

**Facility Management.** The facility management division at the Seashore would be responsible for all maintenance activities related to ORV management. Facility management personnel would provide routine maintenance and emergency repairs of beach ramps and parking areas and would also be responsible for maintaining the vehicles used by law enforcement, resources management and other staff associated with ORV management related activities. Approximately 0.60 FTE of facility management time would be needed to carry out ORV management activities, equaling approximately \$45,600 of labor. In addition to the labor, approximately \$10,000 of supplies would be required that could include ramp fill material, vehicle parts, and vehicle maintenance supplies. Total annual costs for facilities management staff related to ORV management would be approximately \$55,600.

Under alternative A, facility management functions related to ORV management would be accomplished within the existing Seashore budget, and no other divisions would be impacted by those activities. Impacts to facility management operations at the Seashore would be long-term negligible adverse.

**Interpretation.** Under alternative A, staff in the interpretation division would provide materials to Seashore visitors related to ORV use, as well as species management. Staff time would be required to develop these materials, as well as funds to print and distribute the materials. Interpretive staff under alternative A could include the division chief, park rangers to provide interpretive programs and manage volunteer programs, and a visual resource specialist to produce articles, displays, brochures, and exhibits. In order to carry out these functions, alternative A would require approximately 1.50 FTE of staff time, equaling approximately \$58,500. Printing and other supporting costs would be approximately \$10,000, resulting in total approximate annual costs of \$68,500 to the interpretive division.

Under alternative A, the Seashore would be able to conduct interpretive activities related to ORV use and species protection within existing funding sources, and no other divisions of the Seashore would be impacted by these operations. Because there would be no change to Seashore operations, there would be long-term negligible adverse impacts to interpretive activities at the Seashore.

**Overall Impacts to Seashore Operations.** Overall, each division could accomplish actions related to ORV management under this alternative within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts to all areas of Seashore operations.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative A would include implementation of the existing General Management Plan and development of the General Management Plan revision, development of the

predator management plan, implementation of the long-range interpretive plan, implementation of the resources management plan, development of the Interim Strategy, and the implementation of the consent decree modifying the Interim Strategy. The creation of these plans and their implementation would require varying levels of staff time. For example, the current implementation of the General Management Plan would have negligible impacts to staff time since this document is dated and much of the management has been replaced by more updated planning documents. The expected revision of the General Management Plan could have minor to moderate impacts to staff resources, depending on the amount of time and resources devoted to this plan/EIS and whether this planning effort detracts from other efforts at the Seashore. The implementation of the consent decree is a current effort that could also have up to moderate impacts to Seashore management and operations since it required additional staff resources from the document it modified. In general, depending on the amount of staff time needed and the number of these efforts occurring at the same time, these planning efforts and their implementation would have long-term negligible to moderate cumulative impacts to Seashore operations and management since it would be expected that existing and future funding sources would provide the required staff for these activities, and in rare instances, staff may be redirected from one activity to another to develop and implement these plans.

Certain ongoing activities within the Seashore also contribute to cumulative impacts including commercial fishing, response to storms and other weather events (including hurricane recovery), and ongoing Seashore operations for law enforcement, research studies, maintenance, and visitor center operations. These activities are generally all accounted for in the current staff and budget of the Seashore and represent negligible adverse impacts to Seashore operations and management. Storms and other weather-related events, including hurricanes, are not regularly scheduled and planned for, and the preparation for and recovery from these events can have short-term moderate to major impacts to Seashore operations since certain functions of Seashore staff may cease while preparation and recovery occurring. As soon as these events and the staff commitment associated with them have passed, there are long-term negligible adverse impacts to Seashore operations.

Past, present, and reasonably foreseeable future construction projects that would have cumulative impacts with alternative A include ongoing dredging of the federally authorized navigation channel at Oregon Inlet and the replacement of Bonner Bridge. Projects being implemented by the NPS (NC-12 improvements and campground upgrades) would require staff time during the planning, implementation, and maintenance, which would be expected to be within the regular duties of Seashore staff, resulting in long-term negligible impacts since additional funding would not be needed and Seashore staff would be able to address regular operations. Those projects being implemented by other agencies in the area would require Seashore staff to coordinate with these agencies; this coordination would be expected to be within the regular duties of Seashore staff, resulting in long-term negligible impacts.

The combination of these past, present, and reasonably foreseeable future actions, when combined with the long-term negligible impacts of alternative A, are expected to have long-term negligible adverse cumulative impacts to Seashore operations and management.

**Conclusion.** Implementation of alternative A would require approximately 29.35 FTE across Seashore management/administration, visitor protection, resources management, facility management, and interpretation divisions. Staff costs would equal approximately \$2,003,850, with an additional \$205,000 in support costs (e.g., signs, vehicles, materials). Total approximate cost to implement alternative A would be \$2,208,850. All staff and equipment requirements in all divisions would be accommodated by existing funding sources and would not require the Seashore to remove any activities or shift resources around to accommodate ORV management-related activities in these divisions, resulting in long-term negligible impacts to all Seashore operations and management. Cumulative impacts to Seashore operations and management under alternative A would be long-term negligible adverse.



## Impacts of Alternative B: No-action—Continuation of Management under Terms of the Consent Decree

Table 83 provides the total staffing and funding needs under alternative B, Continuation of Management under the Consent Decree.

**TABLE 83. STAFFING AND FUNDING—ALTERNATIVE B**

Division	Assumptions	Annual Costs
Seashore Management / Administration	5.35 FTE would be required to account for overhead costs to provide overall program support. No materials would be required.	Staff = \$480,950 Supplemental Costs = \$3,000 Total Annual Costs = \$483,950
Visitor Protection	16.5 FTE would be required, as well as support materials for law enforcement staff such as vehicles, travel, field supplies, fuel, radio support and training.	Staff = \$1,321,500.00 Supplemental Costs = \$160,000 Total Annual Costs = \$1,481,500
Resources Management	15.0 FTE would be needed, which could include one full-time wildlife biologist, full-time and seasonal biological technicians, and administrative support. Vehicles, signs, and field gear would be required to support these staff.	Staff = \$778,000 Supplemental Costs = \$35,000 Total Annual Costs = \$813,000
Facility Management	3.6 FTE would be needed, which could include the facility manager, heavy equipment operators, mechanics, and other maintenance workers.	Staff = \$158,600 Supplemental Costs = \$20,000 Total Annual Costs = \$178,600
Interpretation	3.0 FTE would be needed, which could include the division chief, interpretive rangers, and a visual information specialist. Other costs would include printing and distributing informational materials.	Staff = \$181,500 Supplemental Costs = \$12,000 Total Annual Costs = \$193,500
Total Staffing and Annual Costs	43.45 FTE	Total Staff Costs = \$2,920,550 Total Supplemental Costs = \$230,000 Total Annual Costs = \$3,150,550

**Seashore Management / Administration.** Under alternative B, Seashore management staff would be routinely involved in ORV management activities and all divisions would require administrative support. This support reflects overhead costs, such as payroll, human resource functions, involvement of the superintendent, and other similar costs. Support would also include assisting in distributing weekly updates of ORV access areas during the spring and summer months. Actions under alternative B would require approximate 5.35 FTE, or over five full-time Seashore management and administrative staff, to support field operations related to ORV management activities. The total approximate cost of these staff would be \$480,950, with \$3,000 of additional materials required for a total of \$483,950. This increase from alternative A would occur due to the varying requirements for when and how buffers are established. Under alternative B, these buffers are larger and subject to more frequent changes—such as when violations occur—and additional updates completed by management staff would be required. Further administrative effort would be required due to the addition of a nighttime driving permit. Although this permit can be obtained online and at no cost, minimal administrative support would be needed for the hardcopy production and provision to visitors of this permit. Under alternative B, administrative functions related to ORV management would be accomplished within the existing Seashore budget, but would require re-prioritizing work and re-allocating staff time away from other

activities, resulting in long-term moderate adverse impacts to Seashore management and administrative operations at the Seashore. These same impacts would be applicable to the administration of the consent decree prior to June 2008, when it was modified.

**Visitor Protection.** Under alternative B, Seashore law enforcement rangers would be responsible for enforcing visitor compliance with ORV regulations and resource closures. Law enforcement staff would perform routine patrols of beach areas, respond to violations, conduct investigations, and assist in public education through visitor contacts.

Resource closures under alternative B would be larger than those provided under alternative A and would be subject to change on a regular basis, such as when new shorebird breeding is observed or when closures are expanded as a result of deliberate violations or vandalism, resulting in a need for a high level of enforcement related to ORV management. The prohibition of night driving from May 1 through September 15, along with the night driving permit from September 16 through November 15, would require enforcement effort to ensure compliance but would also allow the law enforcement staff to focus its patrol efforts on the hours of allowable use. All recreational users would have access to areas adjacent to resource closures, and there would be variation in the areas available for ORV use, resulting in some users not knowing in advance what areas are open or closed. Under this alternative, the opportunity for resource closure violations would be relatively high due to this unpredictability. Law enforcement would also continue existing resource protection activities such as fielding violation calls and responding to violation incidents.

In order to accomplish the above activities, as well as enforce all applicable regulations at the Seashore, 16.50 FTE would be required, which would be filled by law enforcement rangers. Total approximate labor for these positions would equal \$1,321,500 a year with an additional \$160,000 needed for materials (e.g., vehicles, travel, field supplies, fuel, radio support, and training costs) for these rangers, for a total approximate annual cost to the law enforcement division of \$1,481,500. The increase in effort for law enforcement would be primarily related to the variability of the protected species buffers and secondarily to the implementation of night-driving restrictions, as described above.

The Seashore would use currently available funding to fulfill the 16.5 law enforcement positions, and would be able to address all needs related to ORV management under alternative B, but would require re-prioritizing work and re-allocating staff time away from other activities. With this level of funding and staffing, most field law enforcement staff would spend the majority of their time focused on ORV-management related activities and spend less time patrolling other portions of the Seashore such as roads, campgrounds, and parking areas, resulting in long-term moderate adverse impacts to law enforcement operations under alternative B. These same impacts would be applicable to the administration of the consent decree prior to June 2008, when it was modified.

**Resources Management.** Under alternative B, resources management staff would be responsible for all monitoring and establishment of buffers for protected birds, turtles, and seabeach amaranth. Resources management staff would also be responsible for determining monitoring requirements, hiring, training and supervising field staff, and conducting all field surveys. These staff would also provide input into the weekly resources management report updates and access updates that are provided to the public.

For birds, the responsibilities of the resources management staff would be the same as those under alternative A, except that for certain species, such as American oystercatchers and breeding colonial waterbirds, buffer distances would be those used under the consent decree, rather than based on best professional judgment. These buffers would continue to vary with the life cycle of the species and would be expanded if violations of the closures are noted. Resources management responsibilities for turtles and seabeach amaranth would be the same under alternative B as under alternative A.

In addition to regular surveying, monitoring, and establishment of closures, resources management staff would also dedicate time to predator management under alternative B.

In order to accomplish the above activities, the resources management division would require approximately 15.0 FTE, which could include the chief of resources management, a wildlife biologist, seasonal or full-time biological technicians, a GIS specialist, and seasonal administrative assistant support. These positions would equal approximately \$778,000 in labor costs. In order to support these positions, overhead costs, computers, uniforms, vehicles, and other equipment (e.g., signs, field gear, UTVs) would be needed, resulting in approximately \$35,000 in support costs. The total approximate cost of implementing alternative B to the resources management division would be \$813,000. The addition of 5.5 FTE under alternative B, when compared to alternative A, results primarily from the need to establish prenesting closures at an earlier date (two weeks earlier for most species) and monitor prenesting areas more frequently than under alternative A, as well as the need to frequently install or modify resource protection areas once shorebird breeding activity is observed. Additional effort would be needed for resources management staff to react to the more variable nature of the resource closures (i.e., expanding buffers for resource violations) and to expand buffers if disturbance to species is noted, per the consent decree. Resources management staff would also have additional responsibilities under alternative B from requirements that direct staff to establish appropriate buffers within eight daylight hours if prenesting and/or breeding behavior is observed for piping plover, American oystercatchers, or colonial waterbirds, as well as enhanced reporting requirements for resources management staff.

Under alternative B, the Seashore would have noticeable changes in staffing of the resources management division and would require re-prioritizing work and re-allocating staff time away from other activities. With this level of funding and staffing, most resources management field staff would spend the majority of their time focused on ORV management-related species management activities and would have little time to address other field resources management needs, resulting in long-term moderate adverse impacts to resources management activities in the Seashore. These same impacts would be applicable to the administration of the consent decree prior to June 2008, when it was modified.

**Facility Management.** The facility management division at the Seashore would be responsible for all maintenance activities related to ORV management. Facility management personnel would provide routine maintenance and emergency repairs of beach ramps and parking areas and be responsible for maintaining the vehicles used by law enforcement, resources management and other staff associated with ORV management-related activities. Approximately 3.6 FTE of facility management time would be needed to carry out ORV management related activities, equaling approximately \$158,600 of labor. In addition to the labor, approximately \$20,000 of supplies would be required that could include ramp fill material, vehicle parts, and vehicle maintenance supplies. Total annual costs for facility management staff related to ORV management would be approximately \$178,600. Under alternative B, the increase in maintenance responsibilities, when compared to alternative A, would be primarily related increased maintenance of ramps and interdunal roads in high ORV use areas.

Under alternative B, the Seashore would be able to conduct facility management activities related to ORV use within existing funding sources, and no other divisions of the Seashore would be impacted by these operations. Because there would be no significant change to Seashore facility management activities, impacts to facility management operations at the Seashore would be long-term negligible adverse. These same impacts would be applicable to the administration of the consent decree prior to June 2008, when it was modified.

**Interpretation.** Under alternative B, staff in the interpretation division would provide materials to Seashore visitors related to ORV use, as well as species management. Staff time would be required to develop these materials, as well as funds to print and distribute the materials. Interpretive staff under

alternative B could include the division chief, park rangers to provide interpretive programs and manage volunteer programs, and a visual resource specialist to produce articles, displays, brochures, and exhibits. In order to carry out these functions, alternative B would require approximately 3.0 FTE of staff time, equaling approximately \$181,500. Printing and other supporting costs would be approximately \$12,000, resulting in total approximate annual costs of \$193,500 to the interpretive division. Compared to alternative A, specific activities that would require additional staff under alternative B would include assisting in preparing the educational materials that are related to restrictions on nighttime driving, providing additional educational materials on species management and any associated user restrictions, providing protected species information at ORV access points, redesigning and updating the beach access brochure, and continually updating the park's website with access information.

Under alternative B, interpretive functions related to ORV management would be accomplished within the existing Seashore budget, resulting in long-term negligible adverse impacts to interpretive operations at the Seashore. These same impacts would be applicable to the administration of the consent decree prior to June 2008, when it was modified.

**Overall Impacts to Seashore Operations.** Overall, there would be an increase in duties related to ORV management for staff in the Seashore management/administration, visitor protection, and resources management divisions. Although these staff could accomplish these duties with existing budgets, it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the park outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the facility management and interpretation divisions would not see a large change in operations and would be able to accomplish ORV management related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts to these two divisions.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative B would be the same as those under alternative A and would include the implementation of various plans and policies, which would require varying levels of staff time for plan production and implementation.

The combination of these past, present, and reasonably foreseeable future actions, when combined with the long-term negligible to moderate impacts of alternative B, are expected to have long-term negligible to minor adverse cumulative impacts to Seashore operations and management.

**Conclusion.** Implementation of alternative B would require approximately 43.45 FTE across the Seashore management, administration, visitor protection, resources management, facilities management, and interpretation divisions. Staff costs would equal approximately \$2,920,950, with an additional \$230,000 in support costs (e.g., signs, vehicles, materials). Total approximate cost to implement alternative B would be \$3,150,550. All staff and equipment requirements in all divisions would be accommodated by existing and expected funding sources; however, alternative B would require that some divisions re-prioritize work and re-allocate staff time away from other activities in order to accommodate ORV management related activities. Overall, impacts to Seashore operations would be long-term moderate adverse.

Cumulative impacts to Seashore operations and management under alternative B would be long-term negligible to minor adverse impacts.

### Impacts of Alternative C: Seasonal Management

Table 84 provides the total staffing and funding needs under alternative C, Seasonal Management.

**TABLE 84. STAFFING AND FUNDING—ALTERNATIVE C**

Division	Assumptions	Annual Costs
Seashore Management / Administration	4.60 FTE would be required, as well as materials, to account for overhead costs to provide overall program support.	Staff = \$363,200 Supplemental Costs = \$16,900 Total Annual Costs = \$380,100
Visitor Protection	21.7 FTE would be required for law enforcement and visitor use assistant (VUA) staff, as well as support materials for this staff such as vehicles, travel, field supplies, fuel, radio support and training.	Staff = \$1,529,900 Supplemental Costs = \$177,000 Total Annual Costs = \$1,706,900
Resources Management	12.6 FTE would be needed, which could include one full-time wildlife biologist, full-time and seasonal biological technicians, and administrative support. Vehicles, signs, and field gear would be required to support these staff.	Staff = \$645,000 Supplemental Costs = \$59,000 Total Annual Costs = \$704,000
Facility Management	3.80 FTE would be needed, which could include the facility manager, heavy equipment operators, mechanics, and other maintenance workers.	Staff = \$173,800 Supplemental Costs = \$25,000 Total Annual Costs = \$198,800
Interpretation	3.00 FTE would be needed, which could include the division chief, interpretive rangers, and a visual information specialist. Other costs would include printing and distributing informational materials.	Staff = \$181,500 Supplemental Costs = \$12,000 Total Annual Costs = \$193,500
Total Staffing and Annual Costs	45.7 FTE	Total Staff Costs = \$2,893,400 Total Supplemental Costs = \$289,900 Total Annual Costs = \$3,183,300

**Seashore Management / Administration.** Under alternative C, park management staff would be routinely involved in ORV management activities and all divisions would require administrative support. This support reflects overhead costs, such as payroll, human resource functions, involvement of the superintendent, and other similar costs. Support would also include assisting in distributing weekly updates of ORV access areas during the spring and summer months, as well as assisting in the administration of the ORV permit system. Actions under alternative C would require approximately 4.60 FTE, or approximately four and a half full-time Seashore management and administrative staff, to support field operations related to ORV management. The total approximate cost of these staff would be \$363,200, with an additional \$16,900 required for materials. This increase over the no-action alternatives would occur related to the various new programs requiring administrative assistance that would be implemented under alternative C. One such program is the ORV permit, which has a fee subject to cost recovery, that would be distributed in-person or online. Development and administration of the ORV permit system would require Seashore management and administrative staff support. This permit system would also include an educational component requiring the user to pass a basic knowledge test, the administration of which would require support from administrative staff.

Alternative C also includes the potential for alternative transportation, such as a beach shuttle, through the consideration of a commercial use authorization, which is a type of permit. Seashore management support would be required to process and follow up with these permit applications. A requirement for a beach fire permit under alternative C would also require administrative support. In addition to these new requirements, administrative staff would continue to assist with the distribution of weekly resource closure and ORV access updates during the summer breeding season, which may be more consistent since alternative C includes the use of seasonal ORV restrictions in all SMAs, rather than just buffers that vary based on bird behavior.

Under alternative C, the above-described Seashore management and administrative functions related to ORV management would be accomplished within the existing Seashore budget, but would require re-prioritizing work and re-allocating staff time away from other activities, resulting in long-term minor adverse impacts to Seashore management and administrative operations at the Seashore.

**Visitor Protection.** Under alternative C, Seashore law enforcement rangers would be responsible for enforcing visitor compliance with ORV regulations and resource closures. Law enforcement staff would perform routine patrols of beach areas, respond to violations, conduct investigations, and assist in public education through visitor contacts. Alternative C would expand the responsibilities of law enforcement staff since new regulations would be implemented, as described further below.

Under alternative C, resource closures would be implemented on a seasonal basis and remain constant. With more consistency, it would be expected that the number of resource violations would decline from current levels since Seashore users would know what to expect, and accidental resource violations related to not being aware of their location would, in turn, be less. This would reduce the level of effort required by law enforcement staff related to resource violations under alternative C.

Alternative C would implement additional or new Seashore regulations such as requiring an ORV use permit, lowering the speed limit, adding restrictions related to pets and horses, requiring a beach fire permit, monitoring possible beach shuttle permittees, and establishing vehicle characteristic and equipment requirements. These additional responsibilities would require law enforcement staff involvement to ensure compliance with these policies and to contact violators as needed, and would include the authority to revoke ORV use permits. The level of effort related to implementing these new policies would be expected to be greater when they are first implemented, while they would become less time-consuming as Seashore visitors become accustomed to them. In addition, law enforcement staff would continue to perform their existing resource protection activities, such as fielding resource violation calls and responding to violation incidents.

Alternative C would also include seasonally restricting night driving from 7:00 p.m. to 7:00 a.m. from May 1 to November 15. This change would be a long-term benefit for law enforcement staff since during those dates it would allow the Seashore to focus law enforcement coverage on peak use periods during daylight hours. Additional law enforcement effort under alternative C would be required to enforce carrying capacity within each ranger district when the “peak use limit” is reached, as detailed in table 13 in chapter 2. Law enforcement rangers would also be responsible for identifying and implementing the established standards for safety closures under alternative C, resulting in more staff time when these situations are identified.

The implementation of the ORV permit system would require the establishment of a web-based permit issuing process, as well as local permit issuing stations staffed with sufficient VUAs to provide coverage seven days a week year-round.

In order to accomplish the above activities, which includes enforcing all applicable regulations at the Seashore, as well as implementing the ORV permit system, 21.7 FTE would be required and would be filled primarily by law enforcement rangers and VUAs. Total approximate labor for these positions would equal \$1,529,900 a year with an additional \$177,000 needed for materials (e.g., vehicles, travel, field supplies, fuel, radio support, and training costs) for these rangers, for a total approximate annual cost to the law enforcement division of \$1,706,900. The increase in effort for visitor protection would be primarily related to the implementation and enforcement of new regulations and policies at the Seashore, as well as implementation of an ORV permit system, as described above.

The additional demand on Seashore law enforcement staff would be noticeable and require the re-prioritization of work and the re-allocation of staff time away from other activities. The establishment of year-round VUA staffing to implement the ORV permit system would be an additional new program to administer under alternative C. The Seashore would use currently available funding and expected revenues from ORV permit fees, which would be based on cost recovery, to provide the 21.7 FTEs needed to address these ORV management responsibilities. With this level of funding and staffing, most field law enforcement staff would spend the majority of their time focused on ORV-management related activities and spend less time patrolling other portions of the Seashore such as roads, campgrounds, and parking areas, resulting in long-term moderate adverse impacts to law enforcement operations under alternative C.

**Resources Management.** Under alternative C, resources management staff would be responsible for all monitoring and establishment of buffers for protected birds, turtles, and seabeach amaranth. Resources management staff would also be responsible for determining monitoring requirements, hiring, training and supervising field staff, and conducting all field surveys. These staff would also provide input into the weekly resources management report updates and access updates that are provided to the public. Resources management under alternative C would have elements related to seasonal closures, which would reduce the need to move resource closures around in response to species behavior and reduce the amount of effort needed by resources management staff when compared to management under alternative B. By seasonally closing some areas of known habitat to ORV use such as Bodie Island Spit, Cape Point, Hatteras Inlet Spit, and South Point, resources management staff would need to install, modify and remove resource closures much less frequently than under alternatives A or B.

Beyond more predictable resource closures, resources management staff would continue to have monitoring responsibilities. Areas that are designated for the use of ML2 measures under alternative C—such as Bodie Island Spit, Cape Point, and South Point—would require daily monitoring when pedestrians are allowed to access these areas, even during the seasonal closure to ORV. Areas subject to ML1 measures—the remaining areas closed to ORV and pedestrian use—would be surveyed at least three times a week. While resources management staff would have fewer demands from moving/adjusting closures under alternative C, efforts related to monitoring, particularly those areas designated for ML2 measures would generally increase. NPS resources management staff would also have additional responsibilities related to collecting data to evaluate the action in relation to the adaptive management strategy. Areas that would be studied are detailed in table 10 in chapter 2. Sea turtle and seabeach amaranth management activities under alternative C would be similar to those under the no-action alternatives and would not be expected to change the level of effort spent by resources management staff on these activities.

In addition to regular surveying, monitoring, and establishment of closures, resources management staff would also dedicate time to predator management under alternative C.

In order to accomplish the above activities, the resources management division would require approximately 12.6 FTE, which could include the chief of resources management, a wildlife biologist,

seasonal or full-time biological technicians, a GIS specialist, and seasonal administrative assist support. These positions would equal approximately \$645,000 in labor costs. In order to support these positions, overhead costs, computers, uniforms, vehicles, and other equipment (e.g., signs, field gear, ATVs/UTVs) would be needed, resulting in approximately \$59,000 in support costs. The total approximate cost of implementing alternative C to the resources management division would be \$704,000. When compared to the no-action alternatives, alternative C would require more FTE than alternative A, due to more intensive monitoring requirements, but less FTE than alternative B, primarily due to the decrease in staff time related to adjusting resource closures.

Under alternative C, the Seashore would not have a substantial change in staffing in the resources management division and would be able to accommodate staffing needs using existing or expected funding. With this level of funding and staffing, most resources management field staff would spend the majority of their time focused on ORV-management related species management activities and would have little time to address other field resources management needs, resulting in long-term negligible to minor adverse impacts to resources management activities in the Seashore.

**Facility Management.** The facility management division at the Seashore would be responsible for all maintenance activities under alternative C related to ORV management. Facility management personnel would provide routine maintenance and emergency repairs of beach ramps and parking areas and also be responsible for maintaining the vehicles used by law enforcement, resources management and other staff associated with ORV management related activities.

Under alternative C, parking areas would be added at certain areas to provide additional access for pedestrian use, which would require additional staff time by facilities management to establish and maintain. Additional toilet facilities and trash receptacles in high-use locations would also require frequent maintenance that would add to the responsibilities of facility management staff. Alternative C would establish a system for providing additional maintenance to interdunal roads, as well as specifications for the width and condition of ramps to the beach, which would require more time for the maintenance division to carry out the interdunal road maintenance and ensure all ramps meet the new standard. Likewise, the extension of the South Beach interdunal road called for under alternative C would require additional staff time for the actual extension, as well as the maintenance of this area.

Approximately 3.8 FTE of facility management time would be needed to carry out ORV management related activities, equaling approximately \$173,800 of labor. In addition to the labor, approximately \$25,000 of supplies would be required that could include ramp fill material, vehicle parts, and vehicle maintenance supplies. Total annual costs for facility management staff related to ORV management would be approximately \$198,800. Under alternative C, the increase in maintenance responsibilities, when compared to no-action alternatives, would be primarily related to the expanded maintenance requirements for ramps and interdunal roads.

Under alternative C, the Seashore would generally be able to conduct facility management activities related to ORV management within existing and expected funding sources, but would require re-prioritizing work and re-allocating staff time from other maintenance activities. No other divisions of the Seashore would be significantly impacted by these operations although there would be some noticeable changes to facilities management operations. Impacts to facility management operations at the Seashore would be long-term minor adverse.

**Interpretation.** Under alternative C, interpretation division staff responsibilities would be the same as those detailed under alternative B. In order to carry out these functions, alternative C would require approximately 3.0 FTE of staff time, equaling approximately \$181,500. Printing and other supporting costs would be approximately \$12,000, resulting in total approximate annual costs of \$193,500 to the



interpretive division. Compared to alternative A, specific activities that would require additional staff under alternative C would include assisting in preparing the educational materials that are related to restrictions on nighttime driving, and providing additional educational materials on species management and any associated user restrictions.

Under alternative C, the Seashore would generally be able to conduct interpretive activities related to ORV use and species protection within existing funding sources and no other divisions of the Seashore would be impacted by these operations. Impacts to interpretive activities at the Seashore would be long-term negligible adverse.

**Overall Impacts to Seashore Operations.** Overall, there would be an increase in duties related to ORV management for staff in the Seashore management/administration, resources management, and facility management divisions that could result in some re-prioritization of work, but would not be expected to impact overall duties, resulting in long-term minor adverse impacts. In the visitor protection division, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the Seashore outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative C would be the same as those under alternative A and would include the implementation of various plans and policies that would require varying levels of staff time for plan production and implementation.

The combination of these past, present, and reasonably foreseeable future actions, when combined with the long-term negligible to moderate impacts of alternative C, are expected to have long-term minor to moderate adverse cumulative impacts to Seashore operations and management.

**Conclusion.** Implementation of alternative C would require approximately 45.70 FTE across the Seashore management/administration, visitor protection, resources management, facility management, and interpretation divisions. Staff costs would equal approximately \$2,893,400, with an additional \$289,900 in support costs (e.g., signs, vehicles, materials). Total approximate cost to implement alternative C would be \$3,183,300. All staff and equipment requirements in all divisions would be accommodated by existing and expected funding sources including ORV permit revenue, and would require that some divisions re-prioritize work and re-allocate staff time to accommodate ORV management activities. Overall, impacts to Seashore operations would be long-term minor to moderate (but mostly minor) adverse.

Cumulative impacts to Seashore operations and management under alternative C would be long-term minor to moderate adverse.

### Impacts of Alternative D: Increased Predictability and Simplified Management

Table 85 provides the total staffing and funding needs under alternative D, Increased Predictability and Simplified Management.

**TABLE 85. STAFFING AND FUNDING—ALTERNATIVE D**

Division	Assumptions	Annual Costs
Seashore Management / Administration	4.35 FTE would be required, as well as materials, to account for overhead costs to provide overall program support.	Staff = \$343,950 Supplemental Costs = \$16,900 Total Annual Costs = \$360,850
Visitor Protection	22.5 FTE would be required for law enforcement and VUA staff, as well as support materials for this staff such as vehicles, travel, field supplies, fuel, radio support and training.	Staff = \$1,591,500 Supplemental Costs = \$177,000 Total Annual Costs = \$1,768,500
Resources Management	11.0 FTE would be needed, which could include one full-time wildlife biologist, full-time and seasonal biological technicians, and administrative support. Vehicles, signs, and field gear would be required to support these staff.	Staff = \$586,500 Supplemental Costs = \$63,000 Total Annual Costs = \$649,500
Facility Management	3.60 FTE would be needed, which could include the facility manager, heavy equipment operators, mechanics, and other maintenance workers.	Staff = \$158,600 Supplemental Costs = \$20,000 Total Annual Costs = \$178,600
Interpretation	3.00 FTE would be needed, which could include the division chief, interpretive rangers, and a visual information specialist. Other costs would include printing and distributing informational materials.	Staff = \$181,500 Supplemental Costs = \$12,000 Total Annual Costs = \$193,500
Total Staffing and Annual Costs	44.55 FTE	Total Staff Costs = \$2,862,050 Total Supplemental Costs = \$288,900 Total Annual Costs = \$3,150,950

**Seashore Management / Administration.** Under alternative D, Seashore management staff would be periodically involved in ORV management activities and all divisions would require administrative support. This support reflects overhead costs, such as payroll, human resource functions, involvement of the superintendent, and other similar costs. Support would also include assisting in distributing weekly updates of ORV access areas during the spring and summer months, as well as assisting in the development and administration of the ORV permit system. Alternative D would not include the consideration of commercial use permits for alternative transportation—such as a beach shuttle—or beach fire permits, and therefore there would be no responsibilities for the administrative division related to these activities.

Actions under alternative D would require approximate 4.35 FTE, or approximately four and a third full-time administrative staff, to support field operations related to ORV management. Total approximate costs of these staff would be \$343,950, with additional \$16,900 required for materials. This increase over the no-action alternatives would be related to the various new programs requiring administrative assistance that would be implemented under alternative D. One such program is the ORV permit, which has a fee subject to cost recovery, that would be distributed in-person or online. Cost-recovery would be

expected to be lower than other alternatives as the permit program would be less involved. Production and distribution of this permit would require administrative staff support. This permit system would be relatively simple to administer since there would be no testing component, only a requirement that the recipient read the rules and sign a statement that they understand the conditions of the permit.

In addition to these new requirements, Seashore management and administrative staff would continue to assist with the distribution of weekly resource closure and ORV access updates during the summer breeding season. Closure and access would be more consistent since alternative D focuses on simplified management that leaves sensitive resource areas closed to ORV use year-round, rather than on buffers that vary based on bird behavior or seasonal management. A seasonal night driving restriction would prohibit night driving from 7:00 p.m. to 7:00 a.m. under alternative D, but would not require a separate permit that would necessitate administrative support, and would not undergo periodic review that would require administrative time of the superintendent.

The year-round designation of ORV areas and VFAs would result in fewer changes to beach access status and simplify the public information function compared to other alternatives, though this would not necessarily affect other administrative functions. The Seashore would use currently available funding and expected revenues from ORV permit fees, which would be based on cost recovery, to provide the 4.35 FTE needed to address these ORV management responsibilities, resulting in long-term negligible adverse impacts to Seashore management and administrative operations at the Seashore.

**Visitor Protection.** Under alternative D, Seashore law enforcement rangers would be responsible for enforcing visitor compliance with ORV regulations and resource closures, many of which would occur year-round in resources management areas known as SMAs. Law enforcement staff would perform routine patrols of beach areas, respond to violations, conduct investigations, and assist in public education through visitor contacts. Alternative D would expand some of the responsibilities of law enforcement staff since a few additional regulations would be implemented; however, the year-round designation of ORV areas and VFAs would simplify and reduce the overall law enforcement workload, as described further below.

Under alternative D, resource protection would be simplified and remain constant, in part, through the year-round designation of SMAs as VFAs. With more consistency, it would be expected that the number of resource violations would decline from current levels since Seashore users would know what to expect, and accidental resource violations related to not being aware of their location would in turn be less. This would reduce the level of effort required by law enforcement staff related to violator contacts under alternative D. Implementation of law enforcement duties would further be simplified by eliminating designations for safety or administrative closures, which law enforcement previously would have had to implement.

Alternative D would implement additional or new regulations such as requiring an ORV use permit, lowering the speed limit, adding restrictions related to pets (but not horses), and implementing vehicle characteristic and equipment requirements. These additional responsibilities would require law enforcement staff involvement in ensuring that these policies are being adhered to and contacting violators when necessary, and would include the authority to revoke ORV use permits. The level of effort related to implementing these new policies would be expected to be greater when they are first implemented, while they would become less time-consuming as Seashore users become accustomed to them. In addition, law enforcement would also continue existing resources management related activities such as fielding violation calls and responding to violation incidents.

Alternative D would also include seasonally restricting night driving from 7:00 p.m. to 7:00 a.m. from May 1 to November 15. This change would be a long-term benefit for law enforcement staff since during

those dates it would allow the Seashore to focus law enforcement coverage on peak use periods during daylight hours. Additional law enforcement effort under alternative D would also be required to enforce the single row parking limitation when necessary, as detailed in table 13 in chapter 2.

The implementation of the ORV permit system would require the establishment of a web-based permit issuing process, as well as local permit issuing stations staffed with sufficient VUAs to provide coverage seven days a week year-round.

In order to accomplish the above activities, as well as enforce all applicable regulations at the Seashore, 22.5 FTE would be required, which would be filled by law enforcement rangers and VUAs. Total approximate labor for these positions would equal \$1,591,500 a year with an additional \$177,000 needed for materials (e.g., vehicles, travel, field supplies, fuel, radio support, and training costs) for these rangers, for a total approximate annual cost to the visitor protection division of \$1,768,500. The increase in visitor protection effort would be primarily related to the implementation and enforcement of new ORV regulations and policies at the Seashore, as well as implementation of an ORV permit system, as described above.

The year-round designation of ORV areas and VFAs would simplify law enforcement operations and the establishment of year-round VUA staffing to implement the ORV permit system would be an additional new program to administer under alternative D. The Seashore would use currently available funding and expected revenues from ORV permit fees, which would be based on cost recovery, to provide the 22.5 FTE needed to address these ORV management responsibilities. With this level of funding and staffing, impacts to visitor protection operations under alternative D would be long-term negligible adverse.

**Resources Management.** Under alternative D, resources management staff would be responsible for all monitoring and establishment of buffers for protected birds, turtles, and seabeach amaranth. Resources management staff would also be responsible for determining monitoring requirements, hiring, training and supervising field staff, and conducting all field surveys. These staff would also provide input into the weekly resources management report updates and access updates that are provided to the public. Resources management effort under alternative D would be centered on monitoring throughout the Seashore. All SMAs would be designated as VFAs year-round and would all be managed using the ML1 measures during the breeding season, which would result in less frequent monitoring compared to ML2 measures for some SMAs under alternative C. Survey frequency would be reduced under ML1 measures in the SMAs, because with the year-round vehicle-free designation, the potential for impacts to the species from human disturbance would be decreased and the need to survey daily would be decreased. Examples of this reduced level of staffing required can be seen in the observation of unfledged chicks. In areas using ML1 measures, piping plover broods would be observed once a day, whereas in area subject to management under the ML2 measures, they would be observed at least one hour each in the a.m. and p.m. daily. Similarly for American oystercatcher broods, under alternative D they would be observed every other day, rather than once daily for at least a half hour. This reduction in monitoring effort in the SMAs during the breeding season would occur for resources management staff across all species. The year-round designation of all SMAs as year-round VFAs would also significantly reduce the number and frequency of resource closures that the resources management staff would need to install, modify, and maintain.

Resources management staff would have additional responsibilities related to collecting data to evaluate the action in relation to the adaptive management strategy. Areas that would be studied are detailed in table 10 in chapter 2. Sea turtle and seabeach amaranth management activities under alternative D would be similar to those under the no-action alternatives and would not be expected to change the level of effort spent by resources management staff on these activities.

In addition to regular surveying, monitoring, and establishment of closures, resources management staff would also dedicate time to predator management under alternative D.

In order to accomplish the above activities, the resources management division would require approximately 11.1 FTE, which could include the chief of resources management, a wildlife biologist, seasonal or full-time biological technicians, a GIS specialist, and seasonal administrative assistant support. These positions would equal approximately \$586,500 in labor costs. In order to support these positions, overhead costs, computers, uniforms, vehicles, and other equipment (e.g., signs, field gear, ATVs/UTVs) would be needed, resulting in approximately \$63,000 in support costs. The total approximate cost of implementing alternative D to the resources management division would be \$649,500. When compared to the no-action alternatives, alternative D would require more FTE than alternative A, but less FTE than alternative B, primarily due to the decrease in staff time related to adjusting resource closures.

Under alternative D, the Seashore would not have a noticeable change to staffing in the resources management division and would be able to accommodate staffing needs using existing or expected funding. Because any change to Seashore operations of the resources management division could be accommodated with expected funding and noticeable changes are not expected, impacts to resources management activities at the Seashore would be long-term negligible adverse.

**Facility Management.** The facility management division at the Seashore would be responsible for all maintenance activities under alternative D related to ORV management. Facility management personnel would provide routine maintenance and emergency repairs of beach ramps and parking areas and would also be responsible for maintaining the vehicles used by law enforcement, resources management and other staff associated with ORV management-related activities.

Under alternative D, parking areas would be added at certain areas to provide additional access for pedestrian use, which would require additional staff time by facility management to establish and maintain. Additional toilet facilities and trash receptacles in high-use locations would also require frequent maintenance that would add to the responsibilities of facility management staff. Alternative D would not include a system for providing additional maintenance to interdunal roads but would establish specifications for the width and condition of ramps to the beach, which would require more time for the facility management division to ensure all ramps meet the new standard. No interdunal roads would be extended under alternative D, and no requirements would be added to this division.

Approximately 3.6 FTE of facility management time would be needed to carry out ORV management activities, equaling approximately \$156,600 of labor. In addition to the labor, approximately \$20,000 of supplies would be required that could include ramp fill material, vehicle parts, and vehicle maintenance supplies. Total annual costs for facility management staff related to ORV management would be approximately \$176,600. Under alternative D, the increase in maintenance responsibilities, when compared to no-action alternatives, would be primarily related to the expanded maintenance requirements for ramps. Since there would be no program for maintenance of the interdunal road, or establishment of new interdunal roads, there would be a slight reduction on the demand to facility maintenance staff when compared to other alternatives.

Under alternative D, the Seashore would be able to conduct facility management activities related to ORV use within existing funding sources, and no other divisions of the Seashore would be impacted by these operations. Because there would be no change to Seashore operations, impacts to facility management operations at the Seashore would be long-term negligible adverse.

**Interpretation.** Under alternative D, interpretation division staff responsibilities would be the same as those detailed under alternative B. In order to carry out these functions, alternative D would require approximately 3.0 FTE of staff time, equaling approximately \$181,500. Printing and other supporting costs would be approximately \$12,000, resulting in total approximate annual costs of \$193,500 to the interpretive division. Compared to alternative A, specific activities that would require additional staff under alternative D would include assisting in preparing the educational materials that are related to restrictions on nighttime driving, and providing additional educational materials on species management and any associated user restrictions. Alternative D would also include preparing materials for the simplified permit system, and the resources management staff would contribute to the materials provided to ORV users.

Under alternative D, the Seashore would be able to conduct interpretive activities related to ORV use and species protection within existing funding sources, and no other divisions of the Seashore would be impacted by these activities. Impacts to interpretive operations at the Seashore would be long-term negligible adverse.

**Overall Impacts to Seashore Operations.** Overall, there would long-term negligible adverse impacts to all divisions as each division would be expected to execute their duties from existing, or expected, funding sources, without having to re-prioritize staff. These impacts are due, in part, to the expected cost recovery under the proposed permit program.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative D would be the same as those under alternative A and would include the implementation of various plans and policies that would require varying levels of staff time for plan production and implementation.

The combination of these past, present, and reasonably foreseeable future actions, when combined with the long-term negligible impacts of alternative D, are expected to have long-term negligible adverse cumulative impacts to Seashore operations and management.

**Conclusion.** Implementation of alternative D would require approximately 44.55 FTE across the Seashore management/administration, visitor protection, resources management, facility management, and interpretation divisions. Staff costs would equal approximately \$2,862,050, with an additional \$288,900 in support costs (e.g., signs, vehicles, materials). Total approximate costs to implement alternative D would be \$3,150,950. Staff and equipment requirements in all divisions would be accommodated by existing and expected funding sources and would not require the Seashore to remove any activities or shift resources around to accommodate ORV management activities, resulting in long-term negligible adverse impacts.

Cumulative impacts to Seashore operations and management under alternative D would be long-term negligible adverse.

### Impacts of Alternative E: Variable Access and Maximum Management

Table 86 provides the total staffing and funding needs under alternative E, Variable Access and Maximum Management.

**TABLE 86. STAFFING AND FUNDING—ALTERNATIVE E**

Division	Assumptions	Annual Costs
Seashore Management / Administration	4.60 FTE would be required, as well as materials, to account for overhead costs to provide overall program support.	Staff = \$363,200 Supplemental Costs = \$19,900 Total Annual Costs = \$383,100
Visitor Protection	27.4 FTE would be required for law enforcement and VUA staff, as well as support materials for this staff such as vehicles, travel, field supplies, fuel, radio support and training.	Staff = \$1,970,300 Supplemental Costs = \$234,400 Total Annual Costs = \$2,204,700
Resources Management	16.4 FTE would be needed, which could include one full-time wildlife biologist, full-time and seasonal biological technicians, and administrative support. Vehicles, signs, and field gear would be required to support these staff.	Staff = \$854,200 Supplemental Costs = \$70,000 Total Annual Costs = \$924,200
Facility Management	3.90 FTE would be needed, which could include the facility manager, heavy equipment operators, mechanics, and other maintenance workers.	Staff = \$181,400 Supplemental Costs = \$30,000 Total Annual Costs = \$211,400
Interpretation	3.00 FTE would be needed, which could include the division chief, interpretive rangers, and a visual information specialist. Other costs would include printing and distributing informational materials.	Staff = \$181,500 Supplemental Costs = \$12,000 Total Annual Costs = \$193,500
Total staffing and Annual Costs	55.3 FTE	Total Staff Costs = \$3,550,600 Total Supplemental Costs = \$365,900 Total Annual Costs = \$3,916,500

**Seashore Management / Administration.** Under alternative E, Seashore management staff would be routinely involved in ORV management activities and all divisions would require administrative support. This support reflects overhead costs, such as payroll, human resource functions, involvement of the superintendent, and other similar costs. Support would also include assisting in distributing weekly updates of ORV access areas during the spring and summer months, as well as assisting in the administration of the ORV permit system and administration of permits for any new proposed alternative transportation, such as a beach shuttle. Actions under alternative E would require approximately 4.60 FTE, or approximately four and a half full-time Seashore management and administrative staff, to support field operations related to ORV management. Total approximate costs of these staff would be \$363,200, with additional \$19,900 required for materials. This increase over the no-action alternatives would be related to the various new programs requiring Seashore management involvement or administrative assistance that would be implemented under alternative E.

Closures and access may be more consistent than in the no-action alternatives, but would still be variable since pass-through corridors would be located in areas subject to ML2 measures, and these areas would

be subject to closure when species are present. A seasonal restriction would prohibit night driving from 10:00 p.m. to 6:00 a.m. under alternative E, as currently occurs under alternative B.

New programs, such as a variety of permits, would increase the complexity of ORV management program and increase the need for public information updates. Permits would include an annual and a weekly ORV permit, which has a fee subject to cost recovery, that would be distributed in-person or on-line. This permit system would also include an educational component requiring the user to pass a basic knowledge test, which would require support from administrative staff. In addition to the ORV permits, this alternative would include permits to park-and-stay overnight at designated locations during the breeding season, permits for off-season SCV camping, beach fire permits, and the potential for commercial use authorizations (a type of permit), for alternative transportation such as a water taxi service to designated locations. Development and administration of the various permit systems, as well as providing information and updates to the public would require frequent Seashore management involvement and periodic administrative staff support, which would increase the workloads of the respective staff.

Under alternative E, the above-described Seashore management and administrative functions related to ORV management would be accomplished within the existing Seashore budget, but would require re-prioritizing work and re-allocating staff time from other activities, resulting in long-term minor to moderate adverse impacts to Seashore management and administrative operations at the Seashore.

**Law Enforcement.** Under alternative E, Seashore law enforcement rangers would be responsible for enforcing visitor compliance with ORV regulations and resource closures. Law enforcement staff would perform routine patrols of beach areas, respond to violations, conduct investigations, and assist in public education through visitor contacts. Alternative E would considerably expand the responsibilities of law enforcement staff since new regulations would be implemented, a variety of permits would be issued that require field monitoring and enforcement, pass-through corridors would be utilized during the breeding season at some resource sensitive locations, and the hours of allowable night driving during the breeding season would expand compared to alternatives C and D, as described further below. Under alternative E, certain responsibilities related to law enforcement would be the same as those under alternative C, including new policies requiring beach fire permits, restrictions on horses and pets, implementation of an ORV permit system with a testing requirement and a provision that the permit can be revoked by for a violations of the permit terms and conditions, and implementation of vehicle and equipment requirements for ORV drivers. Alternative E would add additional policy elements that the law enforcement staff would be responsible for implementing, including a prohibition on motorcycle use on the beach.

Alternative E would include seasonally restricting night driving from 10:00 p.m. to 6:00 a.m. from May 15 to November 15. Starting November 15, ORV routes with low density or no turtle nests would reopen to nighttime use. The nighttime restrictions would not result in additional law enforcement efforts when compared to alternative B since the hours of the restriction are the same; however, additional effort could be required to patrol those areas that are, or are not, open to use after November 15.

Under alternative E, resource closures would be implemented on a seasonal basis at high use areas such as Bodie Island Spit, Cape Point, Hatteras Inlet Spit, and South Point, with ORV use allowed in a corridor in ML2 areas. This ORV corridor would be subject to closures in response to observed species breeding and/or fledging activities. Village beaches that permit ORV use in the winter would require a minimum beach width of 65.6 feet (20 meters) or the village beach would not be available for ORV use. While this strategy would provide for maximum flexibility, based on past and current conditions of these beaches, it is expected that some of the village beaches would not meet the criteria to be opened; therefore, this strategy could result in unpredictability regarding which ORV routes and areas would be open for use at any given time. A lack of consistency would be expected to lead to more visitors entering resource



closures accidentally because of lack of knowledge regarding which areas are open and which areas are not. This would be expected to lead to an increased effort by law enforcement staff to inform visitors of what areas are open, and to patrol the closures to ensure violations are not occurring. In addition, law enforcement staff would also continue to field violation calls and respond to violation incidents.

Additional law enforcement effort under alternative E would also be required to enforce carrying capacity within each ranger district when the “peak use limit” is reached, as detailed in table 13 in chapter 2. Law enforcement rangers would also be responsible for identifying and implementing the established standards for safety closures under alternative E, resulting in more staff time when these situations are identified.

Alternative E includes new corridors and closures that would be patrolled by law enforcement staff. These areas include the ORV corridor in areas managed using the ML2 measures and the closure of soundside ramps where there is no boat launch access.

Alternative E would also include the establishment of designated overnight park-and-stay areas during the breeding season and SCV use areas during the off-season, each with its own permitting requirements. The patrol of these areas and the enforcement of the related terms and conditions that apply to these two new special use areas would be added to the responsibilities of the law enforcement staff.

Under alternative E, multiple types of permits would be available at the Seashore including annual and weekly ORV permits, beach fire permits, permits to park-and-stay overnight at designated locations during the breeding season, and permits for SCV camping during the off-season. The implementation of the ORV permit system would require the establishment of a web-based permit issuing process, as well as local permit issuing stations staffed with sufficient VUAs to provide coverage seven days a week year-round. The permit stations would also distribute the other kinds of permits called for in alternative E, except for commercial use authorizations.

In order to accomplish the above activities, which includes enforcing all applicable regulations at the Seashore as well as implementing the ORV permit system and distributing the various kinds of permits, 27.4 FTE would be required, which would be filled primarily by law enforcement rangers and VUAs, which would represent 10.9 to 14.4 more positions than under the no-action alternatives. Total approximate labor for these positions would equal \$1,970,300 year with an additional \$234,400 needed for materials (e.g., vehicles, travel, field supplies, fuel, radio support, and training costs) for these rangers, for a total approximate annual cost to the visitor protection division of \$2,204,700. The increase in effort for visitor protection would be primarily related to the implementation and enforcement of new ORV regulations and policies at the Seashore, as well as implementation of an ORV permit system and new closure/corridor areas, as described above.

The additional demand on Seashore visitor protection staff under alternative E would be readily apparent, including the establishment of year-round VUA staffing to issue ORV and related permits. The Seashore would use currently available funding and expected revenues from ORV permits fees, which would be based on cost recovery, to provide the 27.4 FTE needed to address these ORV management responsibilities, but this alternative would also require re-prioritizing work and re-allocating staff time away from other activities. With this level of funding and staffing, most field law enforcement staff would spend the majority of their time focused on ORV-management related activities and would spend less time patrolling other portions of the Seashore such as roads, campgrounds, and parking areas, resulting in long-term moderate adverse impacts to visitor protection operations.

**Resources Management.** Under alternative E, resources management staff would be responsible for all monitoring and establishment of buffers for protected birds, turtles, and seabeach amaranth. Resources management staff would also be responsible for determining monitoring requirements, hiring, training

and supervising field staff, and conducting all field surveys. These staff would also provide input into the weekly resources management report updates and access updates that are provided to the public. Resources management under alternative E would more complex than under alternatives C or D due, in part, to providing an ORV or pedestrian corridor in areas under ML2 procedures during the breeding season if resource conditions allow it.

Alternative E would require more frequent monitoring and more frequent fencing changes when breeding activity is observed than alternatives C or D. Areas under ML2 procedures under alternative E—such as Bodie Island Spit, Cape Point, and South Point—would generally require daily monitoring once shorebird breeding activity is observed. Although this alternative provides the visitor with flexibility, the continual monitoring and implementation of resource closures as needed would require additional resources management staff to implement.

NPS resources management staff would also have additional responsibilities related to collecting data to evaluate the action in relation to the adaptive management strategy. Areas that would be studied are detailed in table 10 in chapter 2. Sea turtle and seabeach amaranth management activities under alternative E would be similar to those under the no-action alternatives and would not be expected to change the level of effort spent by resources management staff on these activities.

In addition to regular surveying, monitoring, and establishment of closures, resources management staff would also dedicate time to predator management under alternative E.

In order to accomplish the above activities, the resources management division would require approximately 16.4 FTE, which could include the chief of resources management, a wildlife biologist, additional seasonal or full-time biological technicians, a GIS specialist, and seasonal administrative assist support. These positions would equal approximately \$854,200 in labor costs. In order to support these positions, overhead costs, computers, uniforms, vehicles and other equipment (e.g., signs, field gear, ATVs/UTVs) would be needed, resulting in approximately \$70,000 in support costs. The total approximate cost of implementing alternative E to the resources management division would be \$924,200. Alternative E would require more FTE to implement than alternatives A, B, C, or D due to the increased monitoring and the number of fencing changes required to provide increased flexibility in visitor access.

The additional demand on Seashore resources management staff under alternative E would be readily apparent. The Seashore would use currently available funding and expected revenues from ORV permits fees, which would be based on cost recovery, to provide the 16.4 FTE needed to address these ORV management responsibilities, but this alternative would also require re-prioritizing work and re-allocating staff time away from other activities. With this level of funding and staffing, most field resources management staff would spend the majority of their time focused on ORV management-related activities and would have little time to address other field resources management needs, resulting in long-term moderate adverse impacts to resources management operations at the Seashore.

**Facility Management.** The facility management division at the Seashore would be responsible for all maintenance activities under alternative E. Related to ORV management, facility management personnel would provide routine maintenance and emergency repairs of beach ramps and parking areas and would also be responsible for maintaining the vehicles used by law enforcement, resources management and other staff associated with ORV management activities. As with alternative C, staff would also be responsible for the establishment and maintenance of parking areas in pedestrian areas, additional toilet facilities, and trash receptacles in high-use areas, the expansion of and establishment of interdunal roads, and the implementation of a system to improve the interdunal roads.

Under alternative E, additional facility management time would be required to maintain the SCV areas during the off-season, as well as maintain the soundside parking and access points that would be implemented.

Approximately 3.9 FTE of facility management time would be needed to carry out ORV management activities, equaling approximately \$181,400 of labor. In addition to the labor, approximately \$30,000 of supplies would be required that could include ramp fill material, vehicle parts, and vehicle maintenance supplies. Total annual costs for facility management staff related to ORV management would be approximately \$211,400. Under alternative E, the increase in maintenance responsibilities, when compared to the no-action alternatives, would be primarily related to the expanded maintenance requirements for ramps and interdunal roads, parking areas, and other new uses such as the SCV areas.

Under alternative E, the Seashore would generally be able to conduct facility management activities related to ORV management within existing and expected funding sources, but would require re-prioritizing work and re-allocating staff time from other maintenance activities. No other divisions of the Seashore would be significantly impacted by these operations. Although there would be some noticeable changes to the division's activities, impacts to facility management operations at the Seashore would be long-term minor adverse.

**Interpretation.** Under alternative E, interpretation division staff responsibilities would be the same as those detailed under alternative B. In order to carry out these functions, alternative E would require approximately 3.0 FTE of staff time, equaling approximately \$181,500. Printing and other supporting costs would be approximately \$12,000, resulting in total approximate annual costs of \$193,500 to the interpretation division. Compared to alternative A, specific activities that would require additional staff under alternative E would include assisting in preparing the educational materials that are related to restrictions on nighttime driving and providing additional educational materials on species management and any associated user restrictions.

Under alternative E, the Seashore would generally be able to conduct interpretive activities related to ORV use and species protection within existing and expected funding sources and no other divisions of the Seashore would be impacted by these operations. Although there would be some changes to division activities, impacts to interpretive operations at the Seashore would be long-term negligible adverse.

**Overall Impacts to Seashore Operations.** Overall, there would be an increase in duties related to ORV management for staff in the facility management division that could result in some re-prioritization of work, but would not be expected to impact overall duties, resulting in long-term minor adverse impacts. In the Seashore management/administration division, the increase in ORV-related responsibilities would be similar, but slightly greater with long-term minor to moderate adverse impacts. In the visitor protection and resources management divisions, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the Seashore outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV-related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts.

**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative E would be the same as those under alternative A and would include the implementation of various plans and policies that would require varying levels of staff time for plan production and implementation.

The combination of these past, present, and reasonably foreseeable future actions, when combined with the long-term negligible to moderate impacts of alternative E, are expected to have long-term minor to moderate adverse cumulative impacts to Seashore operations and management.

**Conclusion.** Implementation of alternative E would require approximately 55.3 FTE across the Seashore management, administrative, visitor protection, resources management, facilities management, and interpretation divisions. Staff costs would equal approximately \$3,550,600, with an additional \$365,900 in support costs (e.g., signs, vehicles, materials). Total approximate cost to implement alternative E would be \$3,916,500. Not all staffing and equipment requirements needed to implement alternative E would be accommodated by existing and expected funding sources, and could require re-prioritization in some divisions, with funding needs being partially off-set by ORV permit fee revenues. Overall impacts to Seashore operations would be long-term moderate adverse.

Cumulative impacts to Seashore operations and management under alternative E would be long-term minor to moderate adverse.

### Impacts of Alternative F: NPS Preferred Alternative

Table 87 provides the total staffing and funding needs under alternative F, NPS Preferred Alternative.

**TABLE 87. STAFFING AND FUNDING—ALTERNATIVE F**

Division	Assumptions	Annual Costs
Seashore Management / Administration	5.75 FTE would be required, as well as materials, to account for overhead costs to provide overall program support.	Staff = \$446,250 Supplemental Costs = \$19,900 Total Annual Costs = \$466,150
Visitor Protection	25.9 FTE would be required for law enforcement and VUA staff, as well as support materials for this staff such as vehicles, travel, field supplies, fuel, radio support and training.	Staff = \$1,853,300 Supplemental Costs = \$225,000 Total Annual Costs = \$2,078,300
Resources Management	15.7 FTE would be needed, which could include one full-time wildlife biologist, full-time and seasonal biological technicians, and administrative support. Vehicles, signs, and field gear would be required to support these staff.	Staff = \$892,700 Supplemental Costs = \$65,000 Total Annual Costs = \$957,700
Facility Management	3.90 FTE would be needed, which could include the facility manager, heavy equipment operators, mechanics, and other maintenance workers.	Staff = \$181,400 Supplemental Costs = \$30,000 Total Annual Costs = \$211,400
Interpretation	4.00 FTE would be needed, which could include the division chief, interpretive rangers, and a visual information specialist. Other costs would include printing and distributing informational materials.	Staff = \$258,500 Supplemental Costs = \$12,000 Total Annual Costs = \$270,500
Total Staffing and Annual Costs	55.25 FTE	Total Staff Costs = \$3,632,150 Total Supplemental Costs = \$351,900 Total Annual Costs = \$3,984,050

**Seashore Management / Administration.** Under alternative F, Seashore management staff would be routinely involved in ORV management activities and all divisions would require administrative support. This support reflects overhead costs, such as payroll, human resource functions, involvement of the superintendent, and other similar costs. Support would also include assisting in distributing weekly updates of ORV access areas during the spring and summer months, as well as assisting in the administration of the ORV permit. Actions under alternative F would require approximately 5.75 FTE, or just under six full-time Seashore management and administrative staff, to support field operations related to ORV management. Total approximate costs of these staff would be \$446,250 with additional \$19,900 required for materials. This increase over the no-action alternatives would be related to the various new programs requiring Seashore management involvement or administrative assistance that would be implemented under alternative F.

Closures and access may be more consistent than in the no-action alternatives, but would still be variable since areas open to ORV and pedestrian use would be subject to resource closures, as described in table 10-1. A seasonal restriction would prohibit night driving from 9:00 p.m. until 7:00 a.m. under alternative F, which would require a higher level of management for all divisions when compared to alternative A, but set hours would lead to consistency in the closure, resulting in more efficient management.

New programs, such as a variety of ORV permits and the potential for new alternative transportation options, would increase the complexity of the ORV management program and increase the need for public information updates. Permits would include an annual and a weekly ORV permit, which has a fee subject to cost recovery, that would be distributed in person at designated NPS permit issuing stations. This permit system would also include an educational component requiring the user complete a short education program in person, which would require support from administrative staff. Development and administration of the permit system, as well as providing information and updates to the public, would require frequent Seashore management involvement and periodic administrative staff support, which would increase the workloads of the respective staff.

Under alternative F, the above-described Seashore management and administrative functions related to ORV management would be accomplished within the existing Seashore budget, but would require re-prioritizing work and re-allocating staff time from other activities that would likely not be noticeable, resulting in long-term minor adverse impacts to Seashore management and administrative operations at the Seashore.

**Visitor Protection.** Under alternative F, Seashore law enforcement rangers would be responsible for enforcing visitor compliance with ORV regulations and resource closures. Law enforcement staff would perform routine patrols of beach areas, respond to violations, conduct investigations, and assist in public education through visitor contacts. Alternative F would considerably expand the responsibilities of law enforcement staff since new regulations would be implemented, permits would be issued that require field monitoring and enforcement, ORV access corridors utilized during the breeding season at some resource sensitive locations, and enforcement of night driving restrictions during the breeding season, as described further below. Under alternative F, certain responsibilities related to law enforcement would be similar to those under alternative C, including new policies requiring beach fire permits, restrictions on horses and pets, implementation of an ORV permit system with a in-person education requirement and a provision that the permit can be revoked for a violations of the permit terms and conditions, and implementation of vehicle and equipment requirements for ORV drivers. When compared to alternative E, less resources would be needed since there would be no special provisions for ORV night access during the breeding season (park-and-stay) or for off-season SCV camping under alternative F.

Alternative F would include seasonally restrict night driving from 9:00 p.m. until 7:00 a.m. from May 1 to November 15. Starting November 15, ORV routes with no turtle nests would reopen to nighttime use. The

nighttime restrictions would not result in additional law enforcement efforts when compared to alternative B since the hours of the restriction are the similar; however, additional effort could be required to patrol those areas that are, or are not, open to use after November 15, as described under alternative E.

Under alternative E, resource closures would be implemented on a seasonal basis at high use areas such as Bodie Island Spit, Cape Point, and South Point, with ORV use allowed in a corridor in certain areas, subject to closures in response to observed species breeding and/or fledging activities. While alternative F, like alternative E, would provide for maximum flexibility, some areas that are open have conditions that could result in their closure such as at Cape Point or South Point Ocracoke; therefore, this strategy could result in unpredictability regarding which ORV routes and areas would be open for use at any given time. A lack of consistency in these areas would be expected to lead to more visitors entering resource closures accidentally because of the lack of knowledge regarding which areas are open and which areas are not. This would be expected to lead to an increased effort by law enforcement staff to inform visitors of what areas are open, and to patrol the areas that are not to ensure violations are not occurring. However the seasonal closure of some areas to ORV use, such as at Bodie Island Spit, where breeding is known to occur would provide a level of consistency and help off-set the increased effort in other areas. In addition, law enforcement would also continue to field violation calls and respond to violation incidents.

Additional law enforcement effort under alternative F would also be required to enforce the vehicle carrying capacity within each ranger district when the “peak use limit” is reached, as detailed in table 8 in chapter 2. Law enforcement rangers would also be responsible for identifying and implementing the established standards for safety closures under alternative F, resulting in more staff time when these situations are identified.

Alternative F includes new access to the soundside, which would be patrolled by law enforcement staff, including on Ocracoke.

In order to accomplish the above activities, which includes enforcing all applicable regulations at the Seashore, as well as implementing the ORV permit system and distributing the various kinds of permits, 25.9 FTE would be required, which would be filled primarily by law enforcement rangers and VUAs, which would represent 12.9 to 9.4 more positions than under the no-action alternatives. Total approximate labor for these positions would equal \$1,853,300 year with an additional \$225,000 needed for materials (e.g., vehicles, travel, field supplies, fuel, radio support, and training costs) for these rangers, for a total approximate annual cost to the law enforcement division of \$2,078,000. The increase in effort for visitor protection would be primarily related to the implementation and enforcement of new ORV regulations and policies at the Seashore, as well as implementation of an ORV permit system and new closure/corridor areas, as described above.

The additional demand on Seashore visitor protection staff under alternative F would be readily apparent, including the establishment of year-round VUA staffing to issue ORV permits. The Seashore would use currently available funding and expected revenues from ORV permits fees, which would be based on cost recovery, to provide the 25.9 FTE needed to address these ORV management responsibilities, but this alternative would also require re-prioritizing work and re-allocating staff time away from other activities to some degree. With this level of funding and staffing, most field law enforcement staff would spend the majority of their time focused on ORV management-related activities and would spend less time patrolling other portions of the Seashore such as roads, campgrounds, and parking areas but would be expected to have more time for these activities than under alternative E, resulting in long-term minor to moderate adverse impacts to visitor protection operations.

**Resources Management.** Under alternative F, resources management staff would be responsible for all monitoring and establishment of buffers for protected birds, turtles, and seabeach amaranth. Resources

management staff would also be responsible for determining monitoring requirements, hiring, training and supervising field staff, and conducting all field surveys. These staff would also provide input into the weekly resources management report updates and access updates that are provided to the public. Resources management under alternative F would be less complex than under alternatives C, D or E in part because areas would have consistent management, and would not be designated as Breeding or Nonbreeding shorebird SMAs or managed under ML1 or ML2 procedures. However, those areas that are seasonally open to ORV use would have smaller buffers than the ML1 areas under other alternatives, and would require more intensive management from resource staff due to monitoring and buffer establishment.

Under alternative F, species management measures at all location would be similar to that of the ML2 measures proposed under alternatives C and E. As a result, alternative F would require more frequent monitoring and more frequent fencing changes when breeding activity is observed at those locations that would be managed using ML1 procedures under alternatives C, D, or E. Although this alternative provides the visitor with flexibility, the continual monitoring and implementation of resource closures as needed would require additional resources management staff to implement.

NPS resources management staff would also have additional responsibilities related to collecting data to evaluate the action in relation to the adaptive management strategy. Areas that would be studied are detailed in table 10-1 in chapter 2. Sea turtle and seabeach amaranth management activities under alternative F would be similar to those under the no-action alternatives and would not be expected to change the level of effort spent by resources management staff on these activities.

In addition to regular surveying, monitoring, and establishment of closures, resources management staff would also dedicate time to predator management under alternative F.

In order to accomplish the above activities, the resources management division would require approximately 15.7 FTE, which could include the chief of resources management, a wildlife biologist, additional seasonal or full-time biological technicians, a GIS specialist, and seasonal administrative assistant support. These positions would equal approximately \$892,700 in labor costs. In order to support these positions, overhead costs, computers, uniforms, vehicles and other equipment (e.g., signs, field gear, ATVs/UTVs) would be needed, resulting in approximately \$65,000 in support costs. The total approximate cost of implementing alternative F to the resources management division would be \$957,700. Alternative F would require more FTE to implement than alternatives A, B, C or D (but less than E) due to the increased monitoring and the number of fencing changes required to provide increased flexibility in visitor access.

The additional demand on Seashore resources management staff under alternative F would be readily apparent. The Seashore would use currently available funding and expected revenues from ORV permit fees, which would be based on cost recovery, to provide the 15.7 FTE needed to address these ORV management responsibilities, but this alternative would also require re-prioritizing work and re-allocating staff time away from other activities. With this level of funding and staffing, most field resources management staff would spend the majority of their time focused on ORV-management related activities and would have little time to address other field resources management needs, resulting in long-term moderate adverse impacts to resources management operations at the Seashore.

**Facility Management.** The Facility Management division at the Seashore would be responsible for all maintenance activities under alternative F. Related to ORV management, facility management personnel would provide routine maintenance and emergency repairs of beach ramps and parking areas and would also be responsible for maintaining the vehicles used by law enforcement, resources management, and other staff associated with ORV management activities. As with alternative C, staff would also be

responsible for the establishment and maintenance of parking areas in pedestrian areas, additional toilet facilities, and trash receptacles in high-use areas, the expansion of and establishment of interdunal roads, and the implementation of a system to improve the interdunal roads. The addition of soundside access under alternative F would also create additional maintenance responsibilities.

Approximately 3.9 FTE of facility management time would be needed to carry out ORV management activities, equaling approximately \$181,400 of labor. In addition to the labor, approximately \$30,000 of supplies would be required that could include ramp fill material, vehicle parts, and vehicle maintenance supplies. Total annual costs for facility management staff related to ORV management would be approximately \$211,400. Under alternative F, the increase in maintenance responsibilities, when compared to the no-action alternatives, would be primarily related to the expanded maintenance requirements for ramps and interdunal roads, parking areas, and other new access points.

Under alternative F, the Seashore would generally be able to conduct facility management activities related to ORV management within existing and expected funding sources, but would require re-prioritizing work and re-allocating staff time from other maintenance activities. No other divisions of the Seashore would be significantly impacted by these operations. Although there would be some noticeable changes to the divisions activities, impacts to facility management operations at the Seashore would be long-term minor adverse.

**Interpretation.** Under alternative F, Interpretation division staff responsibilities would be similar to those detailed under alternative B, but would require more staff time to administer the educational component of the permit system. In order to carry out these functions, alternative F would require approximately 4.0 FTE of staff time, equaling approximately \$258,500. Included in the additional Interpretive division staff would be a Resource Education Ranger to develop education material, program, and signs throughout the Seashore to educate all visitors on the state and federally listed threatened and endangered species within the Seashore. These programs would provide visitors more information on the species within the Seashore, what protection measures the Seashore has in place, and why these species are important to the coastal ecosystem.

Printing and other supporting costs would be approximately \$12,000, resulting in total approximate annual costs of \$270,500 to the interpretive division. Compared to alternative A, specific activities that would require additional staff under alternative F would include assisting in preparing the educational materials that are related to restrictions on nighttime driving and providing additional educational materials on species management and any associated user restrictions.

Under alternative F, the Seashore would generally be able to conduct interpretive activities related to ORV use and species protection within existing and expected funding sources and no other divisions of the Seashore would be impacted by these operations. Although there would be some changes to division activities, impacts to interpretive operations at the Seashore would be long-term negligible adverse.

**Overall Impacts to Seashore Operations.** Overall, there would be an increase in duties related to ORV management for staff in the facility management and Seashore management/administration divisions that could result in some re-prioritization of work, but would not be expected to impact overall duties, resulting in long-term minor adverse impacts. In the visitor protection and resources management divisions, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the Seashore outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts.



**Cumulative Impacts.** Past, present, and reasonably foreseeable future actions that have the potential for cumulative impacts under alternative F would be the same as those under alternative A and would include the implementation of various plans and policies that would require varying levels of staff time for plan production and implementation.

The combination of these past, present, and reasonably foreseeable future actions, when combined with the long-term negligible to moderate impacts of alternative E, are expected to have long-term minor to moderate adverse cumulative impacts to Seashore operations and management.

**Conclusion.** Implementation of alternative F would require approximately 55.25 FTE across the Seashore management, administrative, visitor protection, resources management, facilities management, and interpretation divisions. Staff costs would equal approximately \$3,623,150, with an additional \$351,900 in support costs (e.g., signs, vehicles, materials). Total approximate cost to implement alternative F would be \$3,984,050. Not all staffing and equipment requirements needed to implement alternative F would be accommodated by existing and expected funding sources, and could require re-prioritization in some divisions, with funding needs being partially off-set by ORV permit fee revenues. Overall impacts to Seashore operations would be long-term minor to moderate adverse.

Cumulative impacts to Seashore operations and management under alternative F would be long-term minor to moderate adverse.

**TABLE 88. SUMMARY OF IMPACTS TO SEASHORE OPERATIONS AND MANAGEMENT UNDER THE ALTERNATIVES**

Alternative A	Alternative B	Alternative C	Alternative D	Alternative E	Alternative F
<p>Overall, each division could accomplish within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts to all areas of Seashore operations.</p>	<p>Overall, there would be an increase in duties related to ORV management for staff in the Seashore management / administration, visitor protection, and resources management divisions. Although these staff could accomplish these duties within existing budgets, it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the Seashore outside of ORV management, resulting in long-term moderate adverse impacts. Staff in facility management and interpretation would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts to these two divisions.</p> <p>Overall, impacts to Seashore operations would be long-term moderate adverse.</p>	<p>Overall, there would be an increase in duties related to ORV management for staff in the Seashore management / administration, resources management, facility management divisions that could result in some re-prioritization of work, but would not be expected to impact overall duties resulting in long-term minor adverse impacts. In the visitor protection division, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the Seashore outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts</p> <p>Overall, impacts to Seashore operations would be long-term minor to moderate (but mostly minor) adverse.</p>	<p>Overall, there would long-term negligible adverse impacts to all divisions as each division would be expected to execute their duties from existing, or expected, funding sources, without having to re-prioritize staff. These impacts are due, in part, to the expected cost recovery under the proposed permit program.</p> <p>Overall, impacts to Seashore operations would be long-term negligible adverse.</p>	<p>Overall, there would be an increase in duties related to ORV management for staff in the facility management division that could result in some re-prioritization of work, but would not be expected to impact overall duties resulting in long-term minor adverse impacts. In the Seashore management / administration division, the increase in ORV related responsibilities would be similar, but slightly greater with long-term minor to moderate adverse impacts. In the visitor protection and resources management divisions, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the Seashore outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts.</p> <p>Overall impacts to Seashore operations would be long-term moderate adverse.</p>	<p>Overall, there would be an increase in duties related to ORV management for staff in the facility management and Seashore management / administration divisions that could result in some re-prioritization of work, but would not be expected to impact overall duties resulting in long-term minor adverse impacts. In the visitor protection and resources management divisions, staff could accomplish their duties with existing budgets, but it would require them to re-prioritize and re-allocate staff, and would not leave staff with adequate time to address other needs at the Seashore outside of ORV management, resulting in long-term moderate adverse impacts. Staff in the interpretation division would not see a large change in operations and would be able to accomplish ORV related tasks within current funding, without shifting priorities or having a noticeable change in operations, resulting in long-term negligible adverse impacts.</p> <p>Overall impacts to Seashore operations would be long-term minor to moderate adverse.</p>

## CHAPTER 5: CONSULTATION AND COORDINATION

Seashore staff places a high priority on meeting the intent of public involvement in the NEPA process and giving the public an opportunity to comment on proposed actions. As part of the NPS NEPA process, issues associated with the action were identified during scoping meetings with NPS staff, coordination with other affected agencies, public meetings, and public comment. This chapter describes the consultation that occurred during development of this plan/EIS, including consultation with stakeholders and other agencies. This chapter also includes a description of the public involvement process and a list of the agencies, organizations, and elected officials who received the final document.

### THE SCOPING PROCESS

The NPS divides the scoping process into two parts: internal scoping and external public scoping. Internal scoping involved discussions among NPS personnel regarding the purpose of and need for management actions, issues, management alternative, mitigation measures, the analysis boundary, appropriate level of documentation, available references and guidance, and other related topics. Public scoping is the early involvement of the interested and affected public in the environmental analysis process. The public scoping process helps ensure that people have been given an opportunity to comment and contribute early in the decision-making process. For this plan/EIS, project information was distributed to individuals, agencies, and organizations early in the scoping process, and people were given opportunities to express concerns or views and identify important issues or even other alternatives or alternative elements. Taken together, internal and public scoping are essential elements of the NEPA planning process. The following sections describe the various ways scoping was conducted for this project.

#### INTERNAL SCOPING

Internal scoping for the precursor to this project began on November 15, 2004, with staff members from the Seashore, NPS Environmental Quality Division, NPS Southeastern Region, and contractor personnel in attendance. During the three-day meeting, the NPS identified the purpose of and need for action, management objectives, issues, and impact topics. The planning team also discussed possible alternative elements, cumulative impacts, and strategies for public involvement throughout the process. This process, however, was aborted when the NPS turned its attention to the more pressing need to prepare the Interim Protected Species Management Strategy/EA. Another set of internal scoping meetings was held November 7, 2006, after the completion of the Interim Protected Species Management Strategy/EA to revisit the discussions of the 2004 meeting, update information, and initiate the planning process for this plan/EIS. During the three-day meeting, NPS employees discussed the development of an ORV management plan for the Seashore, including the purpose and need for action, management objectives, issues, impact topics, and preliminary alternative concepts. The 2006 internal scoping meetings also included a discussion of the procedures and schedule of the negotiated rulemaking process, strategies for public involvement, the no-action alternative, and data management.

#### PUBLIC SCOPING

Public scoping began with the December 11, 2006, Federal Register publication of the NOI to prepare an environmental impact statement (71 FR 71552–71553). The NOI summarized the history of ORV management at the Seashore, discussed preliminary issues and impact topics, listed the project website, and announced the upcoming public scoping meetings. The Seashore posted a public scoping newsletter on the NPS PEPC website at <http://parkplanning.nps.gov/caha>, sent informational e-mails to individuals, businesses, agencies, and organizations on the Seashore's email distribution list, and issued a news release inviting the public to comment at the scoping meetings. All four meetings were open-house style

sessions with short presentations, which allowed the public to ask Seashore staff questions and provide input to the Seashore in a more informal atmosphere. These sessions occurred in 2007 on February 26 from 2:00 p.m. to 6:00 p.m. at the Fessenden Center in Buxton, North Carolina; February 27 from 6:00 p.m. to 9:00 p.m. at the Wright Brothers National Memorial First Flight Centennial Pavilion in Kill Devil Hills, North Carolina; February 28, 2007, from 6:00 p.m. to 9:00 p.m. at McKimmon Center (North Carolina State Campus), Raleigh, North Carolina; and March 1 from 6:00 p.m. to 9:00 p.m. at the American Geophysical Union Building in Washington, D.C.

The meetings offered a variety of methods for the public to provide comments. NPS personnel and contractor staff were present at each display to answer questions from attendees and record attendees' comments. Comment sheets were provided to meeting attendees as an additional method for accepting public comment. Following the open house and presentation, attendees were also offered an opportunity to comment in a public hearing format. These comments were transcribed by a court reporter and were posted on the NPS PEPC website. Those attending the meetings were also given a newsletter that provided additional opportunities for comment, including directing comments to the PEPC website. To keep the public involved and informed throughout the planning process, individuals were given the option to receive notification of the availability of draft ORV management documents by either e-mail or regular mail and the option to either download a digital copy or receive a hardcopy through the mail. The public scoping period was open until March 16, 2007.

During the public comment period, 3,511 pieces of correspondence were received, containing a total of 3,532 signatures and 14,397 individual comments. Generally, these comments focused on how the alternatives presented could be improved or suggested new alternative elements that should be considered. Many comments expressed concern about potential impacts to the local economy associated with limiting ORV use at the Seashore. Comments provided suggestions for reconfiguring the existing ORV access system, including opening or closing ramps and interdunal roads. Comments were also received that indicated the need to protect sensitive species and habitat along the beaches, provided that the protection measures implemented would be based on scientific studies. Public comments also recommended strengthening public education initiatives, increasing law enforcement presence, and implementing a fee or permit system for ORV use. Comments also indicated how ORVs either contributed to or detracted from the visitor experience at the Seashore.

## **PUBLIC ALTERNATIVE DEVELOPMENT WORKSHOPS**

After the internal and public scoping meetings, suggestions and ideas for alternatives for ORV management were gathered and compiled into an extensive list of preliminary alternative elements. These alternative elements were organized by topic areas and formatted into a workbook for presentation to the public to obtain further comments and suggestions. Although not required by the NEPA process, the development of these workbooks and the public workshops that followed was intended to generate more detailed public input during the alternatives development process. Members of the public were asked if they thought that the preliminary alternatives met the objectives of the plan/EIS and were also encouraged to identify possible new alternative options for ORV management at the Seashore. Each workbook contained the following sections for public comment: ORV management, education and outreach, law enforcement, ORV permits, other ORV management issues, species protection, site specific management at Bodie Island District, site specific management at Hatteras Island District, and site specific management at Ocracoke Island District. The Alternatives Option Workbook was distributed to the public as follows:

- Copies were provided to participants at the January 3–4, 2008, meeting of the Negotiated Rulemaking Advisory Committee for ORV Management at Cape Hatteras National Seashore.

- A press release, with the NPS PEPC website link where the workbook was located, was sent electronically to all recipients on the Cape Hatteras National Seashore ORV e-mail list.
- Both Microsoft Word and PDF versions of the workbooks were made available online on the NPS PEPC website.
- Hard copies of the workbook were distributed at public alternatives development meetings held on January 14, 15, 16, and 17, 2008, in Buxton, Kill Devil Hills, and Raleigh, North Carolina and in Richmond, Virginia, respectively, and provided to members of the public by the Seashore when requested.

The public was asked to provide completed workbooks by February 15, 2008 (extended from the original January 31, 2008, date). A total of 386 workbooks were received during the public comment period in both electronic and hard copy formats. All workbooks were reviewed and considered during the alternatives development process. Extensive comments were received on the preliminary alternatives, many of which provided suggestions on how preliminary management options could be improved. Most comments offered options for protected species management, law enforcement, ORV permitting, closures, and ORV ramp and route configuration.

## **NEGOTIATED RULEMAKING PROCESS**

The *Negotiated Rulemaking Act of 1990* (5 USC 561–570) establishes a statutory framework for agency use of negotiated rulemaking to reach a consensus with stakeholders on a proposed regulation. Concurrent with the NEPA process, the NPS used a negotiated rulemaking process in an effort to develop a proposed rule for long-term ORV management at the Seashore. Because negotiated rulemaking allows interested, affected parties more direct input into the development of the proposed regulation, the NPS had hoped that the negotiated rulemaking process would result in a rule that is sensitive to the needs and limitations of both the parties and the agency.

The Negotiated Rulemaking Advisory Committee for Off-Road Vehicle Management at Cape Hatteras National Seashore (Committee) was established through a feasibility assessment and convening process. A draft Negotiated Rulemaking Feasibility Report, based on 55 interviews, was released on June 17, 2005. The revised Feasibility Report was released for public comment on December 16, 2005. The final Feasibility Report, released April 4, 2006, concluded, "...a consensus-based negotiation to develop a management plan and proposed implementing regulations can be convened, can yield important benefits even if agreement is not reached, and has a modest chance of success..." The negotiated rulemaking process began informally in February 2007 when the Seashore held a workshop titled "Participating in the Negotiated Rulemaking Process." The workshop was followed by two more pre-convening meetings.

On June 29, 2007, the NPS published in the Federal Register a Notice of Intent to Establish a Negotiated Rulemaking Advisory Committee at Cape Hatteras National Seashore (72 FR 124). The Secretary of the Interior signed the Charter establishing the Committee on November 26, 2007, and the NPS issued the Federal Register Notice of Establishment of the Committee, including Committee member names, on December 20, 2007.

The Committee convened its first meeting on January 3 and 4, 2008, which included adopting its Final Groundrules on the second day of the meeting. Subsequently, the Committee held 10 additional meetings on the following dates: February 26–27, 2008, March 18–19, 2008, May 8–9, 2008, June 17–18, 2008, September 8–9, 2008, November 14–15, 2008, December 11–12, 2008, January 6–7, 2009, February 3, 2009, and February 26, 2009. The Committee established seven subcommittees that undertook aspects of the Committee's work. These subcommittees included: Agenda Planning; Natural Resources; Permits,

Passes, and Fees; Routes and Areas; Socio-Economic Analysis; Vehicle Characteristics and Operations; and Village Closures. There also were a number of informal workgroups.

As required by Section 556 (g) of the *Negotiated Rulemaking Act* and the *Federal Advisory Committee Act*, 5 USC Appendix 2, documents, which were made available to or prepared for or by the Committee, and meeting summaries containing the required information were maintained by the Cape Hatteras National Seashore Superintendent, as the Designated Federal Official, and made available for public inspection.

At the February 3, 2009, meeting, the Committee charged an Integration Group to develop a single proposal recommendation to the Committee for discussion at the final meeting. The Integration Group met in person February 11–13 and 16–17, as well as via conference call on February 23 and 24. The Committee considered the work of the Integration Group in its final meeting and concluded its work on February 26, 2009. The Committee's work product can be found on the internet at: <http://parkplanning.nps.gov/parkHome.cfm?parkId=358>.

The Committee did not reach consensus on the concepts and language to be used as the basis for a proposed special regulation governing ORV use at the Seashore as contemplated by the Committee's Charter. The Committee in its Final Groundrules had defined consensus as unanimous concurrence of the principals, or in the absence of the principal, his or her alternate. As requested by the NPS and Committee members, the Committee discussed in detail, such issues as (1) access to beach areas for commercial fishing and recreational activities; (2) providing for a variety of visitor experiences on the seashore, including both ORV and non-ORV experiences; (3) public safety; and (4) protection of the beach environment and the associated plant and wildlife resources. The Committee gathered extensive information and data on key issues, deliberated about key subjects related to a proposed regulation, reviewed and discussed the NPS draft proposed NEPA ORV Management Alternatives (November 5, 2008) and developed numerous ideas and options for addressing the key issues.

After the final meeting, the facilitators submitted a report to the NPS pursuant to Section VI (F) of the Committee's final ground rules. The report outlined the Committee's process and the outcome of the Committee's work, and provided information, recommendations, and materials submitted by one or more Committee members as an addendum. As provided in Section 556(f) of the *Negotiated Rulemaking Act*, all Committee members were given the opportunity to submit information, recommendations, and materials along with the report. The final report, dated March 30, 2009, included six addenda and was 1,654 pages long.

## **PUBLIC REVIEW OF THE DRAFT PLAN/EIS**

The NPS notice of availability for the draft plan/EIS was published in the *Federal Register* on March 5, 2010. The draft plan/EIS was posted online at the NPS PEPC website at <http://parkplanning.nps.gov/caha> on March 5, 2010. The U.S. Environmental Protection Agency (EPA) notice of availability for the draft plan/EIS was published on March 12, 2010, which opened the public comment period and established the closing date of May 11, 2010, for comments. This public comment period was also announced on the Seashore's website ([www.nps.gov/caha](http://www.nps.gov/caha)); through mailings sent to interested parties, elected officials, and appropriate local and state agencies; and through a press release. In addition to the NPS PEPC website, the draft plan/EIS was made available at local libraries and on CD or hardcopy by contacting the Seashore Superintendent. After reviewing the draft plan/EIS, the public was encouraged to submit their comments electronically through the NPS PEPC website, to submit hard-copy written comments via the U.S. Postal Service or other mail delivery service, or to hand-deliver hard-copy written comments directly to the Seashore. Five public meetings were held in April 2010 to present the draft plan/EIS and facilitate public

involvement and gather community feedback on the draft plan/EIS for ORV management at Cape Hatteras National Seashore. The meetings took place at the following times and locations:

- April 26, 2010, from 9:00 a.m. to 11:00 a.m. at the Ocracoke School in Ocracoke, North Carolina
- April 26, 2010, from 5:00 p.m. to 8:00 p.m. at the Cape Hatteras Secondary School in Buxton, North Carolina
- April 27, 2010, from 6:00 p.m. to 8:00 p.m. at the Wright Brothers National Memorial First Flight Centennial Pavilion, Kill Devil Hills, North Carolina
- April 28, 2010, from 6:00 p.m. to 8:00 p.m. at the McKimmon Conference & Training Center, Raleigh, North Carolina
- April 29, 2010, from 6:00 p.m. to 8:00 p.m. at the Holiday Inn & Conference Center, Hampton, Virginia

These meetings were announced to the public and numerous media outlets on March 24, 2010, through a park press release and through the NPS PEPC website.

Some individuals attended more than one meeting. The meetings began with a brief presentation by the Superintendent, explaining the project background and NEPA timeline. The presentation was followed by a hearing-style meeting where attendees could provide oral statements to the Superintendent. Those attending the meeting were also given a public meeting informational handout about the ground rules for the public meeting and a newsletter, which provided additional details about the draft plan/EIS, and described opportunities for commenting on the project, including directing comments to the NPS PEPC website at <http://parkplanning.nps.gov/caha>.

During the comment period for the draft plan/EIS, over 1,500 pieces of correspondence were received, as provided for in the notice of availability, including individual letters delivered via mail delivery service, oral comments or statements submitted at the public meetings, and electronic correspondences entered directly into the PEPC system. Comments received from the public meetings and all letters delivered individually through the mail or in person were entered into the PEPC system for analysis.

Once the correspondences were entered into PEPC, each was read and specific comments within each correspondence were identified. Over 50,000 individual comments were derived from the correspondences received. During coding, comments were classified as substantive or non-substantive. A substantive comment is defined in the NPS Director's Order 12 Handbook as one that does one or more of the following (NPS 2001a, Section 4.6A):

- Question, with reasonable basis, the accuracy of information presented in the EIS;
- Question, with reasonable basis, the adequacy of the environmental analysis;
- Present reasonable alternatives other than those presented in the EIS; and/or
- Cause changes or revisions in the proposal.

As further stated in the Director's Order 12 Handbook, substantive comments "raise, debate, or question a point of fact or policy. Comments in favor of or against the proposed action or alternatives, or comments that only agree or disagree with NPS policy, are not considered substantive." Non-substantive comments offer opinions or provide information not directly related to the issues or impact analysis. Non-substantive comments were acknowledged and considered by the NPS, but did not require responses. Substantive comments were grouped into issues and "concern statements" prepared for responses. Members of the

NPS planning team responded to the concern statements, and these responses are included in “Appendix C: Concern Response Report.” Though not required, NPS also prepared responses to some non-substantive comments where NPS believed such responses would provide helpful information to the public. These responses are also included in “Appendix C: Concern Response Report.”

The electronic version of the final plan/EIS will be posted on the NPS PEPC website (<http://parkplanning.nps.gov/caha>) and copies distributed to agencies, organizations, elected officials, and other entities or individuals who requested a copy. The publication of the EPA notice of availability of this final EIS in the *Federal Register* will initiate a 30-day wait period before the Record of Decision documenting the selection of an alternative to be implemented is signed. After the NPS publishes a notice in the *Federal Register* announcing the availability of the signed Record of Decision implementation of the alternative selected in the Record of Decision can begin.

## **OTHER CONSULTATION**

Coordination and consultation efforts for this planning process focused on the means or processes to be used to include the public, major interest groups, and local public entities. Coordination with state, local and federal agencies, tribal government, and various interest groups was conducted during the NEPA process to identify issues and/or concerns related to ORV and protected species management within the Cape Hatteras National Seashore. Correspondence from state, local and federal agencies is provided in appendix D.

### **Federal – U.S. Fish and Wildlife Service**

The USFWS prepared a Biological Opinion on August 14, 2006, in response to the Interim Protected Species Management Strategy and amended the biological opinion on April 24, 2007, and again on March 28, 2008, in response to the Consent Decree. Additional USFWS consultation on the Interim Strategy has occurred annually in 2007 through the 2009 breeding season during the course of the ORV management plan/EIS process. During informal consultation on the plan/EIS, the USFWS and NPS agreed that the plan/EIS would contain the appropriate information to also serve as the Biological Assessment for the preferred alternative. A biological assessment is required for federal agencies to determine whether their actions may affect listed or proposed listed species and designated and proposed critical habitat. The biological assessment documents an agency’s conclusions and rationale to support those conclusions regarding the effects of their proposed actions on protected resources. As stated in chapter 4, for this planning process the plan/EIS is also the Biological Assessment. On February 17, 2010, the NPS sent the USFWS a letter requesting consultation on the preferred alternative. A second letter was sent to the USFWS from NPS on October 14, 2010, to inform the USFWS of the revisions made to the preferred alternative (alternative F) in response to public and agency comments on the draft plan/EIS and to ask for consultation on these revisions. These correspondences are provided in appendix D. In response to the request for consultation from the NPS, the USFWS will issue a Biological Opinion. When available, the Biological Opinion will be posted on the NPS PEPC website at <http://parkplanning.nps.gov/caha>. After receiving the Biological Opinion, the NPS will make a final decision on the alternative to be implemented and sign a Record of Decision documenting the NPS decision.

### **Federal – U.S. Environmental Protection Agency**

On May 10, 2010 the NPS received the EPA’s comments on the draft plan/EIS. The EPA rated the draft plan/EIS EC-2 (Environmental Concerns). EPA expressed concerns that as described in the draft plan/EIS alternative F, the NPS preferred alternative, would designate the second-highest amount of shoreline miles for ORV use and would include the greatest number of new (or relocated) access ramps, parking areas, and new roads and trails among the action alternatives; would allow for greater flexibility in the



establishment and enforcement of buffer zones during the breeding season and night-time driving restrictions; and would have higher carrying capacities in certain areas than other alternatives. EPA recommended NPS reconsider alternative D, or if the impacts of implementing alternative D are considered significantly adverse on ORV users and socioeconomic factors, then EPA recommended implementation of alternative C or some other hybrid alternative. In response, in part to EPA's comments, NPS has modified alternative F to incorporate some of the elements of alternatives C and D for carrying capacity, beach parking, the 7:00 a.m. opening time for ORV routes during sea turtle nesting season, an increased number of miles of ocean beach closed year-round to ORV of about 26 miles (between the approximately 13 miles under alternative C and the approximately 40 miles under alternative D), and a decreased number of new access ramps.

#### **State – North Carolina Department of Cultural Resources, State Historic Preservation Officer**

On March 4, 2010, the NPS sent a letter to the North Carolina Department of Cultural Resources, State Historic Preservation Officer (NCDCCR/SHPO) requesting concurrence that no historic properties would be affected by the proposed action. On April 6, 2010, the NCDCCR/SHPO replied that they conducted a review of the project and were not aware of any historic resources that would be affected by the project.

#### **State – North Carolina Department of Environment and Natural Resources, Division of Coastal Management**

The North Carolina Department of Environment and Natural Resources (NCDENR), Division of Coastal Management responded to the NPS's request for a consistency determination on March 12, 2010, stating that the draft plan/EIS had been distributed to state agencies and would require a 60-day period to determine if they would concur or object to the consistency determination provided. On May 7, 2010, the Division of Coastal Management responded that no comments asserting that the proposed activity would be inconsistent with the state's coastal management program were received, but that the Division of Marine Fisheries did express concern with Hatteras Inlet Spit and North Ocracoke spit being closed to ORV use. Their letter further stated that the proposed federal activity is consistent, to the maximum extent practicable, with the relevant enforceable policies of North Carolina's coastal management program.

#### **State – North Carolina Department of Administration, State Environmental Review Clearinghouse**

On May 11, 2010, the North Carolina Department of Administration, State Environmental Review Clearinghouse provided the responses from the remainder of the NC State agencies. The NCDENR Division of Marine Fisheries (DMF) responded and stated their support for parts of alternative F. The DMF expressed concern regarding access under this alternative and stated their support for comments by the Wildlife Resources Commission for modified buffers and alternatives to permanent closures in order to provide more fair and open access. Additionally, the DMF specifically expressed concern over the non-ORV designation of Hatteras Inlet, North Ocracoke, and Oregon Inlet Spits, Cape Point, South Beach, and the South Point on Ocracoke.

The NCDENR Natural Heritage Program responded with support for alternative D or alternative F, citing that the program supports the protection of significant resources under either alternative.

The NCDENR Division of Water Quality responded and concurred that the plan/EIS would not have direct impacts on wetlands or surface waters from beach traffic, but recommended that access roads on the sound side be improved to allow reasonable access during high water to help reduce existing impacts to wetlands from OVR traffic or to close this area until vegetation can be reestablished.

The North Carolina Wildlife Resources Commission (NCWRC) responded and generally supported alternative F but included several suggestions for modifying the alternative. The NCWRC recommended that the NPS not manage state-listed species of special concern similarly to federally listed species to the greatest extent possible as provided by the NPS *Management Policies 2006*, but instead consult with WRC biologists to understand specific monitoring and other conservation actions warranted by state listing. Additionally, the NCWRC recommended the NPS examine the applicability of allowing drive-through corridors (no pedestrian access) within SMA closure areas when a resource closure eliminates ORV access to a segment of beach not otherwise subject to closure and having no other public access. The NCWRC requested that only ML1 buffer distances be used for shorebird/waterbird protection. The NCWRC also requested that the NPS evaluate the applicability of sea turtle nest relocation criteria and recommended incorporating corrected values in the final EIS figure 13 for sea turtle data that were developed by NCWRC biologists working with the Seashore biologists. Finally, the NCWRC recommended removing colonial nesting birds as species requiring monitoring in the nonbreeding season because they do not depend on the land portion of the Seashore during this time for foraging, and instead surveying for the many other nonbreeding shorebirds that depend on the Seashore for foraging. The NCWRC also recommended the NPS use International Shorebird Survey (ISS) protocol for shorebird counts and that the NPS continue to enhance coordination with federal, state, local, and nongovernmental partners.

### **Tribal – Tuscarora Nation**

On August 27, 2010, the NPS sent a letter to the Tuscarora Nation requesting information on any historic properties of religious or cultural significance to the tribe. The Tuscarora Nation has not informed the Seashore of any such properties.

## **LIST OF RECIPIENTS**

This final plan/EIS has been posted on the PEPC website, <http://parkplanning/nps/gov/caha> and was sent to the agencies, organizations, and elected officials listed below. It was also mailed to other entities and individuals who requested a copy.

## **CONGRESSIONAL DELEGATES**

Kay R. Hagan, Senator  
 Richard Burr, Senator  
 Walter B. Jones, 3<sup>rd</sup> District Representative

## **FEDERAL DEPARTMENTS AND AGENCIES**

Advisory Council on Historic Preservation  
 NOAA National Marine Fisheries Service  
 U.S. Army Corps of Engineers, Wilmington District  
 U.S. Coast Guard  
 U.S. Fish and Wildlife Service, Ecological Services, Raleigh Field Office  
 U.S. Fish and Wildlife Service, Pea Island National Wildlife Refuge  
 U.S. Geological Survey, Biological Resources Division  
 U.S. Department of Transportation – Federal Highways Administration  
 U.S. Environmental Protection Agency  
 Federal Emergency Management Agency – Natural Hazards Branch

## STATE OF NORTH CAROLINA GOVERNMENT

Bev Perdue, Governor of North Carolina  
 Marc Basnight, 1st District Senator, President Pro Tempore  
 Timothy Spear, 2nd District Representative  
 North Carolina Department of Environment and Natural Resources

- Division of Coastal Management
- Coastal Resources Commission
- Division of Marine Fisheries

North Carolina Natural Heritage Program  
 North Carolina Department of Transportation  
 North Carolina State Highway Patrol  
 North Carolina State Historic Preservation Officer  
 North Carolina Wildlife Resources Commission

## LOCAL GOVERNMENTS

Dare County Board of Commissioners

- Warren Judge, Chairman
- Allen Burrus, Vice Chair
- Max Dutton
- Mike Johnson
- Richard Johnson
- Jack Shea
- Virginia Tillett

Hyde County Board of Commissioners

- Geo. Thomas Davis Jr., Chairman
- Sharon P. Spencer
- Eugene Ballance
- H. Anson Byrd
- Barry Swindell

## OTHER ORGANIZATIONS

American Bird Conservancy  
 American Sportfishing Association  
 Ascutney Mountain Audubon Society  
 Avon Property Owners Association  
 Bayside Anglers Group  
 Boyette House Condominium Association  
 Cape Hatteras Access Preservation Alliance  
 Cape Hatteras Anglers Club  
 Cape Hatteras Bird Club  
 Cape Hatteras Business Allies  
 Cape Hatteras Recreational Alliance  
 Center for Biological Diversity  
 Chicamacomico Banks Fire & Rescue  
 Coalition of National Park Service Retirees  
 Coastal Conservation Association of North Carolina  
 Coastal Fisheries Reform Group  
 Conservation International  
 Defenders of Wildlife  
 Delaware Valley Ornithological Club  
 Delmarva Ornithological Society

Disability Rights North Carolina  
 Durant Station Condominium Association  
 Eastern Surfing Association  
 Environmental Defense  
 Flowers Ridge Homeowners Association  
 Forest Hills Baptist Men  
 Greater Kinnakeet Shores Homeowners, Inc.  
 Hatteras Island Homeowners Coalition  
 Hatteras Landing Homeowners Association  
 Hatteras Village Civic Association  
 High Country Audubon Society  
 Hyde County Chamber of Commerce  
 Jersey Devil's Fishing Club  
 Kinnakeet Civic Association  
 National Multiple Sclerosis Society  
 National Parks Conservation Association  
 Natural Resources Defense Council  
 New Jersey Beach Buggy Association  
 North Carolina Audubon  
 North Carolina Beach Buggy Association  
 North Carolina Coastal Federation

## Chapter 5: Consultation and Coordination

North Carolina Watermen United  
Ocracoke Civic and Business Association  
Oklahoma Native Plant Society  
Ontario Kiteboarding Association  
Orange County Land Trust  
Outer Banks Association of Realtors  
Outer Banks Chamber of Commerce  
Outer Banks Preservation Association  
Outer Banks Visitor Bureau  
Raleigh Salt Water Sportfishing Club  
Recreational Fishing Alliance  
Republican Party in Dare County  
Rodanthe/Waves/Salvo Civic Association  
Sacharuna Foundation  
Saintsalive Ministries  
Salem Audubon Society  
Saving Birds Thru Habitat

Sierra Club, North Carolina Chapter  
Southern Environmental Law Center  
Southland Trade Corporation  
Surf Riders Association  
Surfrider Foundation, Outer Banks Chapter  
The Nature Conservancy  
The Wilderness Society  
United Four Wheel Drive Association  
United Mobile Sportfishermen  
Ventura County Axle Snappers 4 Wheel Drive  
Club  
Virginia Coastal Access Now  
Watersports Industry Association  
Wildlands CPR

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## GLOSSARY

**Abundance**—An ecological concept referring to the relative representation of a species in a particular ecosystem. It is usually measured as the large number of individuals found per sample. How species abundances are distributed within an ecosystem is referred to as relative species abundances.

**Accretion**—The process where coastal sediments return to the visible portion of the beach following storm erosion.

**Action**—Any federal activity including, but not limited to, acquiring, managing, and disposing of federal lands and facilities; facilitating human occupation or visitation; providing federally undertaken, financed, or assisted construction and improvements; and conducting federal activities and programs affecting land use, including, but not limited to, water and related land resources planning, and regulating and licensing activities.

**Adaptive management**—A system of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or to re-evaluate the outcomes. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain and is the preferred method of management in these cases (source: Departmental Manual 516 DM 4.16).

**Adult**—An organism that is fully grown or developed and capable of sexual reproduction.

**Affected Environment**—Existing natural, cultural, and social conditions of an area that are subject to change, both directly and indirectly, as a result of a proposed human action.

**Alternate (ORV) route**—A route that uses another ramp or an existing interdunal route or NC-12 to provide ORV access to an area by serving as a detour around a closed area.

**Alternative, No-Action**—An alternative that maintains established trends or management direction.

**Anecdotal**—Based on or consisting of reports or observations of usually unscientific observers.

**Appropriate use**—A use that is suitable, proper, or fitting for a particular park, or to a particular location within a park.

**Archeological resource**—Any material remains or physical evidence of past human life or activities which are of archeological interest, including the record of the effects of human activities on the environment. An archeological resource is capable of revealing scientific or humanistic information through archeological research.

**Arthropod**—An invertebrate that has an exoskeleton (external skeleton), a segmented body, and jointed attachments called appendages.

**Anthropogenic**—Resulting from the influence or actions of human beings.

**Artificial lighting**—Light sources produced by humans.

**Backshore**—The part of an ocean beach between the spring high water level and the primary dune line.

**Benthic**—The bottom, or relating to the bottom of the ocean or other body of water.

**Berm**—As used in this document refers to remnants of the man-made dune or dune ridge originally constructed in the 1930s by the Civilian Conservation Corps and the Works Progress Administration. NPS actively maintained this dune ridge until the early 1970s when NPS ended the dune stabilization policy after scientists concluded that the man-made berms constructed since the 1930s had actually served to foreshorten the seashore's beaches and dramatically altered both the ecological and the topographical characteristics of the Outer Banks (NPS 2007f). "Berm" includes the man-made dune or dune ridge constructed to protect state highway NC-12 and interior sections of the island from ocean flooding and overwash during storms.

**Best management practices**—Practices that apply the most current means and technologies available to not only comply with mandatory environmental regulations, but also maintain a superior level of environmental performance. See also, "sustainable practices/principles."

**Biosphere Reserves**—Found in different countries across all the regions of the world. Biosphere reserves are protected areas that are meant to demonstrate a balanced relationship between man and nature.

**Bird nesting**—The act of building a structure by a bird for laying eggs and sheltering its young.

**Bivalves**—A shell consisting of two rounded plates called *valves* joined at one edge by a flexible ligament called the *hinge*. The shell is typically bilaterally symmetrical, with the hinge lying in the sagittal plane.

**Breeding activity**—See Breeding behavior.

**Breeding areas**—Those areas that support the full suite of avian breeding activities including, courtship, territorial defense, copulation, scraping and nest building, egg laying and incubation, chick rearing and associated foraging.

**Breeding behavior**—Shorebird behavior that includes, but is not limited to, courtship, mating, scraping, confirmed scrapes, and other breeding or nest-building activities. The terms breeding behavior and breeding activity are used synonymously.

**Breeding habitat**—Habitat(s) that host the birds during territorial displaying, courtship and mating, scraping, nesting, incubation, brooding and chick foraging.

**Breeding Shorebird and Seabeach Amaranth SMA**—Area of suitable breeding habitat that has had multiple nests of individuals and/or multiple species of protected shorebirds, or concentrations of seabeach amaranth specimens, in more than 1 (i.e., 2 or more) of the past 5 years and is managed to minimize human disturbance during the breeding season. Focal species for Breeding Shorebird SMAs include piping plover, Wilson's plover, American oystercatcher, least tern, common tern, gull-billed tern, and black skimmer; however, there will be ongoing evaluation of the breeding shorebird species addressed by this plan, as part of the periodic review process.

**Brood**—The offspring, as of an animal or a bird, that are the result of one breeding season.

**Buffer**—A protective area or distance surrounding a sensitive resource that limits visitor access.

**Bypass**—A temporary route established by the park in accordance with the bypass criteria to provide ORV access during short periods of time.

**Camouflaged**—A method of cryptic or concealing coloration that allows an otherwise visible organism or object to remain indiscernible from the surrounding environment through deception.

**Canid**—The biological family of carnivorous and omnivorous mammals that includes the wolves, foxes, jackals, coyotes, and the domestic dog.

**Carrying capacity**—The maximum population of a particular species that a particular region can support without hindering future generations' ability to maintain the same population. A visitor, or user, carrying capacity is the type and level of use that can be accommodated while sustaining the desired resource and visitor experience conditions.

**Civic engagement**—Continuous, dynamic conversation with the public on many levels that reinforces the commitment of both the National Park Service and the public to the preservation of heritage resources, both cultural and natural, and strengthens public understanding of the full meaning and contemporary relevance of these resources. The foundation of civic engagement is a commitment to building and sustaining relationships with neighbors and communities of interest.

**Closure**—An area delineated by posts with string between them (symbolic fencing), prohibiting vehicle and/or pedestrian access.

**Coastal High Hazard Area (V Zone)**—The Special Flood Hazard Area that extends from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action. The area is designated on the FIRM as Zone VE.

**Cobble substrates**—A substrate where the majority of the material is between 2.5 and 10 inches in diameter.

**Compaction**—The process by which a sediment progressively loses its porosity due to the effects of loading. This forms part of the process of lithification. When a layer of sediment is originally deposited, it contains an open framework of particles with the pore space being usually filled with water. As more sediment is deposited above the layer, the effect of the increased loading is to increase the particle-to-particle stresses resulting in porosity reduction primarily through a more efficient packing of the particles and to a lesser extent through elastic compression and pressure solution.

**Compendium**—The Superintendent's Compendium is a document, updated yearly, that provides a list the special designations, closures, public use limits, permit requirements and other restrictions under the discretionary authority of the Superintendent within a park unit, as provided for in 36 CFR § 1.7 (b).

**Consensus**—Unanimous or general agreement; and secondly group solidarity of belief or sentiment. Within the context of the Cape Hatteras National Seashore Negotiated Rulemaking Advisory Committee, the Committee defined "consensus" as unanimous concurrence of the principals (members), or in the absence of the principal, his or her alternate. Members may also "abstain" or "stand aside" and not offer their consent, but refrain from blocking agreement and will thus also refrain from future negative comment or action on the consensus. Abstaining/standing aside members shall not be counted in determining if consensus has been reached.

**Consent Decree**—A judicial decree that sanctions a voluntary agreement between parties in dispute.

**Conserve**—To protect from loss or harm; preserve. Historically, the terms conserve, protect, and preserve have come collectively to embody the fundamental purpose of the NPS—preserving, protecting and conserving the national park system.

**Contemporaneous**—The historical timeframe that are immediately relevant to the present and is a certain perspective of modern history.

**Corridor** see **ORV Corridor; Pedestrian Corridor**

**Council on Environmental Quality (CEQ)**—Established by Congress within the Executive Office of the President with passage of the *National Environmental Policy Act of 1969*. CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

**Crawl**—Tracks and other signs left on a beach by a sea turtle (FWC 2002).

**Cultural resource**—An aspect of a cultural system that is valued by or significantly representative of a culture, or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places, and as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources for NPS management purposes.

**Cumulative impacts**—Under NEPA regulations, the incremental environmental impact or effect of an action together with the effects of past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR 1508.7).

**Dearth**—A lack, shortage or scarcity.

**Decapods**—Invertebrate animals of the order Crustacea which have five pairs of legs and includes the shrimps, lobsters, crabs, etc.

**Decibel (dBA)**—A unit of measure of sound intensity.

**Denudation**—A geologic term that indicates the process by which the removal of material, through means of erosion and weathering, leads to a reduction of elevation and relief in landforms and landscapes. Exogenic processes, including the action of water, ice, and wind, predominantly involve denudation. Denudation can involve the removal of both solid particles and dissolved material. Both mechanical and chemical weathering occurs in relation to geomorphological landforms. At present the most significant processes leading to denudation include deforestation (including slash-and-burn practices of local peoples), overgrazing and certain forms of intensive farming which lead to large scale erosion. This phenomenon takes place generally by regional uplift by tectonic movement.

**Derogation**—See “impairment.”

**Desiccation**—The state of extreme dryness, or the process of extreme drying.

**Desired future conditions**—A park’s natural and cultural resource conditions that the NPS aspires to achieve and maintain over time, and the conditions necessary for visitors to understand, enjoy, and appreciate those resources. These conditions are identified through a park’s planning process.

**Detritus**—A *non*-living particulate organic material (as opposed to dissolved organic material). It typically includes the bodies or fragments of dead organisms as well as fecal material. Detritus is typically colonized by communities of microorganisms which act to decompose (or remineralize) the material.

**Dredging**—An excavation activity or operation usually carried out at least partly underwater, in shallow seas or fresh water areas with the purpose of gathering up bottom sediments and disposing of them at a different location.

**Dune**—A mound or ridge of sand or other loose sediment formed by the wind along the sea coast. The majority of dunes at the Seashore are man-made.

**Ecology**—The interdisciplinary scientific study of the interactions between organisms and the interactions of these organisms with their environment.

**Ecosystem**—A natural unit consisting of all plants, animals and micro-organisms (biotic factors) in an area functioning together with all of the physical (abiotic) factors of the environment, considered as a unit. Ecosystems can be permanent or temporary. An ecosystem is a unit of interdependent organisms which share the same habitat. Ecosystems usually form a number of food webs.

**Emergence**—The way complex systems and patterns arise out of a multiplicity of relatively simple interactions.

**Enabling Legislation**—National Park Service legislation that established a particular unit of the national Park System and set forth the legal parameters by which the respective park may operate.

**Endangered species**—“...any species (including subspecies or qualifying distinct population segment) that is in danger of extinction throughout all or a significant portion of its range (ESA Section 3(6)).” The lead federal agency, U.S. Fish and Wildlife Service, for the listing of a species as endangered is responsible for reviewing the status of the species on a five-year basis.

**Endangered Species Act (ESA) (16 USC 1531 et seq.)**—An act to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide a program for the conservation of such endangered species and threatened species.

**Environmental assessment (EA)**—An environmental analysis prepared pursuant to the *National Environmental Policy Act* to determine whether a Federal action would significantly affect the environment and thus require a more detailed environmental impact statement (EIS).

**Environmental impact statement (EIS)**—A detailed NEPA analysis document that is prepared, with extensive public involvement, when a proposed action or alternatives have the potential for significant impact on the human environment. An EIS must meet the requirements of NEPA, CEQ, and the directives of the agency responsible for the proposed project or action.

**Ephemeral pools**—Temporary pools of water. They are usually devoid of fish, and thus allow the safe development of natal amphibian and insect species.

**Erosion**—Removal of surface material from the earth’s crust, primarily soil and rock debris, and the transportation of the eroded materials by natural agencies from the point of removal.

**Escarpment**—A transition zone between different physiogeographic provinces that involves a sharp, steep elevation differential, characterized by a cliff or steep slope. Usually *escarpment* is used interchangeably with scarp. A transition from one series of sedimentary rocks to another series of a different age and composition. When sedimentary beds are tilted and exposed to the surface, erosion and weathering may occur differentially based on the composition. Less resistant rocks will erode faster, retreating until the point they are overlain by more resistant rock.

**Essential vehicle**—Vehicles used by the National Park Service, or its agents, to conduct authorized administrative activities, such as resources management, law enforcement or other park operations, related to implementation of this plan or other applicable management plan(s) or permit(s), or as needed to respond to emergency operations involving threats to life, property, or park resources, within areas that are otherwise closed to recreational ORV or visitor use.

**Estuarine**—Referring to the area where a water passage where the tide meets a river current; especially an arm of the sea at the lower end of a river.

**Ethnographic**—A methodological strategy used to provide descriptions of human societies, which as a methodology does not prescribe any particular method (e.g., observation, interview, questionnaire), but instead prescribes the nature of the study (i.e., to describe people through writing). In the biological sciences, this type of study might be called a “field study” or a “case report,” both of which are used as common synonyms for “ethnography.”

**Ethnographic resources**—Objects and places, including sites, structures, landscapes, and natural resources, with traditional cultural meaning and value to associated peoples. Research and consultation with associated people identifies and explains the places and things they find culturally meaningful. Ethnographic resources eligible for the National Register of Historic Places are called traditional cultural properties.

**Exclosure**—An enclosed area for protection or shelter from predatory animals.

**Executive Order**—Official proclamation issued by the President that may set forth policy or direction or establish specific duties for federal agencies in connection with the execution of federal laws and programs.

**Extirpate**—To destroy the whole of; exterminate.

**False crawl**—An aborted nesting attempt (emergence onto a beach by a sea turtle). A more correct term is “non-nesting emergence.”

**Fauna**—All of the animal life of any particular region or time.

**Feral**—An organism that has escaped from domestication and returned, partly or wholly, to a wild state.

**Fledge**—To bring up a young bird (chick) until it is able to fly. A *fledgling* is a young bird whose feathers and wing muscles are sufficiently developed for sustained flight.

**Floodplain**—Any land area susceptible to inundation by floodwaters from any source.

**Flora**—The first meaning, flora of an area or of time period, refers to all plant life occurring in an area or time period, especially the naturally occurring or indigenous plant life. The second meaning refers to a *book or other work* which describes the plant species occurring in an area or time period, with the aim of allowing identification.

**Foreshore**—The area that is exposed to the air at low tide and underwater at high tide (for example, the area between tide marks). This area can include many different types of habitats, including steep rocky cliffs, sandy beaches, or wetlands (e.g., vast mudflats). The area can be a narrow strip, as in Pacific islands that have only a narrow tidal range, or can include many meters of shoreline where shallow beach slope interacts with high tidal excursion.

**Geohazards**—This definition implies that geohazards are widespread phenomena that are related to geological and environmental conditions and involve long-term and/or short-term geological processes. Geohazards can thus be relatively small features, but they can also attain huge dimensions (e.g., submarine or surface landslide) and affect local and regional socio-economy (e.g., tsunamis) to a large extent. In addition, human activities - for example drilling through geohazards like overpressured zones - could result in significant risk, and as such mitigation and prevention are paramount, through improved understanding of geohazards, their preconditions, causes and implications. In other cases, particularly in montane regions, natural processes can cause catalytic events of a complex nature, such as an avalanche hitting a lake causes a debris flow, with consequences potentially hundreds of miles away, or a lahar released by volcanism.

**Germination**—The process in which a seed or spore emerges from a period of dormancy. The most common example of germination is the sprouting of a seedling from a seed of an angiosperm or gymnosperm.

**Hatchlings**—A young bird or turtle that has recently emerged from its egg.

**Historic breeding area**—Areas used within the last 10 breeding seasons.

**Hopper dredging**—A self-propelled dredge having compartments in which the dredged material can be carried and dumped through hoppers.

**Human disturbance**—Any human activity that changes the contemporaneous behavior of one or more individuals of breeding, nesting, foraging, or roosting colonial waterbirds, piping plover, Wilson's plover, or American oystercatcher. Behaviors indicating disturbance include defensive displays; alarm calls; flushing or leaving a nest or feeding area; and diving or mobbing pedestrians, dogs, or vehicles.

**Hydrology**—The study of the movement, distribution, and quality of water throughout earth, and thus addresses both the hydrologic cycle and water resources.

**Impairment**—An impact that, in the professional judgment of a responsible NPS manager, would harm the integrity of park resources or values and violate the 1916 NPS *Organic Act* mandate that park resources and values remain unimpaired.

**IMPLAN**—An economic impact assessment modeling system that allows the user to build economic models to estimate the impacts of economic changes.

**Incidental take**—Take of listed fish or wildlife species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a federal agency or applicant (50 CFR 402.02).

**Inlet**—A narrow body of water between islands or leading inland from a larger body of water, often leading to an enclosed body of water, such as a sound, bay, lagoon or marsh. In sea coasts an inlet usually refers to the actual connection between a bay and the ocean and is often called an "entrance" or a recession in the shore of a sea, lake or river. A certain kind of inlet created by glaciation is a fjord, typically but not always in mountainous coastlines and also in montane lakes.

**Interdune blowout**—Refers to the wind-swept, flat areas that lie between primary and secondary coastal dune systems.

**Intertidal**—The area that is exposed to the air at low tide and underwater at high tide (for example, the area between tide marks). This area can include many different types of habitats, including steep rocky cliffs, sandy beaches, or wetlands (e.g., vast mudflats).

**Intertidal zone**—(Also known as the foreshore and sometimes referred to as the littoral zone). The area that is exposed to the air at low tide and underwater at high tide (for example, the area between tide marks). This area can include many different types of habitats, including steep rocky cliffs, sandy beaches, or wetlands (e.g., vast mudflats). The area can be a narrow strip, as in Pacific islands that have only a narrow tidal range, or can include many meters of shoreline where shallow beach slope interacts with high tidal excursion.

**Lightscape management (natural ambient)**—The effective use of good design to appropriately light areas and minimize or eliminate light clutter, the spillover of light into areas where light is not wanted, and light pollution, all of which wastes energy and impacts park visitors, neighbors and resources.

**Logarithmic Scale**—A scale of measurement that uses the logarithm of a physical quantity instead of the quantity itself.

**Misorientation**—Orientation in the wrong direction. For hatchling sea turtles on the beach, travel in any direction other than the general vicinity of the ocean.

**Mitigation**—“Mitigation,” is defined in NPS Director’s Order 12 as a modification of the proposal or alternative that lessens the intensity of its impact on a particular resource. The definition references 40 CFR 1508.20, which states:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
3. Rectifying the impact of repairing, rehabilitating, or restoring the affected environment.
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
5. Compensating for the impact by replacing or providing substitute resources or environments.

The term “mitigation” is used interchangeably in this plan/EIS with other terms, including “mitigation measure,” “mitigation techniques,” and “mitigation strategies.”

**Mobile (precocial)**—A young bird or turtle hatched or born in an advanced state of development and mobility and able to feed itself almost immediately.

**Morphology**—The form, structure and configuration of an organism.<sup>1</sup> This includes aspects of the outward appearance (shape, structure, color, pattern) as well as the form and structure of the internal parts like bones and organs.

**Mudflats**—Coastal wetlands that form when mud is deposited by tides or rivers. They are found in sheltered areas such as bays, bayous, lagoons, and estuaries. Mudflats may be viewed geologically as exposed layers of bay mud, resulting from deposition of estuarine silts, clays and marine animal detritus.



Most of the sediment within a mudflat is within the intertidal zone, and thus the flat is submerged and exposed approximately twice daily.

Mudflats are typically important regions for wildlife, supporting a large population, although levels of biodiversity are not particularly high. They are often of particular importance to migratory birds. The maintenance of mudflats is important in preventing coastal erosion. However, mudflats worldwide are under threat from predicted sea level rises, land claims for development, dredging due to shipping purposes, and chemical pollution.

**NEPA process**—The objective analysis of a proposed action to determine the degree of its impact on the natural, physical, and human environment; alternatives and mitigation that reduce that impact; and the full and candid presentation of the analysis to, and involvement of, the interested and affected public—as required of federal agencies by the *National Environmental Policy Act of 1969*.

**Nesting crawl**—A crawl resulting from a nesting attempt in which eggs were deposited (FWC 2002).

**Nesting habitat**—Habitat(s) that host the birds during nesting including incubation, brooding and chick foraging.

**Nestling**—A bird that is too young to leave its nest.

**Niche**—A habitat supplying all of the necessary factors for a species existence.

**Nocturnal**—An animal behavior characterized by being active during the night and sleeping during the day.

**Nonessential vehicle**—Vehicles used by those not operating in an official agency capacity including all vehicles that do not meet the definition of an “*essential vehicle*.”

**Off-road vehicle (ORV)**—Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain; except that such term excludes (a) any registered motorboat, (b) any fire, military, emergency or law enforcement vehicle when used for emergency purposes, and any combat or combat support vehicle when used for national defense purposes, and (c) any vehicle whose use contrary to restrictions proposed in this plan is expressly authorized by the Superintendent or the Refuge Manager under a permit, lease, license, or contract.

**Organic Act (NPS)**—The 1916 law (and subsequent amendments) that created the National Park Service and assigned it responsibility to manage the national parks.

**ORV area**—For the purposes of this plan, an *ORV area* is used synonymously with *ORV route* as defined below.

**ORV corridor**—An *ORV corridor* is the actual physical demarcation of the ORV route in the field. The ORV corridor on the ocean beach would be marked by posts seaward of the toe of dune or vegetation line to the high tide line.

**ORV pass-through zone**—An area where an ORV route would be defined to provide access to a specific area. ORV may drive through this zone to reach their destination, but may not stop or disembark passengers within this zone.

**ORV route**—A designated location, typically linear in nature (e.g., from point A to point B), where ORV travel may be authorized by the Superintendent, but which may be temporarily closed to ORV use to protect park resources, provide for visitor safety, or prevent user conflicts.

**Overwash**—Areas where water has run over or crested a berm or other structure that does not flow directly back to the ocean or lake.

**Overwash fan**—A fan-shaped deposit of sand, gravel or cobbles that is deposited from water that has run over or crested a berm or structure that does not flow directly back to the ocean or lake.

**Park**—Any one of the hundreds of areas of land and water administered as part of the national park system. The term is used interchangeably in this document with “unit,” “park unit,” and “park area.” In the context of this plan, “park” is synonymous with “National Seashore” or “Seashore.”

**Pedestrian corridor**—An established/marked area for pedestrian access.

**Periodic review**—A systematic review of data, habitat conditions, and other information to be conducted by NPS every 5 years, after storms or events that Seashore management determines to be a major modification of habitat quantity or quality, or after a significant change in protected species status (e.g., listing or de-listing), in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives. Periodic review could result in changes to the management actions in order to improve effectiveness. When desired future conditions for resources are met or exceeded, periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remained stable. Where progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may result in increased restrictions on recreational use.

**Physiographic**—(also known as geosystems or physiography) is one of the three major subfields of geography, as opposed to the cultural or built environment, the domain of human geography. Within the body of physical geography, the Earth is often split either into several spheres or environments, the main spheres being the atmosphere, biosphere, cryosphere, geosphere, hydrosphere, lithosphere and pedosphere. Research in physical geography is often interdisciplinary and uses the systems approach.

**Plumage**—The layer of feathers that cover a bird and the pattern, color, and arrangement of those feathers. The pattern and colors of plumage vary between species and subspecies and can also vary between different age classes, sexes, and season. Within species there can also be a number of different colour morphs. Differences in plumage are used by ornithologists and birdwatchers in order to distinguish between species and collect other species specific information.

**Poaching**—The illegal hunting, fishing, trapping, or eating of wild plants or animals contrary to local and international conservation and wildlife management laws.

**Pollutants**—The introduction of contaminants into an environment that causes instability, disorder, harm or discomfort to the ecosystem (i.e., physical systems or living organisms). Pollution can take the form of chemical substances, or energy, such as noise, heat, or light. Pollutants, the elements of pollution, can be foreign substances or energies, or naturally occurring; when naturally occurring, they are considered contaminants when they exceed natural levels.

**Potential new habitat**—Habitat recently created, usually by storms (e.g., overwash passes, blowouts, etc.).

**Predation**—Describes a biological interaction where a predator (an organism that is hunting) feeds on its prey, (the organism that is attacked). Predators may or may not kill their prey prior to feeding on them, but the act of predation always results in the death of the prey. The other main category of consumption is detritivory, the consumption of dead organic material. It can at times be difficult to separate the two feeding behaviors, for example where parasitic species prey on a host organism and then lay their eggs on it for their offspring to feed on its decaying corpse. The key characteristic of predation however is the predator's direct impact on the prey population. On the other hand, detritivores simply eat what is available and have no direct impact on the “donor” organism(s).

**Predator**—An organism that hunts and feeds on its prey (the organism that is attacked). Predators may or may not kill their prey prior to feeding on them, but the act of predation always results in the death of the prey.

**Pre nesting closure**—A kind of resource closure in which an area of suitable habitat is proactively closed to ORVs and pedestrians at the start of the shorebird breeding season to provide undisturbed habitat for bird breeding activities to occur.

**Preserve**—To protect from loss or harm; conserve. Historically, the terms preserve, protect and conserve have come collectively to embody the fundamental purpose of the NPS—preserving, protecting and conserving the national park system.

**Recent breeding areas**—Areas used in the last three breeding seasons.

**Research area**—Area of suitable habitat set aside on a temporary or long-term basis (such as a study site or control plot) as part of a research project authorized by NPS under a research permit.

**Resource closure**—Any area posted as closed to all public entry in order to protect wildlife, such as breeding and foraging shorebirds and bird and turtle nests, or vegetation from human disturbance.

**Riparian**—Relating to or living or located on the bank of a natural watercourse (as a river) or sometimes of a lake or a tidewater.

**Roosting**—A resting state or period of relative inactivity employed by birds to save energy and compensate for the high metabolic rates that occur during the active part of the day. Sleeping birds often use a type of sleep known as vigilant sleep, where periods of rest are interspersed with quick eye-opening ‘peeks,’ allowing them to be sensitive to disturbances and enable rapid escape from threats.

**Route** see **ORV route**

**Salinity**—The saltiness or dissolved salt content of a body of water. It is a general term used to describe the levels of different salts such as sodium chloride, magnesium and calcium sulfates, and bicarbonates.

**Scarified**—To break a seed coat through nicking or abrasion.

**Scrapes**—A place where soil has been scraped away, esp. a shallow hollow formed in the ground by a bird during a courtship display or for nesting.

**Sediment**—Any particulate matter that can be transported by fluid flow, and which eventually is deposited. Sediments are most often transported by water (transported by wind) and glaciers. Beach sands and river channel deposits are examples of fluvial transport and deposition, though sediment also often settles out of slow-moving or standing water in lakes and oceans.

**Sheetflow**—Flowing water that is not confined to a channel.

**Socioeconomic**—The study of the relationship between economic activity and social life.

**Soundscape (natural)**— the aggregate of all the natural, nonhuman-caused sounds that occur in parks, together with the physical capacity for transmitting natural sounds.

**Species Management Area (SMA)**—Area of suitable habitat that has had concentrated and recurring use by multiple individuals and/or multiple species of protected shorebirds during the breeding season or nonbreeding season, or concentrations of seabird specimens, in more than one (i.e., two or more) of the past 5 years and is managed to reduce or minimize human disturbance. SMAs are reevaluated and redesignated every 5 years, or after storms or events that Seashore management determines to be a major modification of habitat quantity or quality, as part of the periodic review process.

**Subarctic**—A region in the Northern Hemisphere immediately south of the true Arctic and covering much of Alaska, Canada, southern Greenland, the north of Scandinavia, Siberia, northern Mongolia and the Chinese province of Heilongjiang. Generally, subarctic regions fall between 50°N and 70°N latitude, depending on local climates.

**Substrate**—The earthy material that exists in the bottom of a marine habitat, like dirt, rocks, sand, or gravel.

**Subtropical**—The geographical zone of the Earth immediately north and south of the tropical zone, which is bounded by the Tropic of Cancer and the Tropic of Capricorn, at latitudes 23.5°N and 23.5°S.

**Superintendent**—The senior on-site NPS official in a park. Used interchangeably with “park superintendent,” “park manager,” or “unit manager.”

**Symbolic fencing**—Posts with string tied between them.

**Synonym**—Different words (or sometimes phrases) with identical or very similar meanings. Words that are synonyms are said to be synonymous, and the state of being a synonym is called synonymy.

**Take**—An act that potentially harasses, injures, or kills a protected species (FWC 2002). Take is defined differently depending on the governing legislation (i.e., Title 36 Code of Federal Regulations (CFR), *Endangered Species Act*, *Migratory Bird Treaty Act*).

“Take” as it applies to Title 36 CFR and as stated in 36 CFR 1.4 means to pursue, hunt, harass, harm, shoot, trap, net, capture, collect, kill, wound, or attempt to do any of the above.

“Take” as it applies to the Endangered Species Act and as stated in the Act Section 3.19 means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harass is defined by Fish and Wildlife Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding feeding or sheltering. Harm is further defined by the Fish and Wildlife Service to include significant habitat modification or degradation that results in death to listed species by significantly impairing behavioral patterns such as breeding, feed or sheltering (50 CFR 17.3).

“Take” as it applies to the Migratory Bird Treaty Act and as stated in 50 CFR 10.12, includes pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect. Executive Order 13186 which calls for an MOU that has not been completed by NPS or other land management agencies defines intentional and unintentional take.

**Taxon**—A group of (one or more) organisms, which a taxonomist adjudges to be a unit.

**Telemetry**—A technology that allows remote measurement and reporting of information.

**Thermal**—A column of rising air in the lower altitudes of the earth’s atmosphere. Thermals are created by the uneven heating of the Earth’s surface from solar radiation, and an example of convection. The sun warms the ground, which in turn warms the air directly above it.

**Traditional**—Pertains to recognizable, but not necessarily identical, cultural patterns transmitted by a group across at least two generations. Also applies to sites, structures, objects, landscapes, and natural resources associated with those patterns. Popular synonyms include “ancestral” and “customary.”

**Traditionally associated peoples**—Social/cultural entities such as tribes, communities, and kinship units, as well as park neighbors, traditional residents, and former residents who remain attached to a park area despite having relocated, are “traditionally associated” with a particular park when (1) the entity regards park resources as essential to its development and continued identity as a culturally distinct people; (2) the association has endured for at least two generations (40 years); and (3) the association began prior to establishment of the park.

**Traditional cultural property**—A property associated with cultural practices, beliefs, the sense of purpose, or existence of a living community that is rooted in that community’s history or is important in maintaining its cultural identity and development as an ethnically distinctive people. Traditional cultural properties are ethnographic resources eligible for listing in the National Register of Historic Places.

**Unacceptable impacts**—Impacts that, individually or cumulatively, would

- be inconsistent with a park’s purposes or values, or impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values, or
- unreasonably interfere with
  - park programs or activities, or
  - an appropriate use, or
  - the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park.
  - NPS concessioner or contractor operations or services.

**Vehicle-free area (VFA)** —An area within the Seashore that has not been designated as an ORV route. Nonessential vehicle/ORV use is prohibited in VFAs.

**Viewsheds**—An area of land, water, or other environmental element that is visible to the human eye from a fixed vantage point. The term is used widely in such areas as urban planning, archaeology, and military science. In urban planning, for example, viewsheds tend to be areas of particular scenic or historic value that are deemed worthy of preservation against development or other change. Viewsheds are often spaces that are readily visible from public areas such as from public roadways or public parks. The preservation of viewsheds is frequently a goal in the designation of open space areas, green belts, and community separators.

**Visitor**—Anyone who physically visits a park for recreational, educational or scientific purposes, or who otherwise uses a park's interpretive and educational services, regardless of where such use occurs (e.g., via Internet access, library, etc.).

**Visitor experience**—The perceptions, feelings, and reactions a park visitor has in relationship with the surrounding environment.

**Vulnerable**—A species which is likely to become endangered unless the circumstances threatening its survival and reproduction improve.

**Wetlands**—Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: 1) at least periodically, the land supports predominantly hydrophytes; 2) the substrate is predominantly undrained hydric soil; and 3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year (Classification of Wetlands and Deepwater Habitats of the United States [Cowardin et al. 1979]).

**Wrack line**—Also known as a drift line, it is a line of stranded debris along a beach face marking the point of maximum run-up during a previous high tide.

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National Park Service  
U.S. Department of the Interior



Cape Hatteras National Seashore

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# **LITERATURE REVIEW: IMPACTS AND MANAGEMENT OF OFF-ROAD VEHICLES**

**December 2009**

Prepared in support of the  
Cape Hatteras National Seashore  
Off-Road Vehicle Management Plan / Environmental Impact Statement

0038462

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## INTRODUCTION

Officially authorized in 1937 along the Outer Banks of North Carolina, Cape Hatteras National Seashore (the Seashore) is the nation's first national seashore. Consisting of more than 30,000 acres distributed along approximately 67 miles of shoreline, the Seashore is part of a dynamic barrier island system.

The Seashore serves as a popular recreation destination with more than 2.1 million visitors in 2008 (NPS 2008e), showing an 8-fold increase in visitation since 1955 (NPS 2007f). Seashore visitors participate in a variety of recreational activities, including beach recreation (sunbathing, swimming, shell collecting, etc.), fishing (surf and boat), hiking, hunting, motorized boating, non-motorized boating (sailing, kayaking, canoeing), nature study, photography, off-road vehicle use (beach driving), shellfishing, sightseeing, watersports (surfing, windsurfing, kiteboarding, etc.), and wildlife viewing. Seashore visitors use ORVs for traveling to and from swimming, fishing, and surfing areas, and for pleasure driving.

Current management practices at the Seashore allow ORV users to drive on the beach seaward of the primary dune line, with a 10 meter backshore areas seaward of the primary dune line protected seasonally. Drivers must use designated ramps to cross between the beach and NC-12 which runs behind the primary dune line. In addition to a multitude of visitor opportunities, the Seashore provides a variety of important habitats created by its dynamic environmental processes, including habitats for the federally-listed piping plover; sea turtles, and one listed plant species, the seabeach amaranth. The Seashore contains ecologically important habitats such as marshes, tidal flats, and riparian areas, and hosts various species of concern such as colonial waterbirds (least terns, common terns, and black skimmers), American oystercatcher, and Wilson's plover, all of which are listed by the North Carolina Wildlife Resources Commission (NCWRC) as species of special concern. In addition, the gull-billed tern, also found at the Seashore, is listed by the NCWRC as threatened.

Historically, beach driving at the Seashore was for the purpose of transportation, and not recreation. The paving of NC-12, the completion of the Bonner Bridge connecting Bodie and Hatteras islands in 1963, and the introduction of the State of North Carolina ferry system to Ocracoke Island facilitated visitor access to the sound and ocean beaches. Improved access, increased population, and the popularity of the SUV have resulted in a dramatic increase in vehicle use on Seashore beaches. Motivated in part by a decline in most beach nesting bird populations on the Seashore since the 1990s, in July 2007 the NPS finalized an Interim Protected Species Management Strategy (Interim Strategy) that was to provide resource protection guidance until the long-term ORV management plan and regulation could be completed.

ORV use has increased substantially on public lands nationwide over the last half-century (The Wilderness Society 2006), including at the Seashore. In response to the widespread and rapidly increasing use of ORVs on public lands “often for legitimate purposes but also in frequent conflict with wise land and resource management practices, environmental values, and other types of recreational activity,” Executive Order 11644, *Use of Off-Road Vehicles on the Public Lands*, was issued in 1972 and amended by Executive Order 11989, *Use of Off-Road Vehicles on The Public Lands* in 1977. These executive orders require federal agencies allowing ORVs to designate specific areas and trails on public lands where the use of ORVs is or is not permitted.

In units of the national park system, including the Seashore, the NPS is required to manage according to the NPS *Organic Act*, through which Congress requires the NPS to preserve park resources “unimpaired for the enjoyment of future generations” (16 USC 1). While the Secretary of the Interior has the authority to allow certain activities in park units, those activities must comply with the *General Authorities Act*, which specifies that activities that lead to the “derogation of the values and purposes” of a park unit should not be allowed (16 USC 1a – 2(h))—language that is mirrored in the *Redwoods Act of 1978* (16

USC 1a-1). This congressional emphasis on uses compliant with park values and purposes is further described in NPS management policies and is vital to policy-based decision-making about land use in national park units.

NPS *Management Policies 2006* includes several guidelines that pertain to monitoring certain uses in park units. Consistent with the Congressional acts, the management policies state that the NPS “must ensure that park uses that are allowed would not cause impairment of, or unacceptable impacts to, park resources and values” (NPS 2006: 1.5). Unacceptable impacts are those that, among other things, “unreasonably interfere with park programs or activities, or an appropriate use, or the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park” (NPS 2006: 1.4.7.1). If unacceptable impacts result from any activity, superintendents are required to “engage in a thoughtful, deliberate process to further manage or constrain the use, or discontinue it” (NPS 2006: 1.5).

While access to public lands improves the experience of ORV users, motorized access to sensitive environments, such as coastal ecosystems, can pose a threat to sensitive species that rely on the beach habitat. Other impacts from motorized access to public lands include adverse effects on water quality, adverse effects on vegetation, impacts to cultural resources, detraction from other visitors’ enjoyment of public lands, and creation of law enforcement issues. ORVs can churn up and damage delicate soils (Proescholdt 2007; Ouren et al. 2007; Webb 1982). Air quality can be negatively affected by exhaust fumes, oil, and dust resulting from ORV use (Taylor n.d.; Proescholdt 2007; Ouren et al. 2007). Loud engines in quiet environments can disturb wildlife and affect visitor enjoyment for those who use parks as places of peace and solace (Proescholdt 2007). Park rangers surveyed during a 1999 study reported incidents where ORV use has destroyed or disturbed cultural resources that parks are bound by law to protect (Bluewater Network 1999). While it is unknown how many coastal park units were included in the study, it can be assumed that such issues also occur in coastal units where ORV traffic is allowed.

This literature review has been prepared to support the development of an ORV management plan at the Seashore. The following sections summarize available information related to the potential effects of ORV use on natural resources, such as wildlife habitat, aesthetics/sound, and vegetation, found in national park units with coastal sand dune ecosystems. Relevant water quality findings are also reported here. In addition, information on the effects of ORV use on socioeconomics and management issues are examined. Because the majority of the area administered as Cape Hatteras National Seashore is best described as a coastal beach environment, with the major issues for resource protection being the protection of threatened and endangered species and the maintenance of coastal wildlife habitat, this literature review focuses on impacts from ORV use in similar coastal environments.

## **Wildlife and Wildlife Habitat**

Numerous studies have detailed the impacts to wildlife of ORV use on public lands. Impacts generally described in these studies include direct mortality, harassment, noise effects, and habitat destruction. Specific risks to wildlife include injury during escape responses and, in severe cases, habitat avoidance and abandonment of young. Radle (2007) found that wildlife generally experience an increase in heart rate, as well as altered metabolism and hormone balance, when introduced to human-made noise. Noise from ORVs can affect the senses of animals that depend on hearing and vibration detection to survive (resulting in inability of wildlife to hear sounds important for mating, avoiding predators, and finding prey) (Berry 1980; Bury 1980; Bluewater Network 1999). ORVs also impact wildlife by destroying or fragmenting habitat. Much of the existing research has dealt specifically with the effects of vegetation damage by visitors and the associated impacts to wildlife habitat values (Monz et al. 2003). This has led some to conclude that the most effective strategies for avoiding habitat disturbance are outright road

removal and the avoidance of new road construction in roadless or sparsely roaded areas (Trombulak and Frissell 2001; Walder n.d.).

Park managers generally agree that intensive ORV use harms wildlife, including endangered species. From July to November of 1999, Bluewater Network conducted a survey of 108 national park units regarding the use of all-terrain vehicles and other ORVs. While the number of surveys conducted at seashore units is not reported, among the issues cited by respondents was the use of ORVs resulting in collisions with and crushing of animals, destruction of habitat, and animals being frightened away from shelter or important habitat (Bluewater Network 1999).

Various studies have examined the effects of ORVs on intertidal invertebrates. Work done on high-energy beaches has suggested that life in the intertidal and supratidal areas may be far more abundant and varied than previously thought (Zaremba et al. 1973), and this life could be affected by ORV use. One study conducted at the Seashore (Landry 2004) documented recovery rates of ghost crab (*Ocypode quadrata*) populations following ORV impacts and high-energy weather events. Beach closures were initiated to study short-term effects and recovery rates. Sediment analysis and beach soil compaction differences in the ghost crab habitat were measured in both untraveled and travelled zones. The study found differences in crab burrow densities between closed and open beaches. Alternative time spans for beach closings varied in their effectiveness for promoting recovery at various beach areas.

Findings from a 1984 study conducted at nearby Cape Lookout (Wolcott and Wolcott 1984) examined impacts of ORV use on mole crabs (*Emerita talpoida*), coquina clams (*Donax variabilis*) and ghost crabs. Results indicated that ghost crabs were completely protected if borrows were at least 5 centimeters (2 inches) deep. The ghost crab creates burrows for shelter from heat and desiccation stress during summer daytime periods. Juveniles produce shallow J-shaped burrows with a mean depth of 160 millimeters (6.3 inches), while adults dig Y-shaped and spiral burrows with mean depths of 361 millimeters (14.2 inches) (Chan et al. 2006). The Wolcott study also found no damage to mole crabs or coquinas; however, crushing of ghost crabs by ORVs occurred during their nighttime feeding on the foreshore<sup>1</sup>. The study recommended establishing a ban on ORV traffic on the foreshore between dusk and dawn to protect this species (Wolcott and Wolcott 1984).

Moss and McPhee (2006) compared ghost crab burrow counts on exposed sandy beaches off the coast of southeast Queensland in areas designated as “open” and “closed” to recreational ORV use and found that beaches where recreational ORV activity was present had significantly lower ghost crab abundance than beaches where ORV use was absent. Similarly, a study on North Stradbroke Island in Australia found crab densities to be significantly lower in areas subject to heavy beach traffic. While crab mortality declined with depth of burrows, burrowing only partially protected crabs. Crabs in shallow burrows of 5 centimeters (1.9 inches) were killed by 10 vehicle passes. While deep-living crabs (which burrowed to depths of least 30 centimeters [11.8 inches]) were not killed by ORVs, this subpopulation represented only half of the total population surveyed (Schlacher et al. 2007).

Schlacher and others (2008) used surf clams (*Donax deltoides*) to investigate damages caused by vehicles to sandy shore invertebrates, and found that in situations where cars traversed soft sand and turned across the beach face, clams had some tolerance against vehicles at low traffic volumes (5 vehicle passes), but more than half of them were killed at higher traffic volumes (75 passes). Van Der Merwe (1991) studied

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<sup>1</sup> Also known as the intertidal zone, the foreshore is defined as that part of the beach between the spring low water mark and the spring high water mark. The upper limits of the intertidal zone are defined by the uppermost wrack line. A wrack line is a line of stranded debris along a beach face marking the point of maximum run-up during a previous high tide, and there may be several on a beach.

the effects of ORVs on four intertidal invertebrate species in South Africa: the gastropod *Bullia rhodostoma*, the bivalves *Donax serra* and *Donax sordidus*, the benthic mysid *Gastrosaccus psammodytes*, and the supralittoral isopod, *Tylos capensis*. All the above-named species except for the benthic mysid showed a high tolerance for vehicular disturbances. The supralittoral isopod demonstrated increasing damage as with more vehicle passes in the less compact sand above the drift line.

In a study of four beaches at Cape Cod and Fire Island National Seashores, Kluft and Ginsberg (2004), used analysis of variance as a statistical metric and found that invertebrates such as the talitrid amphipod (*Talorchestia longicornis*) and the lycosid spider (*Arcotosa littoralis*) were significantly more abundant in the wrackline in vehicle-free areas than in high-traffic zones. On sandy beaches, invertebrates such as gastropods and bivalves could be safe if buried beneath compact sand (which is common when the tide is out). Stephenson (1999), while not specifying particular invertebrate species, cited research that indicated a reduction in both the abundance and number of species of surface and subsurface invertebrates as a result of vehicles on coastal dunes. Crushing by vehicle wheels, destruction of the surface litter layer (where present), and the changes in soil properties and microclimate that accompany track creation, or the overall reduction in plant cover, all contribute to the negative response of these elements of the fauna. Invertebrates associated with the above-ground portions of plants also exhibited reductions in abundance and number of species as a consequence of vehicle impacts to the vegetation and microclimate of dunes (Stephenson 1999).

Bird species are also affected by ORV use on shoreline ecosystems. Historically, many beach-nesting waterbirds have shown population declines along the beaches of the Seashore in response to increased human disturbance, retreating to small soundside islands created from dredge material excavated from navigational channels. By the late 1970s, erosional forces and changes to dredging techniques had whittled away much of these refuges, leaving no choice for the birds but to return to ocean beaches. One such species of special concern is the piping plover (*Charadrius melodus*), which lays speckled eggs that are perfectly camouflaged in the beach sand. A two-year study of piping plovers along the New Jersey shore (Burger 1994) found that plovers forage along the tidal oceanfront, in the dunes, and in backbays, and their relative use of these habitats partially depends upon human presence. While on beaches with few people, plovers can spend 90 percent of time foraging, whereas on beaches with many people they may spend less than 50 percent of their foraging time in direct feeding behaviors (Burger 1994). Results of a logistic regression analysis of the spatial distribution and productivity of piping plover nests in relation to proxy indicators of human disturbance on the barrier islands of Long Island, New York, indicated that for each additional kilometer of road within a 500-meter (1640-foot) radius, the likelihood of the presence of a plover nest decreased by up to 53%. Higher productivity appeared to be only slightly correlated with increasing distance from parking lots, roads, and residential areas. Moreover, no difference in mean productivity was observed among the levels of ORV access (Thomsen 2006).

Among bird species, adverse reactions to human recreational activities have included nest desertion, temporary nest abandonment, and changes in foraging habits (Douglass et al. 1999). Comparing two beach plots open and closed to human traffic along North Carolina's Outer Banks, Collazo and others (1995) found that resting time of shorebirds was reduced by nearly 50 % in areas open to human activity. Although some research indicates predators are the main cause of nest failure of shore-nesting birds, Stephenson (1999) identifies vehicle use as a major cause for reductions in reproductive potential of birds on both coastal dunes and shorelines. Similarly, Melvin and others (1994) described 14 incidents of direct piping plover mortality caused by ORVs in Massachusetts and New York from 1989 through 1993. They estimated the number of one-way vehicle passes per day during the period when mortality occurred, demonstrating that ORV use, even at levels of less than 10 vehicle passes per day, is a threat to unfledged piping plover chicks and adults during brood-rearing periods.



An in-depth study of colonial waterbird reproductive success and population trends along the Atlantic coast, which involved field research at Cape Lookout National Seashore, revealed that American oystercatchers are also at risk in rapidly changing coastal ecosystems. The nest survival rate was calculated to be 0.928 per nest day (213 nests lost during 2,961 nest-days of incubation), with the probability of a clutch surviving to hatching of 0.133 (Davis et al. 2001). A comparison of reproductive success of the American oystercatcher on three river islands in the lower Cape Fear of North Carolina with that of birds nesting on barrier island beach habitat of Cape Lookout National Seashore (McGowan et al. n.d.) revealed that there were 17.6 times more oystercatcher breeding pairs per kilometer on the river island habitat than on the barrier beach habitat. ORV use was directly investigated in this study. The primary cause of nest failure on river islands was flooding, while the primary cause on barrier islands was mammalian predation. In their study of reproductive success of American oystercatchers along the Atlantic coast from Cape Fear to Cape Hatteras National Seashore, Simons and McGowan (2003) also identified predation as the major factor accounting for population decline. Patterson and others (1991) studied piping plovers on Assateague Island, Maryland, in 1986–87 to estimate population size and to identify factors affecting productivity. The study found that predators accounted for most of the known causes of nest losses (91%), with only one nest lost due to direct human destruction and no evidence that suggested recreational disturbance was a factor affecting productivity.

Detailed results of an analysis of eight seasons of reproductive success data at the Seashore found that mammalian predation accounted for 29 % of nest failures (McGowan 2004). The study also found that human disturbance, 24 % of which attributable to ORVs, increased the frequency of trips from the nest during incubation and could contribute to reduced oystercatcher hatching success (McGowan 2004). A recent study by Sabine (2005) involved video monitoring of 32 American oystercatcher nests to document causes of nest failure at Cumberland Island National Seashore, Georgia. Predation was determined to be the primary cause of nest failure. Vehicle disturbances were also simulated by driving immediately below the high water line at approximately 50 meters (164 feet) seaward of nests in order to observe oystercatcher behavioral responses. Although the study found that vehicular activity reduced foraging behavior during brood rearing, results from the disturbance experiment indicated that oystercatchers were more sensitive to pedestrian disturbance than vehicle disturbance during incubation. McGowan and Simons (2006) also suggest that changes in incubation behavior might be one mechanism by which human recreation affects the reproductive success of American oystercatchers. While ATV traffic was positively associated with the rate of trips to and away from the nest, and negatively correlated with percent of time spent incubating, truck and pedestrian traffic had little measured effect on incubation. Stolen (2003) studied the effects of passing vehicles on the foraging behavior of wading birds at the Merritt Island National Wildlife Refuge near Titusville, Florida, and found that foraging wading birds were more likely to be disturbed when vehicles slowed or stopped adjacent to them than when vehicles continued driving by. Experimental disturbance by a vehicle caused a significant depression in the foraging rates of the snowy egret (*Egretta thula*) and the great egret (*Ardea alba*) and non-significant reductions in foraging rates in the tricolored heron (*E. tricolor*). Nineteen percent of the birds flushed after being disturbed. Species reacted differently to disturbance as vehicles approached closer to nests. Tri-colored heron were the most sensitive to flushing; the great egret was intermediately sensitive; and the snowy egret was the least sensitive.

In a study of shorebirds at South Core Banks, South Carolina, Tarr (2008) determined that vehicle disturbance influences shorebird use of ocean beach habitat for roosting during the nonbreeding season. This conclusion was based on the finding that shorebirds were abundant in areas where vehicle abundance was also relatively high, but their distribution among microhabitats was opposite that of vehicles. Vehicles were primarily located on dry sand, while shorebirds were typically found in the swash zone and wet sand microhabitats. When disturbance was introduced, microhabitat use shifted towards the swash zone. This study concluded that vehicle disturbance influences shorebird use of ocean beach habitat for roosting during the nonbreeding season. A study of the results of a ban on beach driving in 2001 on the

South African coastline (Williams et al. 2004) found that in the first breeding season after the ban, there was an increase in breeding pairs for all five species in the study (two waders, two terns and a cormorant). Available data indicated that a 50-meter buffer distance around nests is adequate to prevent harassment of the majority of incubating piping plovers, as stated in the Piping Plover Revised Recovery Plan (USFWS 1996). However, fencing around nests should be expanded in cases where the standard 50-meter (164-foot) radius is inadequate to protect incubating adults or unfledged chicks from harm or disturbance.

Impacts may result from species' inability to adapt to the pace of human development. Loggerhead sea turtles, for instance, face many anthropogenic nesting threats, including beach armoring, beach nourishment, artificial lighting, commercial fishing, beach vehicular driving, and pollution (Nester 2006). Vehicles on the beach could negatively impact sea turtles by running over nests or nesting females, hatchlings, or stranded turtles that have washed ashore. In addition, ruts left by vehicles in the sand may prevent or impede hatchlings from reaching the ocean after they emerge from the nest. Hatchlings impeded by vehicle ruts are at greater risk of death from predation, fatigue, desiccation, and being crushed by vehicles. Sand compaction due to vehicles on the beach may hinder nest construction and hatchling emergence from nests. Driving directly over incubating egg clutches can cause sand compaction, which may decrease hatching success and directly kill pre-emergent hatchlings. Additionally, vehicle traffic on nesting beaches may contribute to erosion, especially during high tides or on narrow beaches where driving is concentrated on the high beach and foredune (USFWS 2008).

Witherington (2003) cites challenges to loggerhead sea turtle (*Caretta caretta*) conservation: uncertainty over the historical abundance of loggerheads so that assessment of status can be made, and the incremental deterioration of suitable loggerhead nesting beaches through development (including coastal armoring and sources of beach lighting) and sea level rise. A 1996 report by the Florida Department of Environmental Protection explains that artificial lighting from a variety of sources on beaches tends to deter sea turtles from emerging from the sea to nest (Witherington and Martin 1996). If sea turtles do nest on lighted beaches, hatchlings can be jeopardized as artificial lighting disrupts a critical nocturnal behavior of hatchlings, which will move toward artificial light sources instead of crawling from their nest to the sea. Artificial lighting has also been found to deter sea turtles from emerging from the water to nest. The increase of false crawls on ORV beaches may cause nesting turtles to expend additional energy. This energy could be put into egg production or growth. To evaluate the effect of driving ORVs on nesting activity, Nester (2006) compared driven and non-driven beaches, data on beach slope, sand compaction, beach width, sand color, sand grain size, moisture content, incubation temperature, and pedestrian activity collected during the 2005 nesting season at Cape Lookout National Seashore, Cape Hatteras National Seashore, and Pea Island Wildlife Refuge, North Carolina. The study found that light intensities presented a significant factor in determining nesting or false crawls. False crawls were more likely on ORV beaches where light intensities from vehicles were found to be greater than those on non-ORV beaches. A resulting decline of 20% in production of female loggerhead turtles was estimated at these locations. Recommendations for mitigating the impacts of artificial lighting on sea turtles included installing timers and monitoring devices to minimize unnecessary lighting (Witherington and Martin 1996).

ORV tracks interfere with the ability of hatchling loggerhead turtles to reach the ocean. By observing newly-hatched loggerhead turtles which were released to the intertidal beaches at Fort Fisher Beach in southeastern North Carolina and Cape Lookout Beach in coastal North Carolina, Hosier and others (1981) determined the effect of ORV tracks on the behavior and rate of sea-approach of these turtles. The extended period of travel required to negotiate suitable paths to the surf, together with the tendency to invert, may increase the susceptibility of loggerhead turtles to stress and predation during transit to the ocean when hatching on ORV-impacted beaches. Tracks in the sand may change the micro-topography as much as 10–15 centimeters (3.9–5.9 inches), which may serve as a significant impediment to the movement of hatchling turtles to the sea. Moreover, vehicle tracks generally run parallel to the beach, and can result in distances of 10–20 meters (33–66 feet) where hatchlings cannot successfully negotiate such

barriers, especially in coarse sands. At Cape San Blas, Florida, near Eglin Air Force Base, Cox and others (1994) examined hatchling tracks and observed four instances of sea turtle hatchlings being disorientated. Vehicle tracks were thought to be a contributing factor at two sites, causing some hatchlings to make a perpendicular diversion of more than 91 meters (300 feet) en route to the sea. Some hatchling tracks ended within vehicle tracks, which suggests that vehicle tracks may lengthen the time of critical exposure to beach predators, particularly ghost crabs.

## **Water Quality**

Many studies have addressed the effects of ORV use on water quality. Most studies have focused primarily on non-coastal desert or forest environments including soil erosion and sedimentation. In these environments, ORVs which travel along, across, or through creeks, rivers, streams and other waterways create turbidity, harm vegetation, destroy habitat for aquatic species and species that use water resources, and cause increased sedimentation and soil erosion that result in impairments to water quality (Bluewater Network 1999). The Texas Chapter of the American Fisheries Society (2002) cites that ORV use could result in erosion, siltation, bank destabilization, and an increased potential for other water quality impacts. The damage to stream bottoms and increased siltation can change stream temperatures, resulting in increased extremes and temperature variability that can be detrimental to fish populations (TCAFS 2002). No studies were found relating to water quality impacts of ORV use on beaches.

## **Soils/Dune Ecosystems**

Several studies of ORV impacts to coastal soils have focused on comparisons of soil characteristics between high-traffic areas versus non-traffic areas. One such study (Hosier and Eaton 1980) compared two barrier beaches in southeastern North Carolina. Less vegetation cover and fewer species were present on both dunes and grassland areas with vehicular traffic. To illustrate this, when quadrants containing vehicle tracks were removed from the analysis, the average vegetative cover of the dunes on the impacted beaches increased to that of the non-impacted beaches. The soil was also more compact where vehicular traffic had been most intense and where, it was suggested, this compaction may have been contributing to increasing salt flats in the area. Similarly, results of experimental testing of ORV impacts to coastal ecosystems of Cape Cod National Seashore between 1974 and 1977 (Leatherman and Godfrey 1979) showed that the ecosystem most resistant to long-term vehicle impact was the intertidal ocean beach, while the most easily damaged were areas protected from the direct ocean waves by barrier dunes or other upland features (such as salt marshes and sand flats). ORV effects are longest lasting farthest from the source of new sand; the areas farthest away from new sand promote optimal growth of grasses. More specifically, the effects of vehicles on dunes depended on the portion of the dune that was impacted. At dune edges, fewer than 100 vehicle passes stopped seaward growth of grass. In the foredune region, a relatively low number of passes (50–200) reduced plant biomass to very low levels. Recovery of the grasses on the dunes varied with the exact location of the vehicle tracks. On the foredunes, where grass growth is lush and rapid due to fresh sand input, the impacted sites were almost completely recovered after three growing seasons. Findings demonstrated that environments that undergo the greatest physical changes, such as the intertidal ocean beach, appear to have the greatest tolerance to vehicle traffic.

Studies on barrier islands have shown that although infrequent travel over dune vegetation had noticeable immediate impacts, permanent damage was ultimately caused by repeated travel over the same tracks (Judd et al. 1989). Impacts of historic ORV use at Gulf Islands National Seashore included denudation of coastal dunes and resulting blowouts and interior flooding, which have flattened the interior island topography; and the creation of trails that contribute to erosion, further narrowing the island (Shabica 1979). In a similar study at Fire Island National Seashore in New York, Anders and Leatherman (1987) found that vehicular passage over the open beach displaces sand seaward and that ORV use levels could

be contributing to the overall erosion rate by delivering large quantities of sand to the swash zone and affecting dune topography. Vehicle traffic resulted in a maximum of 0.75 meters (2.5 feet) of deposition in the zone of actual impact and a slight reduction in the elevation of the foredune. The results of 89 field experiments to examine the effects of ORVs on the beach showed that slope, sand compaction, and the number of vehicle passes in the same track were the principal factors controlling the measured net seaward displacement of sand.

Investigations made between 1973 and 1974 found beach and foredune areas of North Padre Island along the mid-Texas coast to be greatly modified by vehicular traffic (McAtee and Drawe 1981). The primary effects were reduced ground cover and reduced species diversity of vegetation in the foredune areas. As the intensity of human activity increased, dune elevation decreased. Increasing human activity also correlated to higher observed evaporation, soil pH, soil temperature, average wind velocity, atmospheric and soil salinity, and wind-carried sand particles near the ground surface.

Liddle and Grieg-Smith (1975) demonstrated that below 18-centimeter (7-inch) depths, soils became less compacted as a result of vehicle use. But a study of vehicle impacts to sandy beaches on the east coast of Australia (Schlacher and Thompson 2006) found that ORVs corrugated sand as deep as 28 centimeters (11 inches), with the deepest rutting occurring between the foredunes and the drift line. Off-road vehicles in this study were capable of disrupting from 5.8% to 9.4% of the available faunal habitat matrix (the top 30 centimeters [11.8 inches] of the sand which contain the necessary conditions to support the study fauna) in a single day and routinely disturbed the drift line and the base of the foredunes. Belnap (1995) cited several causes of desertification from off-road vehicle use, including soil compaction resulting in decreased water availability to vascular plants through decreased water infiltration. Soil loss can be further accelerated by wind and water erosion and decreased diversity and abundance of soil biota.

## **Vegetation and Invasive Species**

Numerous studies describe the impacts of ORVs on vegetative communities, including both direct and indirect damage to vegetation by vehicle use. Research conducted in the late 1970s at Cape Cod National Seashore on the ecologic and geomorphic effects of ORVs on coastal ecosystems concluded that there is no “carrying capacity” for vehicular impact on coastal ecosystems, and even low-level impacts can result in severe environmental degradation. The most naturally unstable areas, such as the intertidal ocean beach, tend to be the least susceptible to damage due to the rapid pace of natural environmental change and recovery in these areas. Dunes can be quickly devegetated by vehicular passage, resulting in blowouts and sand migration. Of all the ecosystems evaluated, salt marshes and intertidal sand flats are the least tolerant of ORV impacts and should be closed to all vehicle traffic (Leatherman and Godfrey 1979). Similarly results were demonstrated in an experimental testing of ORV traffic on coastal ecosystems of Cape Cod National Seashore between 1974 and 1977 (Godfrey et al. 1978). As detailed in the Soils/Dune Ecosystems section, this study found that even a relatively low number of vehicle passes can reduce plant biomass to very low levels in the foredune area.

At Cape Hatteras National Seashore, potential habitat for the seabeach amaranth includes coastal overwash flats at the accreting ends of the islands and lower foredunes and on ocean beaches above mean high tide (occasionally on sound-side beaches). In its known range, it often grows in the same areas selected for nesting by shorebirds such as plovers, terns, and skimmers. Intensive recreational use, both vehicular and pedestrian, is one factor that threatens the plant’s survival. Its stems are easily broken or crushed by foot traffic and tires, thus, even minor traffic can be detrimental during the growing season (USSWS 1996).

Hosier (1980) cites several cases at the Seashore where vehicle impacts to vegetation have occurred, such as at Oregon and Ocracoke inlets where vehicle traffic has compacted sediments along the unvegetated

portions of the beach and near Ocracoke Inlet. In these areas, sand flat vegetation has been altered by ORV tracks and chronic operation of ORVs has kept natural stabilizing vegetation from invading the flats.

A study of vehicle impacts to coastal dunes at Fire Island National Seashore, in which vegetation was monitored in both an experimental field test and a control before and after experimental vehicle impacts, revealed that low-level ORV use (one pass per week) is severely damaging to natural dune vegetation, and that a steepening of the dune profile occurred in the impacted zones due to higher rates of ORV-related erosion (Anders and Leatherman 1987). Another study of the response of grassy vegetation and soils of coastal sand dunes to varying degrees of vehicle use in Australia found that some species of grassy vegetation demonstrated decline, while others increased under moderate use (Liddle and Grieg-Smith 1975). The researchers also noted that while damage to plant shoots by vehicles was detrimental to plants, soil compaction alone could be beneficial in the sand dune habitat due to roots gaining greater access to higher moisture retaining soils beneath trampled areas. Similarly, results of a study at Cape Cod National Seashore, in which unstabilized and moderately stabilized dune sites were driven at varying levels of intensity, suggested that a single summer season of driving (300–700 passes) on a confined track through grass vegetation can completely destroy the above-ground portions but leave adequate underground roots and rhizomes for a small amount of vegetative regrowth after driving season ends in the late summer and fall (Brodhead and Godfrey 1977).

Three studies reviewed involved direct examination of vehicles to determine if they were potential distributors of exotic plant seeds. Osborn and others (2002) discuss a study that investigated the potential for seed transport into Kakadu National Park in Australia by means of tourist vehicles. The study concluded that vehicles were partially responsible for weed seed dispersal, but the low density of seeds found on the vehicles did not warrant the park taking preventative action. Another study (Rooney 2005) compared soil samples taken from the undercarriage of ORVs to field surveys for seven invasive species in forested areas of Wisconsin. No evidence of actual invasive plant dispersal was noted; however, because invasive plants have seed traits that predispose them to dispersal, the study found that ORVs may occasionally contribute to long-distance dispersal events. This is further supported by a study conducted by the Montana Weed Control Association (Trunkle and Fay 1991), which involved driving a vehicle 40 feet into a vegetated plot and then to various distances from the plot. Afterwards, plant material (including spotted knapweed (*Centaurea stoebe*) seeds) was collected from the undercarriage. At Cape Lookout National Seashore, Hosier (1980) found that deep ORV tracks trapped seeds of sea oats as they were blown across the beach. The captured seeds were then buried and began germination, but the vehicles subsequently churned up the sand and exposed the roots, thus destroying the plants.

Lathrop (1983) found that in arid regions direct vehicle impacts constituted the primary means of vegetative destruction. The study showed that areas beyond the vehicle track width were also affected, although the degree of impact varied with conditions and intensity of vehicle use. The study demonstrated that concentrated current or recent use in localized areas (such as heavy weekend use) created the greatest reduction in vegetative cover. Also in a study of desert environments, Wilshire (1983) found that even a single pass of an ORV could destroy many types of annual and some perennial plants, although hundreds of passes may be required to destroy tough, deep-rooted shrubs.

## **Aesthetics/Sound**

ORV use influences the character of the wild landscape and can result in conflicts between ORV users and other recreational users. With regard to ORV noise-related impacts to park resources, attempts have been made to qualify how visitor experiences in national parks are affected by the addition of mechanical versus natural sound that may come from ORV or other motorized vehicle use such as personal watercraft (PWC). A limited amount of study has been undertaken regarding ORV use and its impacts to

soundscapes in NPS units. Studies related to air tours and PWC are available but not directly relevant to ORV use at Cape Hatteras National Seashore.

Gramann (1999) used many approaches to garner information from visitors about sound in NPS units to formulate a more precise picture of human reactions to sound. Overall, results showed that park users identify natural sounds as more enjoyable than mechanical sounds, but mechanical sounds do not always interfere with the user's experience. Visitor experience and sensitivity to mechanical sound are dependent on visitor expectations, group size, front or backcountry experience, and activity type. For example, a visitor in a group of three or more visiting a park for the first time in the front country and taking pictures may not be as sensitive to mechanical sounds as a lone hiker in the backcountry. People are generally tolerant of certain noise disturbances if they perceive them as necessary (e.g., helicopters conducting fire suppression activities). In this sense, the Gramann study indicated that it is important for sounds to be consistent with the visual setting within which they are heard. Variable noise disturbances may be more readily tolerated depending on the observer's perception of the setting. As a result, from a management perspective, some scenic overlooks and short front country trails may not require as much protection as backcountry locales where preserving the experience of natural sound is paramount to overall visitor experience (Gramann 1999).

## **Archeological Resources**

Whether it is intentional or inadvertent, ORV use has the potential to affect archeological resources on public lands (BLM 2000; Lyneis et al. 1980; Schiffman 2005; Sowl and Poetter 2004; SUWA 2002). Direct impacts result from the damage or destruction that occurs when ORVs drive over and/or near archeological sites. Site integrity, a necessary element for listing a cultural resource on the National Register of Historic Places, is also affected by the visible changes caused by vehicle tracks and erosion (Sowl and Poetter 2004). Studies conducted in the California desert note that ORVs provide access to previously inaccessible, remote areas as ORV users explore new terrain (Lyneis et al. 1980). According to the BLM, this leads to increased visitation to lands previously used only by small numbers of hikers, and increases the intentional and inadvertent damage of archeological resources through surface disturbances (BLM 2000). ORVs have also enabled collectors and pothunters to reach these remote areas, which facilitates greater archeological resource damage from intentional collection and vandalism (BLM 2000; Schiffman 2005; Lyneis et al. 1980; SUWA 2002).

## **Socioeconomics**

ORV-related economic impacts vary by state and region. The large proportion of revenue generated by ORV-related activities was documented in a 2005 report that provides economic impact estimates for a ban on nighttime vehicular access to Fort Fisher State Recreation Area in North Carolina during the spring/summer season. The study, which incorporated electronic vehicle counts and visitor surveys, found that while the baseline number of annual beach vehicle trips (28,884) supported an estimated \$21.6 million in annual regional sales (as well as 382 regional jobs, and 3.7 million in tax revenues), the proposed policy would result in an estimated loss of \$859,590 per year in regional sales, 15 regional jobs (mostly from restaurants, automotive services, lodging and related visitor services), and \$149,334 per year in tax revenues (NCDENR 2005).

A recent report on the economic benefits of hunting, fishing, and wildlife watching in North Carolina found that in 2006, 3.4 million residents and non-residents participated in some form of fish and wildlife-related recreation in North Carolina and spent \$2.62 billion in retail sales, created \$1.26 billion in salaries and wages, and supported 45,224 jobs. The total economic benefit from fish and wildlife-related recreation was estimated at \$4.3 billion (Southwick 2008). For fishing-related activities alone, a national

survey in 2006 found that in North Carolina, there were nearly 1.3 million fishing participants who spent almost 1.2 billion dollars on the sport (USFWS 2006).

## Management Issues

Nationwide, 15 NPS units allow ORV use by the general public. Within these areas, various user groups and ORV manufacturers contend that NPS limits on ORV use unfairly restrict access, establish a precedent for other federal land managers to impose or extend restrictions, and may be economically harmful to gateway communities and industries serving users (Calvert et al. 2007). Conversely, opponents of motorized recreation in NPS units cite damage to the environment and cultural artifacts from ORV use. Conflicts also arise on U.S. Forest Service lands, where uses such as timber harvesting and ORV recreation may affect birdwatching and sightseeing, and can degrade water quality in certain settings (Calvert et al. 2007).

In 1997 the NPS and the National Parks and Conservation Association (NPCA) identified damage from recreational uses as a major concern in coastal units of the NPS (Recksiek 1997). To deal with these issues, Godfrey (1978) explains that while not all shorelines have the same geology or patterns of erosion, some general management recommendations related to ORV use can be applied. These include preventing indiscriminant traffic on dunes and routing traffic around sites of significant dune formation; restricting traffic to intertidal ocean beaches where surveys have shown relatively few marine animal populations are present; not reopening areas that have been closed or have been inaccessible previously; closing off bird and marine turtle nesting sites and important feeding areas; and closing beaches to vehicles during periods of exceptionally high tides (because during high tides vehicles must be driven up the face of dunes, often through nest sites and incipient dune areas).

Operating vehicles on beaches presents special management constraints where loggerhead sea turtles are present. Beach cleaning vehicles, for instance, are common on beaches in southern Florida, and management measures have been established for the use of such vehicles. In order to obtain beach cleaning permits, certain requirements must be met pursuant to Rule 62B-33.005 (11) of the Florida Administrative Code that restricts the timing and nature of beach cleaning. The following permit conditions are included:

- limiting beach cleaning activities to daylight hours only
- limiting cleaning activities to the average high tide mark or debris line and seaward in some areas
- ensuring a daily sea turtle nesting survey has been completed before cleaning activities are conducted
- marking nests for avoidance
- using vehicles with a maximum tire pressure of 10 pounds per square inch and a rake or cleaning apparatus that limits penetration into the surface of the beach to a maximum of 2 inches
- removing accumulated debris from the beach immediately after cleaning has been performed
- avoiding all native, salt tolerant dune vegetation by a minimum of 10 feet (USFWS 2008)

Similarly, the Volusia County, Florida Habitat Conservation Plan (HCP) limits the potential for sea turtle-vehicle interactions through four basic mechanisms: (1) public access is limited to daylight hours and public safety vehicles that operate at night must follow specific guidelines; (2) public driving is limited primarily to those areas where nest densities are lowest; (3) in those areas where public driving is permitted, all driving and parking must occur outside a marked Conservation Zone near the dune, where

the majority of nests are typically deposited; and (4) all nests are conspicuously marked so they can be avoided (USFWS 2008).

Appropriate travel management planning has increased among public agencies and various stakeholder groups in response to continuing ORV use on public lands, particularly BLM lands. Other federal regulatory requirements concerning the protection of resources also provide guidance for travel management plans that may be relevant to management options at the Seashore. However, challenges to crafting and implementing park travel management plans often arise that carry significant implications to the functional management of park resources.

Meyer (2002) prescribes regular maintenance and monitoring of ORV routes, including periodic inspections and condition assessments at 5-year intervals. In addition, Meyer offers several management approaches that can be implemented to curtail trail degradation, some of which may be relevant to seashore environments, including trail rerouting in cases where numerous segments have been degraded by recreational use; seasonal or type-of-use restrictions in instances when specific seasonal uses may be contributing to greater impacts; and outright trail closure as a last resort to protect threatened resources. Traffic volume restrictions or “controlled use” are also suggested as a means to prevent significant resource degradation, although enforcement is needed to implement this management strategy (Meyer 2002).

Christensen and Watson (2006) described challenges resulting from the implementation of the 2006 Bitterroot National Forest ORV management plan, which included maintaining an up-to-date inventory of routes; working with ORV users to reduce impacts and conflicts; and working with all stakeholders to identify appropriate and acceptable ORV opportunities. They also cite lessons learned from the U.S. Forest Service policy and experiences of planners nationwide, which suggest that a collaborative process with a “system-wide, forest-level perspective” is likely to be the most appropriate and successful strategy for developing a widely-supported ORV travel management plan. Moreover, they stress on-going involvement of the public in ORV planning as being crucial for public acceptance of the resulting plans. In an assessment of the efficacy of such a cooperative effort in four counties in North Central Michigan, Nelson and Lynch (2001) conducted stakeholder interviews, surveys of ORV drivers, and investigations of route signage survival. They found that after plan implementation compliance with ORV rules increased as most riders supported the program. By contrast, a study in Utah aimed at creating an inventory of ORV use occurring in 12 high-use or “hotspot” regions of U.S. Forest Service land found that ORV users had taken excessive measures to access closed routes by moving large boulders, removing posts, chain-sawing trees or logs, or purposefully negotiating terrain to create a new trail around management-placed and natural barriers to ORV traffic (Divine and Foti 2004).

Some monitoring efforts have benefitted from the simultaneous observation and data collection of traffic and wildlife made possible by pneumatic road counters and GPS units (USGS 2005). However, Calvert and others (2007) note that monitoring and enforcement may be impeded in some locations (and especially on BLM lands) due to their remoteness, insufficient signs, and inadequate staff and resources, challenges which would also be relevant to the NPS. Adaptive management strategies targeted toward the specific needs of individual parks could provide the most efficacy in resource management. James (2000) argues that a focus on both the component systems of beach environments and interactions among those systems is necessary for improvements in the management, conservation, and overall environmental quality of beaches.



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**Statement of Findings for Floodplains  
for the Proposed  
Off-Road Vehicle Management Plan**

**Cape Hatteras National Seashore  
North Carolina**

Recommended:	_____	_____
	Superintendent, Cape Hatteras National Seashore	Date
Concurred:	_____	_____
	Chief, Water Resources Division	Date
Approved:	_____	_____
	Southeast Regional Director	Date

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## INTRODUCTION

Executive Order 11988 (Floodplain Management) requires the National Park Service (NPS) and other federal agencies to evaluate the likely impacts of their actions in floodplains. The objectives of the Executive Order are to avoid, as much as possible, the short- and long-term adverse impacts associated with occupancy, modification, or destruction of floodplains and to avoid indirect support of development and new construction in such areas where there is a practicable alternative. NPS Director's Order #77-2: *Floodplain Management* provides NPS procedures for complying with Executive Order 11988. This Statement of Findings (SOF) for the Cape Hatteras National Seashore Off-Road Vehicle Management Plan/EIS (Plan/EIS) has been prepared in accordance with the guidelines in NPS Director's Order #77-2. The Plan/EIS states that the purpose of taking action is to develop regulations and procedures that carefully manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors.

## DESCRIPTION OF THE PROPOSED ACTION

Alternative F is identified as the NPS preferred alternative in the Plan/EIS and has been revised based on public and agency comments on the draft plan/EIS. Alternative F would provide a variety of opportunities for ORV and pedestrian access, but often with controls or restrictions in place to limit impacts on sensitive resources. Interdunal road and ramp access for ORVs would be improved, and more pedestrian access would be provided through substantial additions to parking capacity at various key locations that lend themselves to walking on the beach. Implementation of alternative F would involve the construction of 4 new ORV access ramps, the relocation of 2 existing ORV ramps, installation of 2 new interdunal roads (i.e., ORV routes), establishment of pedestrian trails on Bodie and Ocracoke islands, and the installation of 10 new parking areas (surfaced with pervious materials such as a clay/shell base) and the reuse or resurfacing for public parking of two existing paved areas<sup>1</sup> that were not previously used for public parking, which in combination would create or improve a total of approximately 135 new public parking spaces along the Seashore. These actions are listed in Table 1 below and are considered in this SOF.

<sup>1</sup>The reuse/resurfacing of two existing paved areas was not considered to be "new construction" in this Statement of Findings, as the existing paved areas would be replaced with pervious materials and used as public parking areas.

**Table 1. Alternative F Proposed New or Relocated Ramps; New, Reused or Resurfaced Parking Areas; New, Extended or Relocated Interdunal Roads; and New Pedestrian Trails**

<b>BODIE ISLAND</b>
Reuse or resurface for public parking the existing asphalt-paved area at the old Bodie Island Coast Guard Station site after site is used as a potential staging area for proposed widening and repaving of NC12 (if resurface existing paved area, would use pervious material)
Relocate ramp 2 approximately 0.5 mile south of Coquina Beach and install new parking area at 2.5
New parking area and trailhead near ramp 4, with pedestrian trail to the "flats" on the northeast side of the Bait Pond
<b>HATTERAS ISLAND</b>
New parking 1.0 mile south of ramp 23
New ramp with parking established at 25.5
New parking near soundside ramp 48
New ramp established at 32.5
New parking near soundside ramp 52

New parking area on west side of highway at or near Kite Point
New parking area on west side of highway at or near soundside ramp 60
Reuse or resurface/reconfigure for public parking the existing asphalt-paved area at the old Buxton Coast Guard Station site after U.S. Coast Guard has completed clean-up of the site (if resurface/reconfigure existing paved area, would use pervious material)
New parking area at Loran Road
Interdunal ORV route extended from ramp 45 to ramp 49 with new ramp 47.5.
New interdunal ORV route from eastern portion of Spur Road west toward inlet
<b>OCRACOKE ISLAND</b>
Relocate ramp 59 to 59.5
New parking area on west/north side of the highway at or near the entrance to Barrow Pit Road
New ramp 63
A new pedestrian trail to Pamlico Sound from the end of an ORV route perpendicular to the beach 0.6 mile south of ramp 72.

Source: Table 7-1 and Table 8 in the Plan/EIS. Table does not include two on-sand parking areas for 4-wheel drive access (described below).

The interdunal roads, essentially “over sand” ORV routes that are not located along the beach, would be constructed at grade. They would not alter topography, require a finished or impervious surface, or involve any above-grade structures. The pedestrian trails would be primitive sand trails and would not be paved or surfaced. The new or relocated ORV ramps would be surfaced with semi-permeable clay/shell base or some other porous material. The average ORV ramp is 40 feet wide and 500 feet long, occupying 20,000 square feet.

The alternative F on-sand parking areas accessible by 4-wheel drive vehicles at the terminus of the new interdunal ORV route for Hatteras Inlet and near South Point at the beginning of a new pedestrian trail to Pamlico Sound would not need a hardened surface because vehicles would travel over sand to reach them. Also, overnight camping would not be allowed in these two on-sand parking areas. Therefore, the on-sand parking areas are not considered further in this SOF. The other new, reused or resurfaced parking areas would be directly accessible by 2-wheel drive vehicles from NC Highway 12 (NC 12). These would be designed and constructed with a semi-permeable clay/shell base, turf block or some other porous material, using environmentally sensitive standards to minimize stormwater runoff. The only area where a paved surface would be considered is a short section from handicapped spaces to an adjacent boardwalk. With two exceptions involving the reuse, resurfacing and/or reconfiguration for public parking of existing paved areas (a 10-car parking area at the former Bodie Island Coast Guard Station site and a 50-car parking area at the former U.S. Coast Guard Station in Buxton, both in previously disturbed areas), new parking would comprise an estimated 5 – 10 spaces per parking area. A 10-space, 100 foot by 80 foot parking area would occupy about 8000 square feet.

Before constructing the proposed new parking areas, the Seashore would conduct a separate environmental analysis process to evaluate the potential surface materials that could provide an environmentally sustainable, porous treatment and could avoid the need for stormwater control structures (curbs, drains, culverts, holding ponds, etc.). This on-site analysis would also evaluate specific locations to avoid sensitive species in the Seashore’s Significant Natural Heritage Areas that have been identified by the North Carolina Natural Heritage Program. Exact location and number of added spaces for each area would be determined during the site-specific planning and environmental analysis subsequent to approval of the Plan/EIS.

## **SITE DESCRIPTION**

The project site is on three North Carolina barrier islands, which are part of the Outer Banks. These islands have historically been and continue to be affected by coastal forces and flooding events. The barrier islands comprising the Seashore are flat and narrow and lie between the Atlantic Ocean and the shallow and wide Pamlico Sound. The widest part of the Seashore islands is near Cape Point, between Buxton and Frisco. According to FEMA Flood Insurance Rate Maps, nearly the entire Seashore is within the 100-year floodplain. Generally, lands along the ocean beaches and adjacent to the sound (at wide points) are in flood zone “VE,” which is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Zone “VE” is also referred to as the “Coastal High Hazard Area.” The rest of the Seashore not directly adjacent to the ocean or sound lies in the “AE” zone, which is in the 100-year floodplain and subject to waves less than 3 feet high (NCDCCPS 2008).

Because the Seashore is almost entirely in the 100-year floodplain and is subject to high-water-table conditions, many areas are conducive to drainage and flooding that often result from storm events. Areas near Buxton Woods and Cape Point Campground have been documented as historically flood-prone and are examples of popular Seashore destinations that experience flooding during times of above-average precipitation events (NPS 2003).

Elevations in the vicinity of the proposed ramps, interdunal roads, pedestrian trails and parking areas range from sea level to about 25 feet above sea level. Due to the low topography, the entire project area is located within the 100-year flood zone and is subject to inundation during extreme storm events. Some parking areas would be within the “VE” flood zone, and others would be located in the “AE” flood zone. Those in the “VE” or coastal high hazard area are classified as a Class III Action, according to Director’s Order #77-2.

## **GENERAL CHARACTERIZATION OF FLOODPLAIN VALUES AND OF THE NATURE OF FLOODING AND ASSOCIATED FLOODPLAIN PROCESSES IN THE AREA**

The Seashore’s barrier island floodplains help reduce the impact of hurricanes and other storms on the shorelines that they shelter. These floodplains provide storm water holding capacity, reducing runoff that could otherwise flood NC12 and other developed areas. They also provide habitat for species adapted to the coastal barrier island environment.

Storm events such as hurricanes and nor’easters (winter storms along the mid-Atlantic coast) and associated wave action and high precipitation are the prime sources of flooding in the Seashore. Additionally some areas are known to be susceptible to minor flooding without wave involvement when large amounts of rainfall occur.

## **JUSTIFICATION FOR LOCATION OF THE ACTION IN THE FLOODPLAIN**

The purpose of constructing or relocating ORV ramps, establishing interdunal roads, creating pedestrian trails, and installing parking areas is to improve visitor access to the shoreline, both in areas where ORV routes would be designated and in areas where ORV routes would not be designated. To provide access the ORV ramps, interdunal roads, pedestrian trails and parking areas must be located in the vicinity of the shoreline. Avoidance of impacts to floodplains is not possible because the all areas between access points along NC-12 or interdunal roads and the shoreline is within the 100-year floodplain.

## INVESTIGATION OF ALTERNATE SITES

Alternatives A and B (the no-action alternatives) do not provide for any new ORV ramps, interdunal roads, pedestrian trails, or new parking areas. Alternative F and the other action alternatives provide for differing numbers of ramps, interdunal roads, and new parking areas, as displayed in Table 2 below. As explained above, because all areas between access points along NC-12 (or interdunal roads) and the shoreline is in the floodplain and access to the beach is needed, no sites outside the floodplain were considered.

**Table 2. Number of New or Relocated Ramps; New/Reused/Resurfaced Parking Areas; New, Relocated or Extended Interdunal Roads; and New Pedestrian Trails Proposed in the Plan/EIS Alternatives**

	Alternative A/B	Alternative C	Alternative D	Alternative E	Alternative F
Number of new or relocated ramps	0	6	4	7	6
Number of new, reused or resurfaced parking areas	0	7	0	14	12
Number of new, extended or relocated interdunal ORV routes	0	1	0	1	2*
Number of new pedestrian trails	0	0	0	1	2

Source: Routes and Areas Tables and Summary of Alternative Elements of the Plan/EIS

\* In addition to the interdunal ORV route extension between ramp 45 to ramp 49, this number includes the addition of small interdunal ORV route near Hatteras Inlet as described above in Table 1 and as depicted on the maps for alternative F in the FEIS.

The impact analysis in the Plan/EIS indicates that alternatives A and B would have no impacts on floodplains, and the preferred alternative and the other 3 action alternatives would have minor impacts on floodplains. A minor floodplain impact is defined in the Plan/EIS as an impact that “would result in a detectable change to floodplain functions and values, but the change would be expected to be small, of little consequence, and localized. There would be no appreciable increased risk to life or property. Mitigation measures, if needed to offset adverse effects, would be simple and successful.”

## IMPACTS TO FLOODPLAIN FUNCTIONS AND VALUES

The use of vehicles for NPS administrative use and by visitors for beach access would result in no or negligible impacts to floodplain functions or values. Under alternative F, the establishment of interdunal roads would not result in floodplain impacts because impervious surfaces or above-grade structures would not be constructed. The interdunal roads would be constructed at grade and would not alter topography or require a finished surface. Therefore floodplain functions would not be altered.

The pedestrian trails would also not result in floodplain impacts because the trails would be primitive sand trails and would not be paved or surfaced. Minor impacts would result from the construction or relocation of ramps, which would be surfaced with semi-permeable clay/shell base, reducing storm water runoff and limiting the potential for impacts to the floodplain’s water storage function. Similarly, minor impacts would result from the construction of parking areas because they also would be surfaced with semi-permeable or porous materials, with the possible exception of a short access path from handicapped spaces to an adjacent handicapped accessible boardwalk. Because there are no more than minor impacts to the floodplain, there would not be significant impacts to floodplain function and values from establishment or relocation of interdunal roads and ramps, establishment of pedestrian trails, or construction of new parking areas.

## MINIMIZATION OF HARM OR RISKS TO LIFE AND PROPERTY

Mitigation would be provided by incorporating methods for protecting human safety and protection of investment. Minimization of harm or risk to life and property would be accomplished by siting new parking areas in locations known to be less susceptible to flooding from rainfall alone. Parking areas directly accessible from NC 12 are landward of the primary dune line. Overnight camping would not be allowed in the new parking areas or on the beach. Hurricanes and large nor'easters that may result in storm surge are predicted far enough in advance to allow ample time for evacuation.

In addition to Cape Hatteras National Seashore, the Fort Raleigh National Historic Site and the Wright Brothers National Memorial are collectively managed by NPS as the Outer Banks Group. The NPS – Outer Banks Group annually updates its *Hurricane Plan* (NPS 2009), which describes the Incident Command System (ICS) priorities, procedures, and timelines for the protection of human safety, property, and park resources and values in the event of a hurricane or other emergency. The *2009 Hurricane Plan* details actions to be taken at the beginning of hurricane season (June 1), at critical intervals from 96 hours before storm force winds through landfall of a hurricane, recovery, and re-entry. As early as 96 hours before storm force winds, the Superintendent activates the ICS and the following occurs on the Seashore:

- Visitors are informed of weather conditions, park status, and recommended actions.
- Hurricane watch notices are posted at all visitor centers, campground kiosks, and on the Park's website.
- Visitors are advised to leave the island or be prepared for short notice evacuation. Ocracoke must be evacuated before termination of ferry services or before onset of gale-force winds, and preparatory actions for Ocracoke Island occur a day in advance of the other Seashore islands.
- Normal park operations and visitor facilities (e.g., visitor centers, campgrounds, swim beaches) close.
- Concessionaires and local businesses are notified of the park status.
- All non-assigned personnel are released by noon to permit daylight evacuation.
- All non-essential vehicles and equipment are secured.

Since the ramps, interdunal roads, pedestrian trails, and parking areas cannot be assured of protection from all future damage related to flood/storm events, the NPS would tolerate risk to these investments and would repair or reconstruct them when damage occurs.

## CONCLUSION

Alternative F (the preferred alternative) includes the construction of 4 ORV access ramps and the relocation of 2 ramps, and the construction of 2 new interdunal roads, pedestrian trails on Bodie and Ocracoke islands, and 10 new parking areas, and the reuse for public parking of two existing paved areas, to be surfaced with pervious materials such as a clay/shell base, resulting in the creation of approximately 135 new parking spaces along the Seashore. The NPS concludes that there is no practicable alternative for locating these outside the floodplain because their purpose is to provide access for visitors on foot and by ORV to the shoreline. To accomplish this purpose the ramps, interdunal roads, pedestrian trail, and parking areas must be located close to the shoreline.

The establishment of ramps and interdunal roads would not result in floodplain impacts because impervious surfaces or above-grade structures would not be constructed. The pedestrian trails would also not result in

floodplain impacts because the trails would be sand trails that would not be paved or surfaced. On the ocean side of NC 12, the parking areas would be located behind the primary dunes. Because hurricanes and big nor'easters are predicted far enough in advance to allow ample time for visitors to evacuate the area, overnight camping would not be allowed in the parking areas, and the park has prepared and regularly implements and updates a *Hurricane Plan* for the protection of human safety, property, and park resources and values in the event of a hurricane or other emergency, there would be no effect on human safety from the alternative F actions. Construction of the parking areas would result in long-term, minor adverse effects to floodplain functions and values because, although the change to floodplain functions and values would be detectable, it is expected to be small, of little consequence, and localized in the immediate area of the parking areas, ramps, and interdunal roads. Mitigation measures, such as the use of pervious surface materials, would be simple and successful and have been incorporated into alternative F.

Establishment of the ramps, interdunal roads, pedestrian trails, and parking areas would not affect flood storage capacity of the Seashore as a whole. The existing floodplain would continue to function as a floodplain after the construction or expansion of these areas.

The NPS finds the proposal to be consistent with Executive Order 11988. The NPS finds that this proposed action is consistent with the policies and procedures of NPS Special Directive 93-4 (Floodplain Management Guidelines).

## REFERENCES

National Park Service, U.S. Department of Interior

- 1993 Special Directive 93-4: Floodplain Management Guideline. Washington, D.C.
- 2003 October 23, 2003 Letter from Larry Martin (Hydrogeologist, Water Resources Division, NPS) to the Superintendent of Cape Hatteras National Seashore Regarding the Hydrology of the Buxton Woods and Cape Hatteras Areas.
- 2009 2009 Hurricane Plan, National Park Service, Outer Banks Group. Manteo, NC.

North Carolina Department of Crime Control and Public Safety (NCDCCPS)

- 2008. North Carolina Floodplain Management: 2008 Quick Guide.



**Cape Hatteras National Seashore  
Draft ORV Management Plan/EIS  
Concern Response Report**

**Public Comment Analysis Process and NPS Response to Comments  
on the Draft Plan/EIS**

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Appendix C

## Public Comment Analysis Process

### Introduction

Pursuant to the National Environmental Policy Act (NEPA), its implementing regulations, and National Park Service (NPS) guidance on meeting NEPA obligations, the NPS has reviewed and considered comments submitted on the *Draft Off-Road Vehicle (ORV) Management Plan/Environmental Impact Statement* (plan/DEIS). This appendix describes how the NPS considered public and agency comments and provides responses to the substantive comments received.

On March 5, 2010, the NPS published a notice of availability of the plan/DEIS in the Federal Register, posted the draft plan/EIS on the NPS Planning, Environment and Public Comment (PEPC) website at [www.parkplanning.nps.gov/caha](http://www.parkplanning.nps.gov/caha), and issued a news release announcing the electronic availability of the draft plan/EIS on PEPC. Following the announcement of the document's availability and the distribution of the draft plan/EIS to agencies and the public, a 60-day public comment period was open between March 12, 2010 and May 11, 2010. This public comment period was announced by publication of the U.S. Environmental Protection Agency notice of availability of the draft plan/EIS in the March 12, 2010, Federal Register, through the Seashore's website ([www.nps.gov/caha](http://www.nps.gov/caha)), through a newsletter sent to interested parties, elected officials, and appropriate local and state agencies, and through press releases. The draft plan/EIS was also available in local public libraries, at the public meetings, and by contacting the Seashore Superintendent to request a printed copy or CD. The public was encouraged to submit comments on the draft plan/EIS through the NPS PEPC website, by U.S. Postal Service or other mail delivery service, or hand delivery directly to the Superintendent at the Seashore's headquarters in Manteo, North Carolina. Oral statements and written comments were also accepted during the five hearing-style public meetings, discussed below. Each submission received (a letter, oral testimony, or comment directly entered into PEPC is referred to as a correspondence. As provided in the Federal Register notice of availability for the draft plan/EIS, comments were not accepted by fax, email, or in any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others were not accepted.

### Public Comment Meetings

In April 2010 five public meetings were held to continue the public involvement process and facilitate community feedback on the draft plan/EIS, in addition to the opportunities provided to submit written comments, as described above. Meeting times and locations for the five public meetings were as follows.

- April 26, 2010 from 9:00 am to 11:00 am at the Ocracoke School, Ocracoke, North Carolina.
- April 26, 2010 from 5:00 pm to 8:00 pm at the Cape Hatteras Secondary School, Buxton North Carolina.
- April 27, 2010 from 6:00 pm to 8:00 pm at the Wright Brothers National Memorial, Kill Devil Hills, North Carolina.
- April 28, 2010 from 6:00 pm to 8:00 pm at the McKimmon Conference & Training Center, Raleigh, North Carolina.
- April 29, 2010 from 6:00 pm to 8:00 pm at the Holiday Inn & Conference Center, Hampton, Virginia.

The public meetings were announced on the PEPC website, the Seashore's website, through news releases, a newsletter, and notices in local newspapers.

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A total of 793 attendees signed in during the five meetings. Some individuals attended more than one meeting and are counted more than once in this total. Each meeting began with a brief presentation by the Seashore Superintendent, explaining the project background and NEPA timeline. The presentation was followed by an opportunity for attendees to provide oral statements to the Superintendent. All oral statements made within the allotted time (three minutes per speaker) were recorded by a court reporter and the transcripts entered into PEPC as correspondences. Written public comments were also accepted at the public meetings and entered into PEPC by the project team. NPS provided attendees with a copy of the newsletter sent out before the meetings, which provided additional information about the NEPA process, frequently asked questions regarding the project, and additional opportunities for comment on the project, including directions on how to provide comments directly on the NPS PEPC website.

### Comment Analysis Methodology

During the comment period, over 15,00 pieces of correspondence were received. Correspondence was received by one of the following methods: hard copy letter via mail or in-person delivery to the Seashore, oral or written statement provided at a public meeting, or entered directly into the NPS PEPC website. All correspondence delivered by any of those methods were entered into the PEPC system for analysis. Each correspondence was read and specific comments within each correspondence were identified. All comments were categorized by applying a series of codes which identify the general content of a comment and help to group similar comments together. An example of a code developed for this project is AL1115 Alternative Elements: Nighttime Restrictions. In some cases, the same comment may be categorized under more than one code, reflecting the fact that the comment may contain more than one issue or idea.

During coding, comments were also classified as substantive or non-substantive. A substantive comment is defined in the NPS Director's Order #12 (DO-12) Handbook as a comment that does one or more of the following (DO-12 Handbook, Section 4.6A):

- Question, with a reasonable basis, the accuracy of information presented in the EIS;
- Question, with reasonable basis, the adequacy of the environmental analysis;
- Present reasonable alternatives other than those presented in the EIS; and/or
- Cause changes or revisions in the proposal.

As further stated in the DO-12 Handbook, substantive comments “raise, debate, or question a point of fact or policy. Comments in favor of or against the proposed action or alternatives, or comments that only agree or disagree with NPS policy, are not considered substantive.” NPS read and considered all substantive and non-substantive comments, in the process of preparing the final plan/EIS. Although typically only substantive comments are analyzed to create concern statements for NPS response, in this report the NPS has also responded to some non-substantive comments where it believed such responses would provide helpful information to the public.

Under each code, all substantive comments and those non-substantive comments for which NPS decided a response would be useful, were grouped by similar themes, and those groups were summarized with a concern statement. For example, under the code AL1125 Alternative Elements: Species Closures/Buffers, one of the concern statement identified was,

Commenters stated that the buffers proposed for turtle nests were too large, and smaller buffer sizes were needed. One commenter suggested that the exit to the ocean be no more than 18 inches wide. They suggested these closures be removed in the morning as is done

at Pea Island National Wildlife Refuge. Other commenters suggested that nests be closed off from the nest to the surfline from one hour before sunset until dawn.

This one concern statement is an example of a concern statement that captured many comments. Following each concern statement are one or more “representative quotes” which are comments taken from the correspondence to illustrate the issue, concern, or idea expressed by the comments grouped under that concern statement. Sometimes comments under a concern statement provided opposing points of view. In those cases, one or more representative quotes were included to illustrate the differing perspectives.

## NPS Response to Comments on the Draft Plan/EIS

### *AE1100 - Affected Environment: Threatened and Endangered Species*

#### **Concern ID: 25210**

Concern Statement: Commenters stated that the NPS's bird count data in the DEIS is incorrect because it only considers the birds at the Seashore and not in nearby areas such as Pea Island NWR, dredge and spoil islands, and nearby towns and villages. One commenter also stated that the DEIS contained errors with respect to the characterization of dredge spoil habitat and the presence of pebble/cobble substrate in the Seashore.

#### **Representative Quotes:**

**Corr. ID:** 3490

**Organization:** *Not Specified*

**Comment ID:** 141207

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with how NPS does not adequately consider locations neighboring the Recreational Area that are part of the same ecosystem. They did not consider:

- Villages, dredge and spoil islands, Pea Island National Wildlife Refuge
- Dredge and spoil islands typically have fewer predators to threaten nesting birds
- Bird activity within neighboring areas should be tracked and included in target productivity levels. Fluctuations and trends in Recreational Area bird populations should be viewed relative to regional and state experiences -not in isolation.

I agree that all locations neighboring the Recreational Area that are part of the same ecosystem and should have been considered.

**Corr. ID:** 12002

**Organization:** *Not Specified*

**Comment ID:** 134207

**Organization Type:** Unaffiliated Individual

**Representative Quote:** DEIS Part 2, Chapter 3: Affected Environment, Page 190, the DEIS states that dredge spoil sites are ideal habitat as follows: "(8) Natural conditions of sparse vegetation and little or no topographic relief mimicked in artificial habitat types (e.g., dredge spoil sites)." Yet just a few Pages later you counter this positive statement concerning dredged material with an incorrect one.

On the last sentence of page 211, continuing onto page 212 you state, "A recent study theorized that beach nourishment projects may negatively impact plover habitat because the resulting dredge spoil is often fine-grained, reducing the availability of pebbles and cobbles, which are a preferred substrate for nesting plovers (Cohen, Wunker, and Fraser 2008)."

This statement is not valid for habitat at Cape Hatteras Seashore - there is no pebble or cobble substrate on Cape Hatteras. This study probably applies to New England where the Plover is most prevalent. On Hatteras shorebirds prefer to nest in areas of high shell content and dredged material from areas close to Hatteras (ocean or sounds) are likely to contain relatively high shell-quantities that are preferred by Plovers and other shorebirds.

These points are important because dredged material from the ferry channel to Ocracoke have been used with considerable success to nourish the beach near Ramp 55 in the past. Material was coarse sand and shell - ideal bird habitat on Hatteras.

**Corr. ID:** 14408

**Organization:** *Not Specified*

**Comment ID:** 140855

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The methodology to determine the number for each species should include areas outside of NPS Jurisdiction. Specifically it should count all species from Kitty Hawk to Ocracoke as part of the population. The current methodology fails to count species in Pea Island, emergent islands in the sound such as Cora June

Island, and non traditional nesting sites. A 2007 NCWRC found 3rd largest least tern nesting location was the roof of the Belks in Kitty Hawk. According to the same study Least Terns have previously nested in great numbers on the roof of the Outer Banks Mall. The survey also found that there were 55 least terns, 78 black skimmers, and 79 Colonial water birds on Cora June Island. Failure to include nesting areas contingent to the park is short sighted and does not reflect the actual status of the species in the area. Certainly you should include the wildlife refuge in the boundaries of the park.

**Response:** While the status of bird populations outside of Cape Hatteras National Seashore, including but not limited to Kitty Hawk, Pea Island as well as the use of dredge spoil islands and shopping center rooftops, is of regional importance, the NPS is obligated to manage bird species such that they have ample habitat available and sufficient protection within the Seashore. Nevertheless, in the Affected Environment section the status of birds in the wider region is reviewed and discussed. Specifically, regarding piping plover, both regionally in the Atlantic Coast Southern Region Recovery Unit, in North Carolina (see page 184 and 185 of the DEIS), and at Cape Hatteras National Seashore itself the species has risen above the historic lows recorded. Furthermore, the performance and status of birds in areas outside of the Seashore are covered under cumulative impacts. However, the focus is necessarily at Cape Hatteras National Seashore, where the number of piping plover breeding pairs continues to be lower than the historic highs recorded during 1989 and 1995 and 1996. Perhaps more importantly, piping plover, are still performing well below the 400 breeding pair target established in the Revised Recovery Plan for the Atlantic Coast region which includes the Seashore as well as all other nesting areas throughout the Atlantic coast.

For American oystercatcher the number of nesting pairs at Cape Hatteras National Seashore has declined steadily since the high of 41 pairs in 1999 and remained essentially flat at 23 pair since 2006. See pages 223 and 224 for a discussion of the status of American oystercatchers in North Carolina and along the Atlantic seaboard.

Colonial waterbirds have, similar to the piping plover and American oystercatcher, been in decline at Cape Hatteras National Seashore when compared to historic highs. Specifically, colonial waterbirds have declined from a historic high number of 1,236 pairs (for all 4 species combined), in 1977 to a historic low of 255 in 2008. And while colonial waterbirds did increase from that low to 691 pair in 2009, it is more important to focus on the historic trend for these species. See pages 235 and 236 for a discussion of the status of colonial waterbird species in North Carolina and along the Atlantic seaboard.

While it is true that beach nourishment projects have made suitable shell and sand substrates available for nesting and shopping center rooftops are known to also provide suitable nesting substrates, the value of these new substrates does not release the Seashore from its responsibility to minimize human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them. As noted by one commenter, and in the DEIS, dredge materials can provide habitat for piping plover. The example given in the DEIS related to pebble and cobble substrate was not meant to convey the situation at the Seashore, but to give an example of situations where dredge material is not suitable. Clarifying language will be added to the FEIS to make this distinction.

In summary, while there are other opportunities for nesting both locally and regionally (including but not limited to dredge spoils and shopping center rooftops), piping plover, American oystercatcher and colonial waterbirds are all trending downward regionally when compared to their historic highs and when compared to conservation targets that have been established for achieving sustainable numbers (piping plover). Under NPS Management Policies, the Seashore must manage for the protection of the species, and their habitat, within the Seashore boundaries, regardless of other available habitat such as rooftops or dredge spoils that may be available regionally.

**Concern ID: 24018**

**Concern Statement:** Commenters stated that the NPS did not correctly address environmental issues related to sea turtles. They stated that false crawl statistics do not indicate that light pollution is an issue and that the EIS should address weather events being more detrimental to recovery than ORV or pedestrians.

## Appendix C

**Representative Quotes:****Corr. ID:** 3490**Organization:** *Not Specified***Comment ID:** 141218**Organization Type:** Unaffiliated Individual**Representative Quote:** I agree with the assessment that NPS Inadequately Addresses Environmental Issues More Detrimental to Turtle Recovery Success than ORVs or Pedestrians (p. 392-396) because:

- 38.5% of nests had 0% hatchlings due to weather events. (p. 87, p. 219) - 2009 Loggerhead Recovery Plan calls this catastrophic

- False crawl statistics do not support theory that light pollution is a significant problem at the Recreational Area. (p. 125, p. 219)

- Predator management and nest enclosure practices encourage ghost crabs which are a primary predator of turtle eggs and hatchlings

**Corr. ID:** 15000**Organization:** *Not Specified***Comment ID:** 140246**Organization Type:** Unaffiliated Individual**Representative Quote:** Sea turtles- The beaches of CHNSRA have not been hospitable to nesting sea turtles. Over the last 10 years of NPS data there has been an average loss of 40% of the turtle nests laid each year. The loss would be closer to 60% or 70% without relocation which involves human manipulation. This is called management of the resource. No other Atlantic coast or Gulf shore area suffers such disastrous losses because other beaches are less violent and/or their management includes a much higher rate of relocation.**Corr. ID:** 15010**Organization:** Cape Hatteras Access Preservation Alliance**Comment ID:** 140447**Organization Type:** Conservation/Preservation**Representative Quote:** The DEIS inexplicably diminishes the true extent of sea turtle nest loss at the Seashore due to the damaging storms that frequently strike the area. As the DEIS recognizes, "Periodic, short-term, weather-related erosion events (e.g., atmospheric fronts, Nor'easter storms, tropical storms, and hurricanes) are common phenomena throughout the loggerhead nesting range and may vary considerably from year to year." DEIS at 219. The DEIS then describes six storm-related losses that occurred in Florida and Georgia between 1985 and 2001, which caused an average of 27.3 percent loss of loggerhead nests. DEIS at 219-20. With respect to the Seashore, the DEIS provides surprisingly little information relating to storm losses. All it says is that "The majority of turtle nest losses at the Seashore from 1999 to 2007 were weather related, particularly due to hurricanes and other storms. During this time, six hurricanes caused impacts to nests. In 2003, Hurricane Isabel destroyed 52 of the 87 nests (34 had hatched before the storm); there was so much water and sand movement along the beaches that no evidence of any nests could be found afterward. The Seashore also felt the effects of numerous tropical storms and hurricanes as they passed by offshore." DEIS at 220. This amounted to a 59.8 percent loss, higher than any other catastrophic event listed in the DEIS.

In fact, the DEIS fails to mention that, between 2000 and 2009, 36.4% of nests laid at the Seashore have been lost. Last year, with no hurricanes or tropical storms within 400 miles, the Seashore lost 35.58 percent of its nests due to weather-related events. The USFWS Recovery Plan-which inexplicably does not even mention the Seashore's severe losses from Hurricane Isabel in 2003-appears to believe that Georgia's loss of 16 percent of nests in 2001 due to weather-related erosion events was catastrophic. Certainly, a 10-year average loss of 37.25 percent ought to be of concern. But, given that the causes of these losses cannot be attributed to ORV use, the ORV closures that would be required under Preferred Alternative F will not make a dent in these loss rates. Other appropriate management actions are required.

**Response:** As stated in the FEIS (Chapter 3: Affected Environment, Sea Turtles, Potential Threats) the NPS does recognize that weather related events, particularly storms and hurricanes, do cause the majority of nest losses at the Seashore. However, as evidenced by storms during the 2009 season, these events impact nests left in place as well as those that are relocated (of the 24 nests lost to Hurricane Bill and Tropical Storm Danny, 7 were nests that had been relocated to protect them from normal tidal inundation.) Storms are unpredictable as to when they will occur and on what portion of the beach they will most heavily have an impact. However, female sea turtles have adapted to these natural events by laying large quantities of eggs in a number of nests at different times during the nesting season and



at various locations on the beach environment (some lower on the beach, some higher on the beach) to avoid the complete loss of their reproductive effort. This variation also provides a variety of incubation environments for the nests to develop under. Because hatchlings vary with incubation environments, a scattered nesting pattern also increases the variation of hatchling characteristics, which may ensure that at all times at least some hatchlings have characteristics that are appropriate for survival when the exact characteristics that are best suited for survival vary unpredictably over space and time (Carthy et al 2003). Because sea turtles have adapted their nesting strategy to help avoid complete loss due to storms, and the fact that the NPS cannot predict when and where storms will occur and what nests they will or will not impact, the NPS manages the sea turtle nesting population for impacts it can control.

Many different factors (both natural and human) can cause false crawls (DEIS page 373) of which light pollution is just one cause. Even though false crawl to nest ratios at the Seashore average near what would be expected under "natural" conditions (1:1), as would be expected some years the ratio is above 1:1 and some years it is less than 1:1. However, unless a false crawl is witnessed (e.g. people harassing a nesting turtle or a crawl ending at a fire pit and then returning to the ocean) it is difficult to attribute a specific cause. Therefore, the EIS does not attempt to do so, but it does recognize that from scientific studies light pollution can cause false crawls and therefore manages for that impact.

**Concern ID: 24019**

**Concern Statement:** Commenters stated that data shows protected species populations recovering, and therefore additional restrictions are unnecessary.. They further stated that the Interim Protected Species Management Strategy (Interim Strategy) is an approved plan that has provided effective protection.

**Representative Quotes:**

**Corr. ID:** 13490

**Organization:** Not Specified

**Comment ID:** 141153

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Nowhere in the DEIS is it mentioned that protected species populations are growing without the needs of additional restrictions such as those of consent decree and Alternative F.

Published USFWS data suggests that the piping plover is "recovering" well beyond 1986 levels and do not suggest that additional restrictions beyond regional recovery plans are necessary or essential at the Cape Hatteras National Seashore Recreational Area for the continued recovery of the species.

Piping Plover--Atlantic Coast Pairs

Year 1986 1999 2005 2006 2007

Nesting Pairs (est.) 790 1386 1632 1749 1880

<http://www.fws.gov/northeast/pipingplover/index.html>

**Corr. ID:** 14421

**Organization:** Not Specified

**Comment ID:** 139598

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Data collected and published by NPS in recent suggest that Cape Hatteras National Seashore Interim Management Plan prepared with public input and publically reviewed in 2005, published in the Federal Register was showing every sign of being effective at protecting birds and natural resources. The Interim Management Plan was set aside by the court and replaced by the consent decree and settlement that mandated extensive closures without public comment or review.

The consent decree closures of recent years have been of exorbitantly high cost to the public but have not contributed to an improvement in species production or safety. The consent decree has produced no natural resource benefit over and above the interim plan. The fledge counts were higher under the interim plan than under the consent decree. 7 Piping Plovers fledged in 2008 under the interim plan, 6 in 2009 under the highly restrictive consent decree. 17 American Oyster Catchers (AMOY) fledged in 2008 under the interim plan and 13 in 2009 under the highly access restrictive consent decree, the same management structure now found in Alternative F. Species productivity is decreasing under consent decree and now Alternative F restrictions.

## Appendix C

**Response:** Management in 2008 was under the consent decree, not the interim plan, as stated in the comment. Regarding piping plovers, both regionally in the Atlantic Coast Southern Region Recovery Unit, in North Carolina, and at the Seashore itself the species has risen above the historic lows recorded. However, at the Seashore, piping plover continue to be lower than the number of breeding pairs compared to the historic highs recorded during 1989 and 1995 and 1996. Perhaps more importantly, they are still performing well below the 400 breeding pair target established in the Recovery Plan for the Atlantic Coast Southern Region Recovery Unit.

For American oystercatcher the number of nesting pairs at the Seashore has declined steadily since the high of 41 pair in 1999 and essentially flat at 23 pair since 2006.

Colonial waterbirds have, like piping plover and American oystercatcher, been in decline at the Seashore when compared to historic highs. Specifically, colonial waterbirds have declined from a historic high number of 1,236 pairs (for all 4 species combined), in 1977 to a historic low of 255 in 2008. And while colonial waterbirds did increase from that low to 691 pair in 2009, it is more important to not just focus on short-term trends but rather to focus on the historic trend for these species. This is especially important regarding colonial waterbirds as their numbers are known to fluctuate rather significantly in the short-term. Therefore, it is the longer term trends that more directly reflect the health and stability of their populations.

In summary, the number of piping plover, American oystercatcher and colonial waterbirds nesting at the Seashore have been trending downward at the Seashore off historic highs and when compared to conservation targets for achieving sustainable numbers (piping plover), and therefore, the levels of protection proposed under alternative F, as modified, are what the NPS believes are necessary for adequate species protection and believes will go further than the Interim Strategy to minimize conflicts between recreation and birds.

**Concern ID: 24020**

**Concern Statement:** Commenters stated that studies show most nest failures of piping plover are from non-human factors, such as predation and weather. They asked that these factors be given greater weight in the EIS. They stated piping plover numbers at the Seashore have historically been low unrelated to ORV use with population numbers actually being higher during periods of less ORV regulation and lower under the consent decree and requested that the NPS publish data regarding the number of piping plover and other shorebird species deaths related to ORV use. Other commenters provided data regarding chick behavioral responses to consider in the FEIS and stated that even if there is not direct contact, there are still impacts from disturbance.

**Representative Quotes:****Corr. ID:** 29**Organization:** *Not Specified***Comment ID:** 126097**Organization Type:** Unaffiliated Individual

**Representative Quote:** CURIOSLY, BASED ON THE TABLES ILLUSTRATING PIPING PLOVER HISTORICAL ABUNDANCE, (Tables 14-24) IT APPEARS THAT HIGHER DENSITIES AND FLEDGLING SUCCESS OCCURRED DURING PERIODS OF HIGHER ORV USE (1990s).

**Corr. ID:** 29**Organization:** *Not Specified***Comment ID:** 126098**Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 210- "At other sites, it was documented that fledging success did not differ between areas with and without recreational ORV use (Patterson et al. 1991), although pedestrians caused a decrease in brood foraging behavior in New Jersey (Burger 1994)." OTHER STUDIES SUGGEST THAT HUMAN PRESENCE AFFECTS BIRDS. EVIDENCE IS NEITHER CLEAR NOR CONVINCING THAT ORV USE NEGATIVELY AFFECTS PIPING PLOVER BEHAVIOR OR BREEDING SUCCESS. YOU CANNOT SIMPLY CHOOSE TO ACCEPT ONE STUDY WHILE IGNORING OR DISREGARDING ANOTHER- NOT WITHOUT SOME JUSTIFICATION.

**Corr. ID:** 232**Organization:** NCBBA**Comment ID:** 130473**Organization Type:** Unaffiliated Individual

**Representative Quote:** North Carolina is the southern most range of the PP. No PP's were found in South Carolina during the 2008 survey. A clear majority of the population was found in the northern states of Massachusetts (566) and New York (443) while 64 were found in North Carolina. The state of Maine on the other hand is the most

northerly range of the PP where 10 were counted in 2008.

This population distribution can be graphed into a bell shaped curve i.e. Normal Distribution graph. Variability exists in every biological population. The greatest variability in the PP population exists at its extremities (North Carolina and Maine). The least variability is found in the states, which harbor the largest numbers (Massachusetts and New York). Statistically speaking, it is very difficult if not impossible to have a high degree of confidence in North Carolina PP numbers used to make important decisions on beach closures.

**Corr. ID:** 3617

**Organization:** *Not Specified*

**Comment ID:** 133267

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The consent decree and all the closures have not increased the PIPL population at all, in fact, according to your own resource management report, the piping plover has decreased from 2008. If beach driving is harmful, then why are there less PIPL with less driving- shouldn't the numbers have increased with more closures?

In 2003= 50% hatching rate

2005 =100%

2007 =: 40%

2008 =23%

The weather(storms) have controlled the PIPL population, not beach driving. As you can see from the statistics above, some of the best hatch rates were when there was more beach driving.

**Corr. ID:** 3906

**Organization:** The Cove Bed and Breakfast

**Comment ID:** 131334

**Organization Type:** Business

**Representative Quote:** The frequently released reports of the NPS regularly reveal that the "piping plover product" of CAHA Ocracoke, those which flyaway, rarely exceeds single digits annually. This is of no significance to species survival. In the period 1989-2009 the annual average fledge rate has been 0.27 for Ocracoke North Spit, 0.52 for South Point. DEIS further asserts (see Table 14, p. 186 and adjacent Fig. 3, p. 187) that whereas between 1986 and 2009 the number of breeding pairs of plovers doubled in Virginia ( 100 to 208) and elsewhere in North Carolina (30 to 64), the number remained constant and low (12 to 10) in CAHA. This points out that plovers seem to be doing fine- they simply don't like CAHA.

**Corr. ID:** 13163

**Organization:** *Not Specified*

**Comment ID:** 140884

**Organization Type:** Unaffiliated Individual

**Representative Quote:** As a scientist, I think that much of the data many of these proposals are based upon is not statistically significant. The main problem is the small number of bird breeding pairs due to the fact that Cape Hatteras is on the southernmost fringe of the Piping Plover's range. Less than 3% of the Atlantic population of Piping Plovers are in North Carolina (Melvin SM and Hecht A, Waterbirds 32(1):64-72. 2009), consisting of 46 pairs in the entire state (not just Hatteras Island). Hatteras Island seems to rarely have over 10 nesting pairs (p 195). Thus it is very difficult to make any statistically valid conclusions about ORV impact without an extremely long study period, especially with the number of confounding factors (variations in predator populations, weather variations, climate change, etc). Thus year to year comparisons attempting to show impact are very difficult to attribute to a specific cause, and the amount of human (and ORV) impact (if any) demonstrated in the document in Cape Hatteras National Seashore is statistically insignificant. It is clear from the Park Services own historic statistics that most failures to go from nesting to fledging are due to non-human factors, including mammalian predation (including predation from a large population of feral cats on the island), tidal and storm washouts, avian predation and crab predation. Human disturbances account for less than 5% of egg and chick mortality according to the park services own figures, and some of that has been from Park Service monitoring and banding activities.

**Corr. ID:** 13446

**Organization:** *Not Specified*

**Comment ID:** 138779

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Please explain, why there has never been a public list of reported incidents to back up the assumptions made by the NPS regarding endangered species and their nests. As far as the public is informed, on record, only one incident has been reported, and no charges were brought against or for the individuals involved.

## Appendix C

**Corr. ID:** 14154                   **Organization:** *Not Specified*  
**Comment ID:** 140477           **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Why doesn't the NPS publish a list of Piping Plover deaths attributable to ORV use? (p. 210)

**Corr. ID:** 15043                   **Organization:** Southern Environmental Law Center  
**Comment ID:** 137461           **Organization Type:** Conservation/Preservation  
**Representative Quote:** Regardless of whether or not the impacts result from direct contact with ORVs or the impacts result from the associated disturbance, the end result is the same -- a direct negative impact resulting from off-road vehicle use. With respect to Piping Plovers, the Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act (USFWS 1996) states:

"Unrestricted use of motorized vehicles on beaches is a serious threat to piping plovers and their habitats. Vehicles can crush eggs (Wilcox 1959; Tull 1984; Burger 1987b; Patterson et al. 1991; United States of America v. Breezy Point Cooperative, Inc., U.S. District Court, Eastern District of New York, Civil Action No. CV-90-2542, 1991; Shaffer and Laporte 1992), adults, and chicks. In Massachusetts and New York, biologists documented 14 incidents in which 18 chicks and 2 adults were killed by vehicles between 1989 and 1993 (Melvin et al. 1994). Goldin (1993) compiled records of 34 chick mortalities (30 on the Atlantic Coast and 4 on the Northern Great Plains) due to vehicles. Many biologists that monitor and manage piping plovers believe that many more chicks are killed by vehicles than are found and reported (Melvin et al. 1994). Beaches used by vehicles during nesting and brood-rearing periods generally have fewer breeding plovers than available nesting and feeding habitat can support. In contrast, plover abundance and productivity has increased on beaches where vehicle restrictions during chick-rearing periods have been combined with protection of nests from predators (Goldin 1993; S. Melvin, pers. comm., 1993).

**Corr. ID:** 15043                   **Organization:** Southern Environmental Law Center  
**Comment ID:** 137462           **Organization Type:** Conservation/Preservation  
**Representative Quote:** Typical behaviors of piping plover chicks increase their vulnerability to vehicles. Chicks frequently move between the upper berm or foredune and feeding habitats in the wrack line and intertidal zone. These movements place chicks in the paths of vehicles driving along the berm or through the intertidal zone, Chicks stand in, walk, and run along tire ruts, and sometimes have difficulty crossing deep ruts or climbing out of them (Eddings et al. 1990, Strauss 1990, Howard et al. 1993). Chicks sometimes stand motionless or crouch as vehicles pass by, or do not move quickly enough to get out of the way (Tull 1984, Hoopes et al. 1992, Goldin 1993). Wire fencing placed around nests to deter predators (Rimmer and Deblinger 1990, Melvin et al. 1992) is ineffective in protecting chicks from vehicles because chicks typically leave the nest within a day after hatching and move extensively along the beach to feed (see Table 1).

Vehicles may also significantly degrade piping plover habitat or disrupt normal behavior patterns. They may harm or harass plovers by crushing wrack into the sand and making it unavailable as cover or a foraging substrate, by creating ruts that may trap or impede movements of chicks, and by preventing plovers from using habitat that is otherwise suitable (Maclvor 1990, Strauss 1990, Hoopes et al. 1992, Goldin 1993)."

**Corr. ID:** 15136                   **Organization:** *Not Specified*  
**Comment ID:** 138476           **Organization Type:** Unaffiliated Individual  
**Representative Quote:** According to your own resource management report from 2008, there was a 28 percent fledge rate last year. That is less than the years before the Consent Decree. There's no scientific reason for these statistics, but it can't be based on beach driving or human presence. If that were the case, there should be more fledged chicks with the new restrictions and closures. And there's not; there's less. The closures aren't working.

**Response:** Numbers of piping plover at the Seashore are too low on an annual basis and the magnitude and number of potential and actual human and natural risks to piping are too high to establish statistically clear within-year cause-and-effect relationships. Typical sample sizes necessary to allow for scientifically and statistically valid studies of reproductive performance in birds are 12 nesting pairs at a minimum and more typically exceed 20-30

pairs, which is not occurring at the Seashore. These low numbers lead to a situation where there is high degree of scientific uncertainty in the system which in turn makes it very difficult to manage biological resources.

Compounding this low sample size is the fact that when it comes to poor breeding performance of piping plover at the Seashore (which can include but not be limited to these: the unavailability of habitat due to recreational pressure, failure of Piping Plover to settle at the Seashore and establish territories, failure of piping plover pairs to build nests, failure of piping plover to hatch eggs and fledge young), it is very rare indeed to be able to establish conclusively and scientifically what natural and/or human variable may have been at the root cause of the failure. Rather, it is more typically the case that adults, eggs, and young simply disappear without a trace. Therefore, it is almost impossible to assign a particular poor reproductive outcome to a single environmental issue with assurance.

As discussed in the response to Concern ID 24019, species numbers at the Seashore have been trending downwards. The exact cause of this downward trend is not known, but human activity, including direct and indirect effects of ORVs, is considered to be one of the factors. The adverse effects of ORVs, and the additional people brought into remote areas by ORVs, on wildlife is amply documented in the literature cited in the DEIS. The DEIS correctly acknowledges the other factors that also adversely affect wildlife at the Seashore. None of the applicable laws impose a burden of proof on NPS to show direct causality of ORV impact on a species. Quite to the contrary, Executive Order 11644 and the NPS statutes and regulations generally require that the default be no ORV use, unless ORV routes can be designated consistent with the Executive Order, which states that trails shall be located in areas of the National Park System only if the respective agency head determines that off-road vehicle use in such locations will not adversely affect their natural, aesthetic, or scenic values (which include park wildlife). Part of the purpose of the ORV Management Plan/EIS is to manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes to meet these requirements.

Regarding specific mortality events and/or disappearances of birds, nests and eggs from territories, NPS publishes information in its annual species reports regarding the potential disturbances to the species (weather, predation and human disturbance to name a few). Other than the rare case where chicks or adults are found dead in tire tracks or cases where predator signs are found near a failed nest, the majority of cases are necessarily categorized as “unknown” or “indeterminate” regarding the actual cause. Although these specific cases are unknown, what is known, and provided in the reports, are the types of disturbances that are occurring. For example, the 2009 piping plover report states that, “No hurricanes or tropical storms occurred during the breeding season. However, smaller localized events may have affected nesting. A very high new moon spring tide overwashed one nest on South Point and may have contributed to the loss of Brood 3a on Hatteras. The brood was foraging in the Small Salt Pond when the event occurred and was never observed afterwards.” In regards to human disturbance the report notes that, “Human disturbance, direct or indirect, can lead to the abandonment of nests or loss of chicks. Throughout the season, resource staff documented 192 pedestrian, eight ORV, 19 dog, three horse and three boat violations in the pre-nesting closures. The numbers are conservative since sites are not monitored continuously, weather erases tracks, and staff did not disturb an incubating pair or young in order to document disturbance. These numbers indicate violations to closures specifically containing nesting PIPLs or habitat protected for PIPLs.” While the NPS is not able to derive exact numbers of nest abandonment, egg or chick loss due to all of these factors, it is accurate to say they all play a role in why these losses occur.

Because of the low numbers of piping plover coupled with the inherent uncertainties surrounding piping plover reproductive performance, the NPS provides the required protection for this species from factors it can address, such as ORV use and human disturbance. This is consistent with NPS management policies provisions on listed species, which state the NPS will undertake active management programs to inventory, monitor, restore, and maintain listed species' habitats; control detrimental non-native species; control detrimental visitor access; and re-establish extirpated populations as necessary to maintain these species and the habitats on which they depend. (Section 4.4.2.3) In addition to NPS management policies, the NPS has a responsibility under the ESA to provide protection to the piping plover. Additionally, it is not required that an agency remedy all factors related to a problem in order to manage one factor. Thus, it is reasonable, and consistent with Executive Order 11644, for NPS to manage ORV use as provided in the Plan/EIS.

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**Concern ID: 24022**

**Concern Statement:** Commenters stated that NPS provided information on the Seashore's website that the piping plover is endangered, when its status is threatened and felt this information was misleading. They further stated that the piping plover is reaching the threshold to be removed from the federally threatened list.

**Representative Quotes:****Corr. ID:** 237**Organization:** NCBBA**Comment ID:** 130523**Organization Type:** Unaffiliated Individual

**Representative Quote:** My second point is that THE PIPING PLOVER POPULATION IS VERY NEARLY AT THE FEDERALY MANDATED REMOVAL NUMBER OF 500 PAIR OF BIRDS. PIPING PLOVER WILL BE REMOVED FROM THE "THREATENED" LIST IN THE VERY NEAR FUTURE. So the Hatteras Island National Seashore (HINS) folks have developed a plan based on a "Threatened" not "Endangered" species that is about to be removed from the Threatened and Endangered list all together. What kind of sense does that make? OH, Yes they must be MONITORED for an additional five years but that is just that, MONITORED, nothing more.

**Corr. ID:** 13806**Organization:** *Not Specified***Comment ID:** 139841**Organization Type:** Unaffiliated Individual

**Representative Quote:** On the CAHA NPS website in the "Nature and Science" section there is a reference to the piping plover as "endangered" when in fact the bird is "threatened". Statements like this on the official NPS website are misleading to the general public.

**Response:** As stated in the DEIS (p. 185 and 202), plovers from the endangered Great Lakes population have been observed at the Seashore in fall and spring migration and during the wintering period. Plovers from the threatened Atlantic Coast population also use the Seashore during all seasons with some birds even overwintering on the Seashore. Text of page 185 of the DEIS states that there have been sightings of all three North American breeding populations at the Seashore. While the critical habitat rule for wintering piping plover (FR 62820) notes that the Great Plains population "possibly" use the Seashore, this population has not been documented (both the Great Lakes and Atlantic populations have been documented). To correct this, the following sentence has been removed from the DEIS (p. 185), "Band sightings indicate that plovers from all three North American breeding populations depend on Cape Hatteras during migration and/or the winter." This same correction will be made to page 202 (under Affected Environment, Piping Plover, Nonbreeding Population) and mention of the Great Plains population occurring at the Seashore will be removed.

NPS has responsibilities under other statutes, such as the NPS Organic Act, to protect piping plover and its habitat in addition to its responsibilities under the Endangered Species Act and the Migratory Bird Treaty Act. Managing the list of endangered and threatened species is a U.S. Fish and Wildlife Service responsibility, and until delisting occurs NPS must manage the species as listed. NPS does not expect a change in the listing status of the threatened Atlantic Coast population at the Seashore to substantially change the Seashore's management to protect the piping plover and its habitat. However, when desired conditions for the piping plover at the Seashore are achieved, and as new information relating to effective management measures becomes available, changes may be considered, consistent with NPS responsibilities under all the relevant statutes and policies.

**Concern ID: 24023**

**Concern Statement:** One commenter stated that since sea turtles only lay eggs every 3 to 5 years, any improvements being seen today should not be attributed to the consent decree.

**Representative Quotes:****Corr. ID:** 14774**Organization:** *Not Specified***Comment ID:** 137802**Organization Type:** Unaffiliated Individual

**Representative Quote:** I have also learned from doing a little research that the turtles only come to shore to lay eggs every 3 to 5 years therefore any increase in turtle nesting during the years of the consent decree is indeed due to the policies in place before the consent decree.

**Response:** The number of nests laid by sea turtles are often highly variable from year to year due to a number of factors including both environmental and anthropogenic factors, some of which occur outside the nesting area (e.g. strandings and fishery impacts). These factors combined with a long age to sexual maturity (32-35 years) and a remigration interval (number of years between successive nesting migrations) of approximately 2-3 years (NMFS and USFWS 2008) indicate that successful conservation efforts implemented both at nesting beaches and outside nesting beaches may take several decades to yield detectable results on the nesting beaches (Hawkes et al. 2005). While recently implemented management policies, such as night driving restrictions under the consent decree, may help to increase nesting by reducing potential false crawls, given the variability of nesting numbers on an annual basis and the multiple factors that can influence those numbers, it would be difficult to conclusively attribute any near term increase or decrease in turtle nesting at Cape Hatteras National Seashore to recently implemented management changes, and the EIS does not attempt to do so.

**Concern ID: 24024**

**Concern Statement:** One commenter stated that the NPS has tampered with nests to manipulate the closures.

**Representative Quotes:**

**Corr. ID:** 846

**Organization:** *Not Specified*

**Comment ID:** 132661

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The National Park Service is ill-equipped and seriously negligent (according to the local's who live & work in this area). They have been caught tampering with nests to manipulate closures.

**Response:** NPS has no knowledge that this has occurred. No evidence has been provided to support the commenter's allegation that this has occurred.

**Concern ID: 24025**

**Concern Statement:** Commenters felt that based on existing data, closures in certain areas of the Seashore were not warranted. This included closures at Cape Point as data shows that chicks do not travel toward the ocean, but rather toward the dunes. They also felt that the north end of Ocracoke should not be closed as only four chicks have fledged from this area in the past 18 years.

**Representative Quotes:**

**Corr. ID:** 265

**Organization:** *Not Specified*

**Comment ID:** 130596

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The National Park has done a decent job helping these species. But neither you nor I are responsible for their fluctuating numbers. There are several major factors that cause these bird's survival numbers to go up and down. Storms and predation are by far, and with no argument, the two biggest factors. The Park's own data shows it is not from visitors walking or running over nests or chicks! The bird enclosures in the Cape Point area are necessary and I have personally always endorsed them. However, I spent the last two months reviewing piping plover nest hatchings at Cape Point. Over an eight-year period, all the data I reviewed showed that every chick hatched in an enclosure has traveled west towards the salt pond or lateral dune, never east towards the north beach or ocean! I know my birds and their activities very well after observing them for over 40 years. Perhaps that is why I'm presently working with Duke Energy studying avian patterns in the Pamlico Sound for the proposed wind energy project. Please look at that data very closely when making final decisions at Cape Point. There is no reason access to Cape Point should be denied when the area is being monitored by so many qualified Park biologists and the enclosures are properly in place.

**Corr. ID:** 15169

**Organization:** *Not Specified*

**Comment ID:** 139755

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Starting at the North end is the North Point of Ocracoke. Closing down this area completely to ORVs except for a quarter mile on either side of ramp 59 is just a shame. There has not been a piping plover nest there in the last ten years. As on Chart 200 -- piping plover nests -- no nests since -- when there was one in 1996, and only four chicks have fledged there in the last 18 years. That's kind of a big area to close down completely, for little gain.

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**Response:** Regarding suggestions specific to Cape Point, it is very difficult to craft a local management plan based on the behavior of a few birds over a short period. Rather, it is more effective to manage birds in a way that uses knowledge of local conditions and past performance at a particular site. As documented in the Seashore's annual reports, in recent years piping plover chicks have routinely moved east of their nest sites to forage in the ephemeral run-off channel from the small pond and there have been documented occasions in which chicks have foraged on the eastern ocean shoreline.

A reality at the Seashore is that conditions often change at short notice. For example, piping plover chicks at Cape Point could at any time need to access areas to the east in the event that their favored micro-sites, such as the salt pond, become physically unavailable or become host to a predator. Therefore, species management cannot be not based solely upon the behavior of a few individual birds over a short period of time and at one particular location. Rather, management must be adaptive and consistent with biological requirements and physical realities for each species such that it is responsive to changing conditions. For example fencing chicks away from and/or allowing ORVs while chicks are present at or near the east side of Cape Point or in the vicinity of the small or large salt pond would essentially reduce their chances of survival by making it more difficult or impossible for plovers to forage on the high quality food at these sites.

While alternative F, as modified, allows for ORV access to Cape Point (see Concern ID 24198), resource closures would still apply to this area as needed. Because of its consistent use as a nesting area, Cape Point was changed to vehicle-free year-round from about 0.3 miles west of the Point to milepost 47 and other areas that are open could be closed if breeding/nesting activities occur.

Because of the dynamic nature of the shoreline at the points and spits, especially at Hatteras Inlet and the North Point of Ocracoke, these areas may or may not attract piping plover breeding pairs in any given year. However, the areas that were historically occupied by nesting pairs and still provide high quality potential habitat are the sites that are most likely to become occupied again in the future given a growing population and assuming that nesting habitat is still available. Similarly, the North Point of Ocracoke and specifically ramp 59 is also very high quality potential habitat and while it may be underused at current population levels, it is essential that these areas be protected and maintained as they could be colonized in the future. Also, Seashore resource management staff have also concluded that morphological changes to the north end of Ocracoke, specifically accretion and increased tidal flats, is creating enhanced habitat for piping plover reproduction. This has been supported by increased observation of piping plovers in the area in the past few years, including a piping plover nest that occurred there in 2010.

Based on these regulations and what is known about the potential for habitat, the North Point of Ocracoke would be designated as vehicle free year-round under alternative F, and open to pedestrian access.

In general, the closures at the inlets and spits were examined and under new alternative F a decision was made to have many of the points and spits open to pedestrian access, but vehicle free either seasonally for the protection of nesting birds or year-round in recognition of the additional value of these areas to migrating and wintering shorebirds as further discussed under Concern ID 24198.

### ***AE11000 - Affected Environment: State-listed and Special Status Species***

#### **Concern ID: 24026**

**Concern Statement:** Commenters stated that data for American oystercatcher shows that human actions account for only 3% of disturbance and management should focus on factors that make up the majority of the disturbance such as predation and weather.

#### ***Representative Quotes:***

**Corr. ID:** 15236

**Organization:** *Not Specified*

**Comment ID:** 138861

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The existing policies may be reviewed in the future. To look at an example, an American oystercatcher nest failure statistics from the National Park Service indicate a mammalian predation causes 50 percent, or 54 percent, of nest failures; storms and Lunar Tides, 29 percent; nest abandonment, 6 percent; avian predation, 5 percent; ghost crab predation, 3 percent. Finally, human interference, 3 percent total nest failures.



Shouldn't the focus be on the 97 percent, and not the 3 percent.

**Response:**

Nest failure statistics only include direct sources of nest failure and do not include any indirect effects from human disturbance. Regarding the direct sources of failure, it is important to also be aware that for only 50% of the nest failures are the actual reason "source" known. Therefore, when it is reported that 3-4% of oystercatcher nest failure is attributable to direct human activities from such thing as physical destruction of nests and/or eggs, this does not include any indirect effects by humans upon oystercatchers.

The Seashore is focusing on minimizing factors it has control over (i.e. disturbance and predation) as opposed to factors it has no control over (i.e. weather events) in order to maximize American oystercatcher productivity. Predator populations and the pressure they exert on other species are themselves dependent upon and enhanced to some degree by recreation and other human activities. Similarly, some portion of observed nest abandonment and predation is likely contributed to by recreation and other human activity at the Seashore. So, it is not correct to ascribe just four percent of total American oystercatcher nest failures to human interference, when some significant percent of loss to predators and nest abandonment is likely to be directly and/or indirectly linked to recreation and human activities. In any event, management of recreation must be consistent with the best available information regarding how to minimize the negative impacts both direct and indirect from recreation and other human activities to all protected species at the Seashore.

As discussed above under Concern ID 24020, none of the applicable laws impose a burden of proof on NPS to show direct causality of ORV impacts on a species. ORV use is to be allowed only if NPS can determine that off-road vehicle use on the routes to be designated will not adversely affect the natural, aesthetic, or scenic values of the Seashore (including listed and non-listed park wildlife).

**Concern ID: 24027**

**Concern Statement:** Commenters did not agree that there has been a decline in beach nesting species at the Seashore. Some commenters stated that ORV driving has contributed to the decline of bird species and that the consent decree has addressed this as populations have remained stable or have increased. Others felt that ORVs were not the cause and other factors, such as feral cats, should be considered.

**Representative Quotes:**

**Corr. ID:** 726

**Organization:** *Not Specified*

**Comment ID:** 133130

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree that there has been "a decline in most beach nesting bird populations on the Seashore since the 1990's." There is no data to support this vague generalization.

**Corr. ID:** 11639

**Organization:** *Not Specified*

**Comment ID:** 135372

**Organization Type:** Unaffiliated Individual

**Representative Quote:** A recent change in management at the Seashore demonstrates that, given a chance, wildlife can rebound. Under a new science-based management plan, the number of nests laid by colonial waterbirds more than doubled in 2009 compared to 2007. And the two years under the new plan have seen a record 112 sea turtle nests in 2008 and 103 nests in 2009, compared to 82 in the 2007 season prior to the implementation of the plan.

**Corr. ID:** 15043

**Organization:** Southern Environmental Law Center

**Comment ID:** 137466

**Organization Type:** Conservation/Preservation

**Representative Quote:** The consent decree has governed management of ORV use as it affects wildlife on the Seashore for two breeding seasons (2008, 2009) and the beginning of the 2010 breeding season. All species or species groups targeted by the management measures in the consent decree remained stable or increased during the two breeding seasons under the consent decree. Piping plovers increased to 11 pairs in 2008 and 9 pairs in 2009 from 6 pairs in 2006 and 2007, the highest number of pairs since 1997. The number of pairs of American oystercatcher on Seashore beaches declined from 35 in 2000 to 21 in 2006 and remained stable through 2009. Fledged oystercatcher chicks increased to 17 in 2008 and 13 in 2009. In 2009, the number of least tern nests more

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nearly tripled to 577, compared to 194 nests in 2007. Black skimmers also nested on the Seashore's beaches for the first time in three years, with 40 nesting pairs. The number of common tern nests almost doubled with a minimum of 31 nests laid in 2009, compared to 18 nests in 2007. Sea turtles had a record nesting year on the Seashore in 2008 with 112 nests followed by 104 nests in 2009 and the number of nests exceeded false crawls both years.

**Response:** Although some increases in species numbers (but not for American oystercatcher, which have been flat for the last 4 years) has occurred over the last few years under the consent decree, it cannot necessarily be ascribed to or disassociated from any particular change in management. The number of nesting pairs (especially for piping plover) necessary to support that conclusion is simply too few to point conclusively to one or another aspect of management. When all of the species in question are looked at in ten year increments, they are all presently well below where they have been in recent years and in the case of piping plover, well below the established minimum for achieving regional sustainability. This is discussed further under the response to Concern ID 24020. Furthermore, piping plover, American oystercatcher and especially colonial waterbirds can colonize habitats due to disturbance at other nesting areas that can be many miles away. Therefore, it is possible that some of the flux in numbers observed at the Seashore may be due to events at nesting areas far removed from the Seashore. NPS nevertheless is required to conserve and maintain all of these species within the Seashore.

***AE12000 - Affected Environment: Wildlife And Wildlife Habitat***

**Concern ID: 24028**

Concern Statement: One commenter noted that ORVs have the potential to spread invasive plants at the Seashore.

***Representative Quotes:***

**Corr. ID:** 12406

**Organization:** Oklahoma Native Plant Society

**Comment ID:** 137838

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I can think of no better way to spread invasive plants on a National Seashore than to allow ORV access to it. In addition to what they bring in, they can go anywhere, gathering plant parts and distributing those parts over the whole area.

**Response:** The potential for ORV to introduce non-native plants at the Seashore is discussed in the DEIS (p. 33) which concludes that because only a small number of non-native species can live in the salty, windy, dynamic environment of the Seashore, there is a low potential for ORV to promote non-native species. The following sentences have been added to the Issues Considered but Dismissed from Further Analysis section of the FEIS to further clarify the low potential for ORV to introduce or promote non-native plants at the Seashore:

“Additionally, ORVs are prohibited from driving on vegetation at the Seashore. Therefore the potential for spreading plants from one area of the Seashore to another by driving on Seashore vegetation is also very low.”

***AE21000 - Affected Environment: Socioeconomics***

**Concern ID: 24031**

Concern Statement: Commenters stated that the economy in the Seashore is currently being impacted by restrictions on ORV use. Commenters provided statistics of the current economic situation they felt should be considered in the FEIS including unemployment rates, reductions in businesses, losses in tax revenues, and a decline in building permits.

**Representative Quotes:****Corr. ID:** 3874**Organization:** Outer Banks Chamber of Commerce**Comment ID:** 139461**Organization Type:** Unaffiliated Individual

**Representative Quote:** In September 2009, (the first full year under the Consent Decree) the beginning of the prime fall fishing season - Dare County as a whole experienced an unemployment rate of 6.8 percent, one of the lowest in the state, but when the North Carolina Division of Labor Marketing broke the unemployment down to zip codes it showed that Hatteras Island's villages had extraordinary unemployment. The island as a whole had 12.8 percent unemployment. When broken down to the villages, Salvo was at 28 percent; Buxton 16.5 percent; and Rodanthe was 12.4. According to data provided by the Dare County Social Services, in 2009, the first full year under the Consent Decree, the Hatteras Island increase in individuals applying for food stamps was 81.6 percent over 2008. The remainder of Dare [north of Oregon Inlet] 56.6 percent, and the countywide 59.3 percent. In October 2009, Cape Hatteras United Methodist Men's Emergency Assistance and Food Pantry reported that requests for food and other assistance in the seashore villages were continuing to rise. In 2008, the group paid out \$56,000 the entire year to help with utility bills, rent, etc.. but in 2009, the amount was surpassed before the end of October.

**Corr. ID:** 14888**Organization:** NCBBA**Comment ID:** 136465**Organization Type:** Recreational Groups

**Representative Quote:** Without sensible beach access, there is no reason for tourists to come here. Since 2008, with the increased closures, successful businesses that are older than the park itself have started to fail. All walks of business are reporting that staffs have been reduced by 25 to 50% and the same for their sales figures. Restaurants are often half full in summer and finding a place to stay is now easy. The people who are still working are earning less. Charity organizations are reporting a tremendous increase in the number of families needing their assistance, doubling every year since the Consent Decree took effect. Church donations have decreased. Area banks are reporting that businesses have exhausted most of their lines of credit trying to stay afloat. Dare County now has the highest rate of unemployment in the state of North Carolina.

**Corr. ID:** 14896**Organization:** *Not Specified***Comment ID:** 136399**Organization Type:** Unaffiliated Individual

**Representative Quote:** At the present time the OBX economy is suffering. During the 1st quarter of 2007 building permits totaled \$30,000,000 see The Virginian Pilot March 30, 2008. On May 6, 2010, The Coastland Times gave the total building permits for the first 4 months of 2010 as \$5,15,535.18 This represents a decline of over 83%. Our unemployment has been among the highest in the state; often twice the state's average.

**Corr. ID:** 15063**Organization:** Rodanthe-Waves-Salvo Civic Association**Comment ID:** 138970**Organization Type:** Civic Groups

**Representative Quote:** In 2009, Ramp 23 was closed from June 1 through August 31 for a colonial waterbird nesting area. No access at the ramp was available for beach walkers or drivers. This closure may explain why the unemployment rate in Salvo in September 2009 was 28 percent, while Dare County's as a whole was 6.8 percent. In 2010, Ramp 23 was closed for shorebird breeding activity on May 7, three weeks sooner than in 2009. This deals a second, and potentially larger, economic hardship to Hatteras Island's northern villages.

**Corr. ID:** 15096**Organization:** *Not Specified***Comment ID:** 139559**Organization Type:** Unaffiliated Individual

**Representative Quote:** You cannot blame the 28 percent unemployment in Salvo and Rodanthe on the economy and for the whole of Dare County at 6 percent. Please poll Hatteras Island. Now do not use aggregate figures of Dare County to base Alternative F.

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**Corr. ID:** 15240**Organization:** *Not Specified***Comment ID:** 138742**Organization Type:** Unaffiliated Individual

**Representative Quote:** You heard last night from an ice supplier; he gave you statistics that his ice sales on Hatteras Island changed by nearly a 100 percent between the date closures came into effect and the date that the beaches were reopened. Again, a significant impact. In Dare County Food Stamp allocations on Hatteras Island, if you look county wide, they're up around 59 percent. On Hatteras Island, they're up 81.6 percent. The county north of Oregon Inlet, they're only up 56.6 percent. Again, a very significant negative impact on Hatteras Island. If you go to the island and look at the local community and talk to the people down there, the Cape Hatteras United Methodist Church men's assistance fund, in 2008 they spent about \$56,000. By October of 2009, in that year, they had used their whole \$56,000 allotment. In Hyde County, Ocracoke has about 50 percent of the tax base, and they have only about 10 percent of the people. The average weekly -- the average wage in Hyde County is about \$22,000, again, about a hundred dollars more than the poverty level. Small economic impacts on Ocracoke have significant economic impacts throughout the county. These are but a few of the impacts that you'll see.

**Response:** The Affected Environment section (Chapter 3 of the DEIS) presents an overview of the socioeconomic environment in the area without specific reference to different alternatives, while the Chapter 4 presents estimates of the impacts of the alternatives on the economy. The data discussed in Chapter 3 includes county-level unemployment rates in Dare County, Hyde County and the State of North Carolina (see Figure 31).

Commenters requested that the FEIS present unemployment by zip code. Data provided by the Employment Security Commission of North Carolina's Labor Market Information Division regarding unemployment levels by zip code relies on the ratio of unemployment by zip code to unemployment within the entire county in the year 2000. This ratio, based on data from the 2000 Census, is multiplied by the current county unemployment rate to create the zip code level unemployment figures. While the ratio was high for some zip codes, cited by the commenters, other zip codes on Hatteras, such as Waves, have 0% unemployment according to these data. Data from 2000 are too out-of-date to be relevant for the analysis. Differences in unemployment rates in the year 2000 are not the result of ORV management under the no action plans, implemented beginning in 2007. Text was added to the Socioeconomic Impact section of Chapter 3 about the 2000 unemployment rates by zip code and the graph of current county-level unemployment was updated with the latest data.

Differences in tax revenue are difficult to compare across years because the county changes what items are taxable and there can also be changes in enforcement. However, assuming all of Dare County follows the same rules, we can compare the percent of tax revenue generated in the Seashore villages compared to Dare County as a whole over time to see if the months and years during which beach driving restrictions are in place disproportionately affect the Seashore villages. As discussed in the Socioeconomic Impacts section of Chapter 3, the monthly and yearly trends do not suggest disproportionate impacts on the Seashore villages due to the closures.

Data from the business survey (RTI 2010c) does not identify any businesses that had closed or reports of businesses that had closed. A number of businesses had experienced a decline in revenue between 2007 and 2008 or 2009, some of which the businesses attributed to the ramp closures.

The article from the *Virginian Pilot* referenced in a comment discussed the impact of the national economic recession on Dare County. Building permits for Dare County in January and February declined from \$30 million in 2007 to \$27.5 million in 2008. The article discussed how conditions in Dare County were similar to conditions across the nation. The *Coastland Times* issue referenced in the same comment contains a "Dare County Building Permit Report (Summary) January 2010" which lists the building permits issued in the county to date in 2010. It does not discuss why the number of permits is up (221 to date for 2010; 176 to date for 2009) and the value is down (\$5,315,535.18 to date for 2010; \$15,019,612.79 to date for 2009). Overall, the data suggest that the value of building permits declined between 2007 and 2009, as did housing sales and the median sales price of new houses.

Generally, building permits are dependent on many factors unrelated to beach closures such as access to credit, personal income, government incentives, and available land. The trends for Dare County are similar to trends around the nation. For this reason, we do not include data on building permits in the DEIS or FEIS. Text was added to the Socioeconomic Impact section in Chapter 3 of the FEIS about the 2000 unemployment rates by zip code and the graph of current county-level unemployment was updated with the latest data.

The economy all over North Carolina has been affected by the national economic recession. Business closures, loss of revenue, lack of credit from the financial markets, declining building permits and an increase in requests for public assistance are state-wide and nation-wide trends. For example, the following quote comes from The Durham News out of Durham, North Carolina: "The food bank saw its requests for food rise last year by 30 to 60 percent in the 34 counties it serves. The region mirrors national and statewide trends. More than one in seven American households struggled to put enough food on the table in 2008, the highest rate since tracking began in 1995, according to a U.S. Department of Agriculture report. That's about 49 million people in the country". <http://www.thedurhamnews.com/2010/04/11/201466/food-programs-struggle-to-keep.html>

As discussed in the DEIS, it is difficult to identify the proportion of the impact on the economies of Dare and Hyde counties that are due to national economic trends, the cost of gasoline in the summer of 2008 and the impacts of ramp closures.

In Chapter 4 of the DEIS, the range of impacts for each alternative was developed using several sources. One of the sources was data gathered during a survey of local businesses. The business survey methodology and results are described under "Assumptions and Methodology" in the Socioeconomic Impacts section of Chapter 4 of the FEIS and beginning on page 566 of the DEIS. Information about the business survey methodology was added to the Socioeconomic Resources section of Chapter 3 of the FEIS. The data gathered from local businesses forms one set of information used to generate the range of impacts.

#### ***AE22000 - Affected Environment: Visitor Use***

##### **Concern ID: 24032**

**Concern Statement:** Commenters disagreed with the NPS's description of the evolution of recreational uses in the DEIS, specifically stating that recreational fishing has been practiced for more than 50 years.

##### ***Representative Quotes:***

**Corr. ID:** 726

**Organization:** *Not Specified*

**Comment ID:** 133129

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the characterization that ORV for recreational purposes only resulted in the last half century due to increased accessibility to the barrier islands; that generalization can be made for beach recreation as a whole.

**Corr. ID:** 14971

**Organization:** *Not Specified*

**Comment ID:** 139000

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The NPS also argues that visitor use patterns have changed. For example, the NPS states that recreational fishing has only been practiced for 50 years when it "almost completely supplanted commercial fishing" and that neither recreational or commercial fishing are integral to the "continuing cultural identity of any community." This is categorically untrue. As the following excerpt from a letter from Lindsay Warren to Secretary of the Interior Harold Ickes clearly demonstrates, recreational fishing and tourism were major factors as early as 1935. Furthermore, the beach hauling method of commercial fishing was practiced as early as 1930. (Footnote 26)

**Response:** The DEIS does not state that no recreational or commercial fishing occurred at the Seashore in the period preceding the last 50 years. The discussion on DEIS p. 35 of ethnographic resources notes that the North Carolina Department of Cultural Resources (NCDCCR) found that the Cape Hatteras Preservation Alliance (CHAPA) request to the NCDCCR focused on activities occurring during the last 50 years. See the response to Concern ID 24160 for additional information on ethnographic resources and the Traditional Cultural Properties (TCP) determination.

The DEIS Chapter 3 section on Visitor Access and Off-road Vehicle Use (DEIS p. 261) contains the sentence "With the paving of NC-12, the completion of the Bonner Bridge connecting Bodie and Hatteras islands, and the introduction of the NCDOT Ferry system to Ocracoke Island, visitor access to the islands resulted in increased vehicle use on beaches for recreational purposes."

To clarify in the FEIS that recreation in general increased with improved road, bridge and ferry access to the islands, the sentence has been re-written to read: "With the paving of NC-12, the completion of the Bonner Bridge

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connecting Bodie and Hatteras islands, and the introduction of the NCDOT Ferry system to Ocracoke Island, improved visitor access to the islands resulted in increased recreational use of the Seashore in general as well as increased vehicle use on beaches for recreational purposes."

**Concern ID: 24033**

**Concern Statement:** Commenters felt that the DEIS did not take into account the variety of watersports that occur at the Seashore, and requested that information provided by these groups previously be incorporated into the FEIS. Commenters also stated that kiteboarding is currently banned from bird closures, and didn't feel this should be the case.

**Representative Quotes:**

**Corr. ID:** 7036

**Organization:** OBPA

**Comment ID:** 136990

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Kiteboarding has been banned within the boundaries of bird closures and SMA's, for dubious reasons. Kites are not predators to plovers, and the species will over time realize this fact and adapt accordingly. How long before surfing and windsurfing are also banned for the same nonexistent reasoning?

**Corr. ID:** 14529

**Organization:** WSIA

**Comment ID:** 134564

**Organization Type:** Unaffiliated Individual

**Representative Quote:** There was a very small description of the fishing community and the local fishing tournaments, but there was no description of the active watersports use, watersports tournaments, past and current world champions who frequent the area, or detailed map of popular areas of interest for each sport which was provided to the NPS during the Reg Neg process. Up until this point, we were very optimistic about the Reg Neg process, as we felt that this process would provide a very beneficial platform, of which qualified experts in their field could deliver invaluable information to the NPS on how the park is actually used on a daily basis in each of the user groups.

**Corr. ID:** 15083

**Organization:** Surf Rider Foundation - Outer Banks Chapter

**Comment ID:** 138399

**Organization Type:** Recreational Groups

**Representative Quote:** We'd

also like to encourage you, moving forward, when you are assessing this information, to not discount surfers as a user group, since aboard here in some of these meetings that nine-time world champion, Kelly Slater, has called it his neck of his pipeline, as far as his formative years are concerned. He's groomed countless surfers growing up. For his competitors, more importantly and from a lifestyle prospective, Cape Hatteras stands as the dominant, most enjoyable surfing spot on the whole east coast, and one of the few that is recognized around the world.

**Response:** All information provided to the negotiated rulemaking committee, including the materials referred to by commenter, was considered in the development of the DEIS. The DEIS indicates in several places (e.g. p. 259, 260) that visitors pursue watersports activities such as boating, fishing, kayaking, swimming, surfing, kiteboarding, and wind surfing at the Seashore. The following additional information has been added to the FEIS in Chapter 3, Recreational Opportunities and Use at Cape Hatteras National Seashore section, after the first sentence:

Materials submitted to the negotiated rulemaking committee by Cape Hatteras Business Allies mentioned the following recreational activities sought by visitors: birdwatching/wildlife viewing, fishing, horseback riding, shelling, sea glass, collecting, swimming, watersports (kayaking, kite boarding, paddle boarding, skim boarding, surfing and windsurfing). (Cape Hatteras Business Allies 2009. Draft Recreational Overview and Maps. pp. 5-8 of Addendum 4 in Negotiated Rulemaking Advisory Committee for Off-Road Vehicle management at Cape Hatteras National Seashore; Final Report of the Proceedings submitted to the National Park Service on behalf of the Committee by Patrick Field, Robert Fisher, and Ona Ferguson, Committee Facilitators, March 20, 2009. <http://parkplanning.nps.gov/document.cfm?parkID=358&projectID=10641&documentID=26286>)

A reference to these materials mentioned by the commenter has been added to the References section of the FEIS. Detailed descriptions of all the recreational activities pursued at the Seashore is not provided in the DEIS or FEIS

because it is not relevant; managing for each specific recreational activity is outside the scope of the plan and is not attempted.

Kiteboarding is managed differently than surfing and windsurfing because, unlike surfboards and windsurfing sails, the kite of a kiteboarder may fly overhead inside a closure or cast a shadow on the ground that is perceived by nesting shorebirds as a predator. This can result in flushing or physiological alarm reactions that change bird behavior. Inexperienced kiteboarders may be unable to control the kite sufficiently to prevent it from landing inside closures, resulting in disturbance to nesting birds and possible damage to nests and eggs.

**Concern ID: 24034**

**Concern Statement:** Commenters requested that the NPS provide data on visitor use conflicts/incidents. They further stated that they believed that there were no visitor conflicts to base management decisions on and that some statements in the DEIS were speculative.

**Representative Quotes:**

**Corr. ID:** 2748

**Organization:** *Not Specified*

**Comment ID:** 131569

**Organization Type:** Unaffiliated Individual

**Representative Quote:** "Restricting ORVs from areas of the Seashore could enhance the recreational experience for some and diminish the experience for others. Visitor experience could be affected by conflicts between motorized and non-motorized recreation users." pg. 5, part II. I disagree with this statement because it is based on speculation and not facts.

**Corr. ID:** 3051

**Organization:** *Not Specified*

**Comment ID:** 134685

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the Alternative F restrictions as those are the most stringent restrictions available. NPS stated: "Visitor experience could be affected by conflicts between motorized and non-motorized recreation users.:(pg. vi) - Why has NPS never made public a list of reported incidents? In the last 10 years, there has only been 1 minor incident involving a stuck vehicle and a pedestrian was disclosed. the driver was not blamed by those involved, nor was he charged.

**Response:** The presence of visitor conflicts has been documented in many public comments received on the Interim Strategy and on this Plan/EIS. The Seashore also receives letters from visitors complaining about the adverse effects of ORVs on their experience at the Seashore. Some members of the negotiated rulemaking committee represented members of the public that experience the presence of vehicles driving on the beach as a conflict with their experience of the Seashore. The Seashore does not compile data on numbers of these complaints or incidents of visitor conflict, nor is a quantitative analysis required to manage or minimize it under Executive Orders 11644 and 11989. As required by these Executive Orders, the Seashore is designating routes to "minimize visitor conflict."

**Concern ID: 24035**

**Concern Statement:** One commenter stated that NPS has not taken action to open sound access points after storms.

**Representative Quotes:**

**Corr. ID:** 14761

**Organization:** *Not Specified*

**Comment ID:** 135488

**Organization Type:** Unaffiliated Individual

**Representative Quote:** In regard to the park area west of the ferry dock...numerous sound access points were lost during past storms but the CHNS has taken no action to reopen or establish access points to the sound.

**Response:** NPS assumes commenter is referring to the Hatteras Ferry dock and therefore the back side of Hatteras Spit behind the Pole Road. Over the past several years the Seashore has tried to provide ORV access to the back side of Hatteras spit whenever it is not in conflict with safety, bird nesting or foraging, and it would not cause additional damage to the vegetation and general ecological attributes of the area. Some of this area is very narrow with a small strip of sand that is subject to flooding at high tide unless one drives on the vegetation, including wetland vegetation, that bounds it on the land side. Because it is problematic to access the Sound from Pole Road at other points,

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alternative F provides for ORV access to the Sound behind the Coast Guard Station, at Cable Crossing and at Spur Road.

**Concern ID: 24036**

**Concern Statement:** Commenters stated that the absence of vehicles on the beach would create safety issues, and provided examples of where they felt the presence of ORVs has been beneficial from a safety standpoint.

**Representative Quotes:**

**Corr. ID:** 11032

**Organization:** *Not Specified*

**Comment ID:** 136897

**Organization Type:** Unaffiliated Individual

**Representative Quote:** A Terrible Tragedy happened May 1st in Hatteras Inlet, within sight of the Beach, if only someone was there to see it go down. Well folks no one was there to see it because of the parties listed above..And massive Draconian Beach closures, where we can't even see Hatteras Inlet from what little Beach we have left off of RAMP 55. I will not go into details as I will leave that to the professionals here is the article.

<http://islandfreepress.org/2010Archives/05.02.2010-OnEPersonDiesWhenBoatCapsizesInHatterasInletButFiveAreRescued.html>

OnEPersonDiesWhenBoatCapsizesInHatterasInletButFiveAreRescued.html

What I will state is the Opinion of mine and a growing number of folks that live on this Island. On a hard SW wind Hatteras Inlet Beach's would have been full of Beach Fisher People Fishing for Drum, if it were not for all the Folks listed above. A Tragedy may (could, would, should insert any of your favorite non answers to our questions)have been avoided. If ( there's another one) if the Beach's were open, someone could have called in the Overturning of the TIDERUNNER, and a mans life could and should have been saved.

**Corr. ID:** 13352

**Organization:** NCBBA, OBPA, CHAC

**Comment ID:** 135555

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Current closures under the consent decree have been a direct cause of the loss of human life. With no visitors on the beach in the areas of the spits, a safety factor for the commercial and recreational boaters has been removed. Problems seen by beachgoers are reported to the US Coast Guard and rescue efforts implemented within minutes instead of hours after the incident.

**Response:** The purpose of the plan is to develop regulations and processes that carefully manage ORV use/access in the Seashore to protect natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors. The decision to allow or not allow ORV use on certain beaches must be based on resource protection and beach visitor use (including beach visitor safety), which are all known conditions or variables that can be identified and considered. While it is possible that under certain circumstances the presence of more potential witnesses might help those involved in certain offshore incidents or accidents, the governing laws and regulations do not allow NPS to make its decisions based on these sorts of infrequent and speculative scenarios. Also, after review of public comments the NPS has modified alternative F to allow for increased pedestrian access to spits and points, with many of these areas open to ORV use year-round or seasonally.

**Concern ID: 24037**

**Concern Statement:** Commenters asked for a greater balance and emphasis in the FEIS on pedestrian use and felt this use was being overshadowed in this process. They felt that the decline of pedestrian use was due to an increase in ORVs on beaches, which does not provide for adequate areas for a non-ORV experience. They also noted safety concerns related to ORVs and pedestrians using the same areas.



**Representative Quotes:****Corr. ID:** 290      **Organization:** Audubon supporter**Comment ID:** 130628      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Under the National Park Service's preferred plan, Alternative F, ORVs would be prohibited year round on only 16 of the 68 total miles of Seashore beach. This does not represent a fair balance for other users and wildlife. If ORV use is allowed within the park, at least half of the beach should be available year round for non-ORV users and wildlife. Combined with more walkways and better access facilities, this approach would provide balanced access for all visitors. Pedestrians and families could then more safely enjoy the Seashore, and wildlife could have a chance to rebound to its traditional numbers and diversity within the park.

**Corr. ID:** 246      **Organization:** *Not Specified***Comment ID:** 130540      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I am pleased that the use of ORV's on Hatteras Island is being evaluated, but find that the concerns of ORV beach users, and environmental concerns seem to be overshadowing those of users who choose not to drive on the beach (pedestrian users).

This is probably due to the fact that there are dedicated and effective organizations which promote ORV use on beaches and there are also equally effective organizations dedicated to environmental protection. There does not seem to be a similarly effective organization to promote the needs of non-ORV users.

This could be because pedestrian beach users have an expectation that reasonable beach use does not ordinarily include ORV use. Because of this expectation, the beach users who prefer limited ORV use are not organized in the same manner as pro-ORV groups or environmental groups.

Consequently, non-ORV beach users' interests seem to be lowest on the priority list with regard to this issue. In fact, this group could very easily be a majority of users who are unfortunately at this point a silent one. While it may be true that this is a less organized group, that fact does not diminish the importance of equal enjoyment of the beaches for pedestrian users, especially those which are part of the National Park system.

**Corr. ID:** 2877      **Organization:** *Not Specified***Comment ID:** 132811      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I have many safety concerns involving pedestrians and ORVs. So far this season in Florida one pedestrian, a child, was killed by a vehicle on the beach (traveling at the appropriate speed) and another seriously injured. By having separate areas, pedestrians can avoid the ORV areas and there won't be as many concerns for safety.

**Corr. ID:** 14588      **Organization:** *Not Specified***Comment ID:** 139238      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Narrow beaches with more vehicles make pedestrian access less appealing. Incidents of recreational conflicts on these beaches are less because visitors seeking solitude and a non-ORV experience don't frequent these beaches. This has created a change in the demographics of visitors that come to CHNS. A National Seashore that promoted National Park values would attract visitors that would benefit and enjoy a non-ORV experience. The NPS has encouraged ORV access by not having an ORV plan for many years. ORV organizations have formed because of this and created unrealistic expectations for ORV use in a National Seashore.

**Corr. ID:** 14940      **Organization:** *Not Specified***Comment ID:** 137072      **Organization Type:** Unaffiliated Individual

**Representative Quote:** There are many grave concerns about your proposed Alternative F and they are as follows:

-Safety of pedestrians will be compromised; These are just a few examples: (1) On March 22,2010, a 4 year old child was run over and killed by a beach driver in Daytona Beach after the child ran in front of the car and the driver stepped on the gas instead of the brake pedal. The driver was traveling the posted speed limit of 10 mph and child was holding his mother's hand when the accident took place. Children and motor vehicles on the beach is a dangerous combination. If it happened there, it could happen here.

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(2) In 2005 an ORV driving recklessly on the beach in Ocracoke (CHNS) flipped over and killed a passenger, a 17 year old German exchange student.

(3) A child was struck by an ORV on the Avon beach-front(CHNS) this past year and fortunately not seriously injured.

(4) In 2003, two teenagers were killed on Coquina Beach (CHNS) when they were speeding and flipped their jeep.

(5) There have been countless citations issued for speeding and reckless driving in the CHNS over the years resulting in many convictions in Federal Court.

**Response:** This plan provides a variety of recreational uses for Seashore visitors. As detailed on page 527 of the DEIS, the NPS believes that the enabling legislation of the park, as well as past planning documents, allows for ORV access, "within the context of preserving the cultural resources and the flora, fauna, and natural physiographic conditions, while providing for appropriate recreational use and public access to the Oceanside and soundside shores in a manner that will minimize visitor conflict, enhance visitor safety, and preserve Seashore resources." As stated above, the NPS believes that the revised range of alternatives accounts for the variety of visitor uses at the Seashore, without emphasizing one use over another.

Concerns regarding the level of pedestrian access provided in the DEIS were considered and as a result, alternative F has been modified to provide additional vehicle-free areas to provide for a greater variety of ways to access the beach for all visitors and address visitor safety issues raised by the public. Alternative F, as modified, provides 26.4 miles of the Seashore that are vehicle-free year-round and 27.9 miles of Seashore that are open to ORV year-round, with 12.7 miles that are seasonally designated as vehicle free at least six month per year (i.e., open to ORV use less than six months per year).

**Concern ID: 24038**

**Concern Statement:** Commenters requested that further analysis be completed on the number of fishing licenses issued in the State of North Carolina. They felt these data would show the adverse impacts of the consent decree on visitor use.

**Representative Quotes:**

**Corr. ID:** 14722

**Organization:** OBPA

**Comment ID:** 133636

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The data on recreational fishing fails to draw some obvious conclusions. Table 46 shows 519,000 participants for 2008 in the state. A comparison of that total to the total for 2007 would provide the context to understand the next chart. Table 47 shows a drop in Dare county license sales of over 10,500, or 10% from 2007 (93225) to 2008 (82635). This drop would need to be compared to the overall state recreational fishing participants, both in state and out of state, as in Table 46 for proper context as to the effects of the consent decree. If that drop isn't greater than or equal to 10% then you have evidence of the effect of the consent decree's harm. I request a more valid analysis of the effect on fishing license sales (a proxy for paying visitors) for the past three years, the 2009 data must be available as the license process is performed on line.

**Response:** The NPS has considered this concern and determined that there are multiple variables that impact fishing licenses outside of the potential impact from the consent decree and for this reason, it was not used as a tool for the impact analysis. Because the Coastal Recreational Fishing License has only been a requirement since 2007, there is really no long term data from which to draw any conclusion. These tables were included in the DEIS to provide a baseline for the types and level of expenditures that occur at the Seashore and across the state related to recreational fishing and to provide the reader with a picture of the activity at the Seashore. This information was provided not only for recreational fishing, but for other activities such as wildlife watching. The 2009 data will be reviewed and incorporated into the FEIS.

**Concern ID: 24040**

Concern Statement: Commenters stated that pedestrians, not ORVs, leave behind most of the trash and asked that references to refuse left behind by ORV users be stricken from the FEIS.

**Representative Quotes:**

**Corr. ID:** 7036

**Organization:** OBPA

**Comment ID:** 136993

**Organization Type:** Unaffiliated Individual

**Representative Quote:** CHNSRA NPS staff is lucky in the fact that the ORV users remove almost every scrap of trash from beach daily, negating the need for an official NPS trash removal program within the seashore. Pedestrian beaches are another story, and areas that are closed to ORV's for a prolonged period of time show that pedestrians do not remove trash from the beaches, nor do any other user group other than ORV users. There are passages within the DEIS that suggest predators are attracted to the refuse left behind by ORV users, but this is simply not the case in CHNSRA, and these lines should be stricken from the FEIS.

**Response:** It is recognized that different users have different habits or ethics when it comes to trash disposal, and the EIS states that recreational users (including both pedestrians and ORV users) may leave trash behind. The use of ORVs brings people into areas where sensitive species reside, including areas that may not often be reached by solely pedestrian means, due to distances. Seashore staff observations confirm that trash is left behind by some, not all, of these users, just as trash is left behind by some, not all, strictly pedestrian users. NPS acknowledges and appreciates the "beach respect" ethic and beach clean-up projects sponsored by local ORV groups.

**Concern ID: 24042**

Concern Statement: Commenters noted data in Table 36 of the DEIS they felt was incorrect, and offered suggestions for correcting the data.

**Representative Quotes:**

**Corr. ID:** 14947

**Organization:** Cape Hatteras Anglers Club

**Comment ID:** 137152

**Organization Type:** Recreational Groups

**Representative Quote:** Page 262 of DEIS TABLE 36. FISHING TOURNAMENTS, 2004-2008

Cape Hatteras Anglers Club

11/4/2004

11/3/2005

600

Public ocean beaches excluding 0.5 mile either side of Cape Point, 0.5 mile from Hatteras Inlet and Ocracoke Inlet, and 0.5 mile on the north side of Oregon Inlet; also excluding 0.2 mile on either side of ramps 1,4,23,27,30, 34, 43, 49, and 55, and the beaches of Pea Island NWR

Cape Hatteras Anglers Club

11/8/2007

11/6/2008

720 Hatteras Island

The content of Table 36 regarding the Cape Hatteras Anglers Club (CHAC) fishing tournament is incorrect in the following ways:

1. The 2005 tournament was authorized for 720 not 600,
2. The 2006 tournament which is omitted was authorized for 720.
3. The tournament location for 2004 was not limited to 0.2 miles from ramps as stated.
4. Tournaments for 2006 (omitted), 2007 and 2008 had the 0.2 mile ramp limitation.5. Pea Island NWR has never been requested for the CHAC tournament yet is listed as an excluded "Tournament location within the Seashore". Pea Island NWR is not managed by NPS. but this reference implies that it is, and if so. Pea Island NWR must be listed as a beach that the public has available as a non-ORV beach on page xiii.
6. Since 2005 the tournament has been allowed to use 0.7 miles north of Ramp 43 for access to fish, but is omitted on Table 10.
7. Listing "Hatters Island " as the "Tournament location within the Seashore" for the years 2007 and 200 8 is not correct. The corrected language listed for 2004 and 2005 should have been listed here.

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**Response:** The information for the Cape Hatteras Anglers Club in Table 36 has been revised as follows:

- Number of people authorized for the 2005 tournament has been changed from 600 to 720
- The November 4-5 2006 tournament information was added, including its authorization for 720 participants
- The 0.2-mile from ramps restriction was removed from the 2004 tournament information and added to the 2006, 2007 and 2008 tournament information
- Reference to Pea Island was removed
- Tournament location of "Hatteras Island" for the years 2007 and 2008 was replaced with the corrected location language for 2004 and 2005.

**Concern ID: 24043**

**Concern Statement:** Commenters stated that the data in the DEIS related to ORV use of the Seashore on holiday weekends was incorrect, and asked that this be addressed in the FEIS.

**Representative Quotes:**

**Corr. ID:** 12672

**Organization:** Not Specified

**Comment ID:** 140384

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 265. "Figure 25 shows the distribution of ORVs across these areas on Memorial Day and the Fourth of July in 2008." - Disagree - The ORV counts provided in this data fail to show that Bodie Island Spit and Cape Point were closed to ORV access on these dates due to resource protection closures. This, therefore, increased ORV congestion at ramps 4, 43, 44 and 49.

**Corr. ID:** 14977

**Organization:** Not Specified

**Comment ID:** 137568

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the following charts;

DEIS Chapter 3 page 265; On Memorial Day and the Fourth of July, the Seashore counts the number of ORVs on the beach by an aerial survey. Research Triangle Institute International (RTI) (RTI pers. comm.. 2009a) used this information, along with assumptions based on rental occupancy and patterns of use, to create a range of estimates for the total number of ORVs using the Seashore in a year. Although there are some data from various sources about the number of vehicles on the beach, none of the sources have the scope or reliability to provide a robust annual estimate of vehicles on the beach. A survey is being conducted according to a random sampling plan to provide an estimate of the number of vehicles on the beach between April 1, 2009, and March 30, 2010 with a 95% confidence interval. Data collection will be completed in March 2010.

Figure 25 shows the distribution of ORVs across these areas on Memorial Day and the Fourth of July in 2008. About 75% of the ORVs counted on those days were located around the points and spits (including all of Ocracoke as one count); over half of the ORVs were located around Cape Point and the Bodie Island Spit.

Figure 25: This pie chart for July 4 is flat out a lie.

From Cyndy Holda access mileage of open & closed beach in July 3;

ORV Access Mileage for July 3, 2008:

\*\*\*\*\*All mileages are approximate\*\*\*\*\*

Bodie Island Spit:

Ramp 4: 2.5 miles open north of Ramp 4

There was no access to BODIE Island spit, it was closed all the way back to ramp 4 were it meets the beach. The point was also closed. The nearest vehicles were over a mile away from both locations.

Ramp 43: 0.4 mile open north of Ramp 43; 0.1 mile open south of Ramp 43

Ramp 44: Closed

Ramp 49: 1.7 miles open east of Ramp 49; 1.2 miles open west of Ramp 49

According to this document, there was a 0.50-mile parking lot at ramp 43.  
There was a larger parking lot at ramp 49 2.9 miles long.

There was no access to Bodie Island Spit, Cape Point, or South Point Ocracoke Island on July 4.

**Response:** The following sentence on page 265 of the DEIS that refers to closures at the points and spits Memorial Day and Fourth of July 2008 has been removed from the FEIS.

The distribution of ORVs as indicated on the pie charts is correct and no changes were required.

### ***AE3000 - Affected Environment: Soundscapes***

#### **Concern ID: 24045**

**Concern Statement:** One commenter suggested using data from the Noise & Health Journal to address how noise affects stress levels.

#### ***Representative Quotes:***

**Corr. ID:** 6382

**Organization:** Audubon

**Comment ID:** 131203

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Noise and ORV use is stressful and disturbing to people and wildlife. Even when a person does not report any stress from noise, raised levels of stress hormones are usually present. These stress hormones have adverse affects on the heard. Scientific literature exists to support this statement. The Noise & Health Journal is a good source of details regarding human health and noise.

#### **Response:**

When analyzing the impacts of ORVs on the soundscape, NPS did consider the health effects of noise on humans and wildlife. The DEIS incorporated by reference a recent review of the scientific literature on the effects of noise on wildlife published in Trends in Ecology and Evolution (Barber et al in press) written by NPS acoustic biologists. The Barber et al article discusses the health effects of increased noise on humans and wildlife and references several studies that address increases in stress hormones and hypertension from noise.

The paragraph on page 508 of the DEIS has been revised in Chapter 4 of the Soundscapes section to read:

“Research has shown that human activities that generate high levels of anthropogenic noise (including vehicular traffic) can result in adverse impacts to animal physiology and behavior. Impacts to bird species include nest desertion and reduced pairing success. (Barber et al. in press). Noise can cause increased levels of stress hormones and hypertension and inhibit the ability of wildlife to perceive natural sounds, an effect referred to as “masking.” Acoustic masking can interfere with the ability of wildlife to communicate with each other, for example, when sounding a warning to indicate an approaching predator (Barber et al. 2010).”

### ***AE8000 - Affected Environment: Wetlands and Floodplains***

#### **Concern ID: 24046**

**Concern Statement:** One commenter stated that the DEIS did not accurately describe how and why ORVs impact wetlands.

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**Representative Quotes:****Corr. ID:** 15000**Organization:** *Not Specified***Comment ID:** 140232**Organization Type:** Unaffiliated Individual

**Representative Quote:** Adjacent wetlands come in for their share of NPS remarks disgruntled with human visitors. On page 28 is a complaint of vehicles driving over wetlands to avoid standing water in trails and interdunal roads. The NPS failed to mention a few key facts:

- a. The sand trails had been established for many years.
- b. During the 1970's and 1980's, NPS routinely operated a caterpillar road grader to maintain the trails.
- c. The graders would use their blade to dig drainage ditches along each side of the trail. The ditch sand was used to raise the center road bed and packed firm by the blade and grader wheels.
- d. The trails were kept free of water pooling or quickly repaired.
- e. Standing rain water will soon become saline and corrosive to the underside of vehicles.
- f. Retired folks on limited income don't have tax dollars to buy replacement vehicles like NPS.
- g. Yes we are forced to drive around water holes.
- h. It has always been the NPS job to maintain the trails.
- i. This is just one of many instances in the DEIS where incomplete information is presented to bolster the NPS agenda.

**Response:** The DEIS describes how ORVs impact soundside wetlands and recognizes that driving around standing water in the vehicle routes causes the described impacts by driving over wetland vegetation and damaging or killing the vegetation (DEIS page 29 and in all impact assessments for wetlands and floodplains.) The "how" of the impact is the same for all action alternatives, although the impacts would occur to a lesser extent with compliance with the additional protective signage included under alternatives E and F. Why ORVs choose to travel around standing water is self-evident, but the field conditions, including the presence of water holes, cannot be totally controlled by the NPS, and therefore this impact is recognized for all alternatives since all have some level of soundside access.

**AL1010 - Alternatives: Alternative A (Substantive)****Concern ID: 24047**

**Concern Statement:** Some commenters requested that the NPS select alternative A, stating that it is simple for the public to understand and meets resource protection needs. They further stated that the Interim Strategy should have been the basis for the preferred alternative. Other commenters asked that alternative A be removed from consideration, as it would not meet the goal of the plan.

**Representative Quotes:****Corr. ID:** 726**Organization:** *Not Specified***Comment ID:** 133142**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the finding that Alt A will lead to long term moderate to major adverse impacts, first that it neglects to recognize elements of the 1978 Draft Interim Plan included in this alternative provide buffers and restrictions, and second that while in affect the many species including non-indigenous ones thrived.

**Corr. ID:** 2545**Organization:** *Not Specified***Comment ID:** 132031**Organization Type:** Unaffiliated Individual

**Representative Quote:** Ocracoke, meanwhile, is unburdened by beach villages, an ample beach to person ratio and relatively low wildlife concentration. In my opinion, this favors Alternative A as the most appropriate choice for Ocracoke Island. This plan is administratively simple to oversee and for public cooperation, and meets the needs of wildlife conservation. Please give serious consideration to this tailored approach to the issue of beach access- Alternative A for Ocracoke.

**Corr. ID:** 13090      **Organization:** *Not Specified*

**Comment ID:** 140935      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I am writing to request that the National Park Service removes alternative A from the list of possible management plans for Cape Hatteras National Seashore. As stated in the purpose section of the plan, the goal is to develop a management plan that stipulates ORV use in a manner that will maintain the parks' resources. Being written as non-action plan negates the ability of this alternative to successfully accomplish the task.

**Corr. ID:** 13763      **Organization:** *Not Specified*

**Comment ID:** 139741      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Alternative A (2007 FOSNI Interim Strategy) for the purposes of Species/Resource Management and the current ORV Management Policies are the only option in the DEIS that accomplishes what was envisioned in the 1930s when the park was created. Around 1952, fifteen years after he submitted the act to create Cape Hatteras National Seashore, then former Congressman Lindsay C. Warren made the following statement:

"When I introduced the bill for the Cape Hatteras National Seashore in 1937, I would have nothing to do with it unless the people were fully protected forever in their hunting and fishing rights, and unless there was a guarantee of a hard-surface road if the Government came into the picture, and unless all of the villages were exempt. At that time there was very little prospect for a paved road, but I extracted a promise from the NPS that they would favor such a road to be built, whenever possible, either through State or Federal Aid funds. Frankly, I think that this Park will mean more to the people of Dare County than anything that could ever happen to them. I do not say that because I was the author of the bill, but I say it because I had studied the history of all Parks, before I came into the picture back in 1937."

As stated above, the creation of the park took many years of negotiation with the residents of Hatteras and Ocracoke Islands. At the time residents were presented with two other options for development--namely, oil exploration and accepting outside developers. The residents' acceptance of the national seashore as their preferred option for development was based upon Conrad Wirth's promise that the parks' beaches would always be open to all people, that the park would not compete with the villages for tourists' dollars, and that the NPS would "stand ready to cooperate with you at all times in the development of your communities, if you want us to." That is, the residents saw the park as a way to retain their primary way of life while still taking advantage of the higher living standard offered by a modern national economy.

**Corr. ID:** 14633      **Organization:** *Not Specified*

**Comment ID:** 135723      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Before the court order, which came about because the park service never published the orv plan formed in 1978 after public hearings and much review, The Cape Hatteras National Seashore was operating under an "interim "plan established by the current Superintendent which was approved by Fish and Wildlife and produced more plover chicks in 2008 than the subsequent court ordered plan in its first year. WHY WAS THIS PLAN NOT USED AS THE BASIS FOR THE CURRENT RECOMMENDATION'S RATHER THAN THE OPPRESSIVE COURT ORDERED PLAN?

**Corr. ID:** 14700      **Organization:** OBPA

**Comment ID:** 137289      **Organization Type:** Unaffiliated Individual

**Representative Quote:** As described on page x Alternative A would restore the conditions existing before the consent decree and implement the plan drafted in 1978. TABLE ES-4. ANALYSIS OF HOW ALTERNATIVES MEET OBJECTIVES and all the subsequent discussion in the DEIS fails to rebut the presumption that a perfectly adequate response to the legal requirement for an ORV plan is to adopt No Action Alternative A. I request the PARK Service explicitly address what the objection to this course of action would be. The response should be based on the best available science and the documented bad results which were occurring under the Interim Management plan between 1978 and January 2006 when the National Park Service the Interim Protected Species Management Strategy/Environmental Assessment Strategy and the adoption of the "Consent Decree" in October of 2007. If there is no documentary evidence of "Significant Impact" to make the case for modification of the pre-October 2007 plan(s), then address why a period of operation under Alternative A should not occur to allow for it to be gathered.

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**Response:** The alternatives under consideration must include the “no-action” alternative as prescribed by 40 CFR 1502.14. Two no-action alternatives, alternatives A and B, are included for analysis in this plan/EIS because alternative A is the most recent agency decision and alternative B reflects the on-the-ground management since the April 30, 2008 consent decree. The two no-action alternatives capture the full range of management actions that occurred and are currently occurring during the planning process for this plan/EIS. Also, the no-action alternative(s) provide a baseline of existing impacts continued into the future against which to compare the impacts of action alternatives. For these reasons, alternative A and alternative B are included in the range of alternatives.

Alternative A, Continuation of Management Under the Interim Protected Species Management Strategy (Interim Strategy), was not identified as the NPS’s preferred alternative because this alternative would not meet key objectives (such as those related to providing protection for threatened and endangered species and minimizing impacts to other natural resources at the Seashore) as well as the action alternatives (DEIS p. 95). While alternative A satisfies some of the plan objectives, the fact that it would designate nearly all Seashore beaches as ORV routes 24 hours a day seriously limits its ability to meet the natural resource or visitor use and safety objectives as well as the preferred alternative F. In addition, alternative A, if implemented as long-term management, would impede the attainment of the Seashore’s desired future conditions for natural resources as identified on page 7 to page 10 of the DEIS. The impact analysis in Chapter 4 of the DEIS documents the adverse effects of alternative A on natural resources. Alternative A also fails to provide areas of beach that are not designated as ORV routes to accommodate visitors who wish to enjoy the Seashore without the presence of vehicles. Thus, alternative A unreasonably interferes with the atmosphere of peace and tranquility and the natural soundscape maintained in natural locations within the Seashore.

As noted on p. 60 of the DEIS, alternative A was based primarily on the selected alternative in the July 2007 FONSI for the 2006 Interim Strategy and the 2007 Superintendent’s Compendium. Elements from the 1978 draft interim ORV management plan that were incorporated by inclusion in Superintendent’s Order 7 included ORV corridors, speed limits, seasonal closures and safety closures. Resource protection measures from the 1978 plan were not incorporated into alternative A, as the protection of bird species in the 1978 plan was minimal as there were no state or federally listed birds in the Seashore at that time. In general, species numbers declined at the Seashore during the life of the 1978 plan. The number of piping plover nesting pairs declined from 15 to 2 between 1989 and 2003 (DEIS p. 193). Seabeach amaranth declined from over 15,000 plants in 1988 to only one plant in 2004 (DEIS p. 222). The number of American oystercatcher nesting pairs declined from 41 in 1999 to 29 pairs in 2003 (DEIS p. 229). Also, recent estimates of colonial waterbird nests at the Seashore are clearly much lower than they were 30 years ago (DEIS p. 240).

**Concern ID: 24050**

**Concern Statement:** Commenters stated that alternative A is not a legitimate no action alternative, as it is part of an ongoing planning effort.

**Representative Quotes:**

**Corr. ID:** 14932

**Organization:** *Not Specified*

**Comment ID:** 136873

**Organization Type:** Unaffiliated Individual

**Representative Quote:** #7: The DEIS is Flawed and Illegal

The NPS 6 alternatives begin with Alternative A - No Action plan and Alternative B -No action plan. Both of these plans were the result of actions. Alternative A was the result of the interim plan being put in place and Alternative B was put in place by the consent decree. Because the DEIS should have had a Alternative No Action plan that reflected the regulations being enforced in 2004 that were adopted from the 1978 draft plan and updates through Superintendent’s Compendium, I content that the entire DEIS is flawed and illegal.



**Corr. ID:** 15010                   **Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140436           **Organization Type:** Conservation/Preservation

**Representative Quote:** Under Alternative A, "management of ORV use and access at the Seashore would be a continuation of management based on the selected alternative identified in the July 2007 FONSI for the 2006 Interim Strategy and the 2007 Superintendent's Compendium, as well as elements from the 1978 draft interim ORV management plan that were incorporated in Superintendent's Order 7, as amended in 2006." DEIS at 60. In October 2007, a lawsuit was filed on the Interim Strategy that resulted in the Consent Decree. Notably, Alternative A in the DEIS is actually Alternative D from the "Interim Protected Species Management Strategy /Environmental Assessment published on January 18, 2006, which, in fact was an action alternative. The Federal action to which the DEIS relates is the development of a long-term ORV management plan and associated special regulation in accordance with Executive Order 11644, as amended by Executive Order 11989, and 36 C.F.R. §4.10. Given that the current DEIS is all part of the same ongoing planning effort that now began more than five years ago, Alternative A cannot legitimately be viewed here as a no action alternative.

**Corr. ID:** 15010                   **Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140438           **Organization Type:** Conservation/Preservation

**Representative Quote:** The true no action alternative that the DEIS should have considered is the no action alternative that was referenced in the "Interim Plan" assessment, the first step in NPS's effort to assess the impacts associated with management of ORV use as the Seashore. The cover letter to that document explained that "This document presents the evaluation of four alternatives for managing protected species at Cape Hatteras National Seashore in the interim period until a Long-term Off-Road Vehicle (ORV) Management Plan and associated regulations are developed." It then explained the no action alternative as follows:

Alternative A - Continuation of 2004 Management (baseline or no action): The no-action alternative would continue management as expressed in Superintendent's Order #07, which was issued in 2004. Under alternative A, the seashore would implement protective measures for recent piping plover breeding areas (areas used at some time during the past 3 breeding seasons); American oystercatchers and colonial waterbirds, if a territory or colony or nests established; sea turtle nests; and seabeach amaranth plants or seedlings. Measures vary for special status bird species according to the activity. Any species management closures would require the Superintendent's approval. Management would continue for predator removal, recreation use restriction, and public outreach.

It is this alternative that should have been identified as the no action alternative and used to establish the baseline for consideration of the various alternatives in the DEIS. By failing to use the baseline, the DEIS's analysis understates the significance of the impact of Alternative F and the other action alternatives on recreational, cultural, historic, and socioeconomic values. All six alternatives are in fact "action alternatives," when compared to the policies and practices in place when the ongoing ORV management planning process began.

**Corr. ID:** 15010                   **Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140434           **Organization Type:** Conservation/Preservation

**Representative Quote:** Section 1502.14(d) of the CEQ's NEPA-implementing regulations requires that the alternatives analysis in an EIS to "include the alternative of no action." 40 C.F.R. 5 1502.14(d). The analysis of the no action alternative "provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives." NEPA's Forty Most Asked Questions, CEQ, available at <http://ceq.hss.doe.gov/nepa/regs/40/1-10.HTM#3>. Rather than adopt a single no action alternative, the DEIS took the unusual step of adopting two such alternatives. Unfortunately, neither of these alternatives is appropriate in this instance or reflects the proper baseline for evaluating the environmental impacts of the various alternatives. The DEIS's choice of two no action alternatives that are not true no action alternatives and that already reflect movement toward the proposed action has the effect of grossly understating the impacts of Preferred Alternative F and the other alternatives on recreational, cultural, historic, and socioeconomic values. Accordingly, the NPS must reconsider its choice of no action alternative and baseline, adopt an appropriate no action alternative, and re-assess the environmental impacts of the proposed action and reasonable alternatives against an appropriate baseline.

**Response:** DEIS alternative A comprises Interim Protected Species Management Strategy (IPSMS) alternative D with some elements of IPSMS alternative A, as described in the FONSI for the IPSMS. The IPSMS and the ORV management plan/EIS are two separate management documents with different purposes. The Interim Strategy was

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developed as an interim plan to guide species management until a separate ORV management plan and rule were in place.

At the time the DEIS was initiated, the IPSMS (which incorporated components of Superintendent's Order 7, the 2007 Superintendent's Compendium, and elements of the 1978 draft interim ORV management plan) represented the most recent NPS decision as to the management of the Seashore. Because the IPSMS directed management, it is appropriately analyzed as a no action (i.e. continuation of current management) alternative in the ORV management plan/EIS.

**Concern ID: 24624**

**Concern Statement:** One commenter requested that the NPS explain why if alternative A has already been analyzed and has a Finding of No Significant Impact (FONSI), this alternative is not being selected for implementation.

**Representative Quotes:**

**Corr. ID:** 12002

**Organization:** *Not Specified*

**Comment ID:** 134186

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The DEIS describes, Alternative A as No Action: Continuation of Management under the Interim Protected Species Management Strategy. Further described as, "management of ORV use and access at the Seashore would be a continuation of management based on the 2007 FONSI for the Interim Strategy?"

If you have a "Finding of No Significant Impact" for Alternative A; and alternative A is the least costly; and it has the least restriction to the public's use of the Park; NPS should recommend Alternative A. This calls into question earlier management strategies and why (assuming they had FONSI's) this EIS was performed and why there has been such a large change in direction by NPS. Perhaps there is a good reason that the EIS conflicts with previous FONSI's. If it isn't already covered in the DEIS, the reasons should be explained in the DEIS document.

**Response:** Alternative A provides a useful baseline of impacts from current management during a part of the planning period for the long-term plan/EIS. As described several places in the FONSI, management under Alternative A was considered to have no significant impacts during the 3 year period it was to be in effect before the long-term plan was developed and approved for implementation. The related biological opinion (BO) issued by the U.S. Fish and Wildlife Service also evaluated the impacts of the IPSMS based on the understanding that it was a short-term action. The purpose, need, and objectives for the Interim Protected Species Management Strategy are different than those of the long-term ORV plan/EIS. As a long-term management plan, alternative A would not meet the criteria of the Executive Orders or the NPS regulations for designation of ORV routes, nor would it meet the purpose and resolve the need for the long-term Plan/EIS. As discussed on p. 95 of the DEIS, alternative A would not meet the objectives of the plan to a large degree. Also it would have the potential for impairment of several shorebird species (DEIS pp. 429 - 433). NPS has looked carefully at the impacts from all the alternatives, and has considered that alternative A has fewer adverse impacts on ORV users and local economic interests than the other alternatives. After reviewing all the public comment on the DEIS, NPS has added some mitigation actions to alternative F, in part, to address these concerns.

**Concern ID: 25207**

**Concern Statement:** Commenters stated that the general methodology of the document was flawed because it is based on a premise that the existing condition violates federal laws, and that this premise is unproven.

**Representative Quotes:**

**Corr. ID:** 15045

**Organization:** United Four Wheel Drive Associations, Inc.

**Comment ID:** 137883

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The DEIS is premised on an incorrect and unsupportable notion that the existing condition violates applicable law and cannot be improved. To the contrary, designated roads, trails, and areas are being supported, Endangered Species Act, Migratory Bird Treaty Act, and similar standards are being met, and species protection coupled with a greater degree of both pedestrian and motorized vehicle access can be even further improved through a cooperative and logical management solution that will bring common sense to planning and management of the unit.

**Response:** Without a regulation designating ORV routes, the NPS is out of compliance with its own regulation, 36 CFR 4.10, and the requirements of the Executive Orders 11644 and 11989 that relate to criteria for ORV route designation and allowing ORV use on lands of the national park system. The U.S. District Court for the Eastern District of North Carolina has ruled that operating an off-road vehicle is prohibited except where NPS has specifically designated that ORV use is permitted, and therefore ORV use is prohibited at the Seashore absent a special regulation issued in compliance with 36 CFR 4.10, *United States v. Matei*, 2:07-M-I075 (E.D.N.C. 2007); *United States v. Worthington*, 2008 WL 194386 (E.D.N.C. 2008). The NPS is also under a court order stemming from a later case to develop and approve an ORV Management Plan and final regulation. The Plan/EIS has been developed to bring the Seashore into compliance with the Executive Orders and other legal and policy requirements, as described by the purpose, need and objectives (DEIS pp 1-3). The impact analysis for the alternatives, including alternatives A and B which describe actions under the existing condition, provides information on the effects the different management actions would have. In addition to carefully considering the impacts, the NPS has considered that action alternatives, including the preferred alternative F, better meet the purpose, need and objectives than the existing conditions (alternatives A and B) do.

### ***AL1025 - Alternatives: Alternative B (Substantive)***

#### **Concern ID: 24051**

**Concern Statement:** Commenters requested that alternative B be removed from consideration in the FEIS. Some noted that this alternative was arbitrary and capricious as it has not gone through the NEPA process, and therefore lacks transparency.

#### ***Representative Quotes:***

**Corr. ID:** 14532

**Organization:** USA Citizen

**Comment ID:** 139399

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Alternative B should be completely removed from consideration in this document. A court ordered consent decree, with arbitrary and capricious rules, that were not vetted properly in the NEPA process do not belong in this document as a viable alternative. Unprecedented wildlife closures, no pass through corridors, closures disturbance penalties, and unsubstantiated night time driving restrictions are all new rules brought on by the consent decree. How do non-NEPA vetted rules now become part of every alternative (except alt A), including the preferred alternative?

**Corr. ID:** 15010

**Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140437

**Organization Type:** Conservation/Preservation

**Representative Quote:** Further, Alternative B, "Continuation of the Terms of the Consent Decree Signed April 30, 2008, and amended June 4, 2009," clearly has no place in the DEIS as a no action alternative to establish a baseline for purposes of assessing the impacts of the various other alternatives. The Consent Decree, by its terms, states that the document shall have no precedence. Paragraph 34 of the Consent Decree specifically provides that "Plaintiffs, Federal Defendants, and Intervenor-Defendants stipulate and agree that this Consent Decree is entered into solely for the purpose of settling this case, and for no other purpose . . . ." Consent Decree at 17. Utilizing the Consent Decree, then, as a no action alternative is contrary to the agreement of the parties in that document, and entirely inappropriate.

**Response:** Alternative B is required as a "no action" alternative because it is the current management at the Seashore. CEQ NEPA regulations (40 CFR 1502.14(d)) require the alternatives analysis in the EIS to "include the alternative of no action". The Seashore has now had three breeding seasons of experience implementing the consent decree. The effects of management under Alternative B provide a useful baseline for comparison with the action alternatives, as intended by NEPA. NEPA does not require a "no action" or action alternative in an EIS to have gone through a previous NEPA process.

Paragraph 34 of the consent decree provides that it is not to be "cited or otherwise referred to in any other legal proceeding . . . except as necessary to effectuate the terms of this Consent Decree." This NEPA process is not a legal proceeding. Moreover, paragraph 36 of the consent decree provides that "[n]o provision of this Consent Decree shall

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be interpreted as or constitute a commitment or requirement that Federal Defendants take action in contravention of NEPA." The ORV plan and special regulation require NEPA analysis, and NEPA and the CEQ regulations require analysis of current management as a no action alternative. . Analysis of management under the consent decree as a "no-action" alternative is thus consistent with these provisions of the consent decree. This analysis does not direct the decision on ORV management under the ORV management plan/EIS, and in fact NPS identified another alternative as the preferred alternative.

**Concern ID: 24053**

**Concern Statement:** Commenters felt that elements of alternative B encourage violation of the resource closures to encourage closures of a larger size. Other commenters felt that resources have not been harmed by closure violations under the consent decree.

**Representative Quotes:****Corr. ID: 10625****Organization: Not Specified****Comment ID: 136532****Organization Type: Unaffiliated Individual**

**Representative Quote:** That NPS enforcement has had no effect and made little or no effort to catch the perpetrators of consent decree violations simply enhances the chances that the perpetrators are either environmentalists trying to stir the pot or NPS personnel siding with those individuals who want to see the beaches closed. Not one resource violation under the consent decree has harmed the resource in any manner according to you, the superintendent.

**Corr. ID: 12002****Organization: Not Specified****Comment ID: 134193****Organization Type: Unaffiliated Individual****Representative Quote:**

Alternative B pits environmental interests vs. beach-driving interests and encourages both parties to do the wrong thing. Those supporting driving on the beach are encouraged to harm PIPL and those who want no-ORV access are encouraged to vandalize shorebird signs so that protected areas are increased in size.

**Response:** NPS believes that the great majority of ORV drivers at the Seashore take seriously the stewardship responsibility of all visitors to protect the Seashore's resources. NPS has no knowledge of any incidents or violations of resource closures committed with the primary intention of causing a closure expansion, and no evidence has been presented to support this comment.

The comment regarding the effort of law enforcement personnel contains inaccurate information and unsupported speculation. Enforcement, as well as education, are important tools for improving visitor compliance with ORV and resource protection regulations. Under the consent decree, deliberate acts that have disturbed or harassed wildlife or vandalized fencing, nests or plants and therefore required an automatic buffer expansion have made up a small portion of the total number of resource closure violations. NPS law enforcement staff have, in fact, made numerous violator contacts for resource closure violations during the same period. For example, from 2008 through August 25, 2010, park rangers issued 101 violation notices and 170 written warnings (total of 271 violator contacts) for entering resource closures, and 70 Violation Notices and 164 written warnings (234 violator contacts) for violating the night driving restriction. In contrast, from June 2008 through August 25, 2010, there were a total of 21 "deliberate violations" that vandalized fencing or nests and resulted in an automatic buffer expansion as required by the consent decree. Of these incidents, one incident (July 30, 2008) involved the unlawful take of a least tern nest that was crushed by an all-terrain vehicle (ATV). Another incident involved the apprehension of two perpetrators who illegally drove ATVs through a turtle closure, but did not appear to damage the nest. In the remaining deliberate violation cases, no direct resource damage occurred and no suspects were identified. There is no evidence to support the allegation that any of the vandalism incidents were caused by environmentalists, by NPS staff, or by any other particular user group.

The comment about resource violations not harming the resource in any manner is not valid and inconsistent with current information. In addition to the July 2008 incident noted in the paragraph above, on the night of June 23, 2010 a nesting loggerhead turtle was struck and killed on Ocracoke island by an ORV that was operating on the

beach in violation of the night driving restriction under the consent decree. In addition, there have been hundreds of other resource closure violations under the consent decree that have not involved vandalism or direct take of wildlife, including many observations of human and vehicle tracks unlawfully entering resource closures. Even if resource closure violations do not directly injure or kill wildlife, human disturbance in nesting areas can indirectly harm wildlife by causing behavioral responses that may lessen breeding success. There is no way to know the extent of indirect impacts from the many resource closure violations that have occurred, particularly those that were detected based on tracks and not direct observation of the violator.

Note: None of the action alternatives, including the preferred alternative, include the consent decree requirement for automatic buffer expansions in the event of deliberate violations of resource closures or buffers.

**Concern ID: 24054**

**Concern Statement:** Commenters stated that alternative B is not an appropriate no action alternative because it allows a use currently prohibited. In addition they stated that the protection measures for birds and turtles under this alternative were not adequate.

**Representative Quotes:**

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137724

**Organization Type:** Conservation/Preservation

**Representative Quote:**

Alternative B would continue current management under the interim species protection plan as modified by the consent decree. Presented as a "no action" alternative, this alternative is not a true no action alternative because it continues ORV use that is currently prohibited.

This alternative provides better protection to breeding shorebirds, colonial waterbirds, and sea turtles, but does not designate routes and areas for ORV use, designation of areas where ORVs would be prohibited for pedestrian use, and other components of an ORV plan. Alternative B provides insufficient protection for nesting shorebirds and colonial waterbirds. This alternative allows extensive areas of ORV use during the shorebird breeding season, and depends on monitoring in these areas for the areas to be closed. If monitors do not quickly detect breeding activity, there is the risk of abandonment or take of nests or chicks. Breeding season closures of key nesting areas to ORVs would provide increased protection, and reduce monitoring costs. Alternative B also provides insufficient protections for migrating and wintering shorebirds, including the threatened piping plover and candidate red knot as well as other species. In addition, at all the major wintering locations for piping plovers, the ocean shoreline is open to ORV use, resulting in significant disturbance to piping plovers that are using this habitat. Night driving restrictions are not adequate to protect nesting sea turtles that come ashore to nest before 10 pm when the closure goes into effect, raising risk of take, and insufficient protection for sea turtle nests and hatchlings, due to the possibility that nests could be missed due to ORV tire tracks eliminating sea turtle crawls before the nesting areas can be protected by the turtle patrols. Finally, this alternative does not designate adequate areas closed year round to ORVs, resulting in excessive recreational conflicts between pedestrians and ORVs.

The consent decree was an important improvement over the prior management of the Seashore. However, the management measures are interim protections until a final comprehensive ORV plan is put in place. NPS has appropriately rejected this alternative.

**Response:** The "no-action" alternative in an EIS describes the status quo (continuation of current management), whether the current management comprises lawful or unlawful activities. NPS Director's Order #12 Handbook: Conservation Planning, Environmental Impact Analysis and Decision Making (Handbook) states "The no action alternative must be fully analyzed in all EAs and EISs, even if another law prohibits the adoption of the no action alternative or the park is under legislative or other command to act. The no action alternative is usually a viable alternative, but even when it is not, it sets a baseline for comparing the impacts of existing actions with those proposed." (Section 4.5E.5) The Handbook also states "If choosing the true no action alternative (i.e., continuing as is) would violate laws or your park's own policies, you may want to add a "minimum management" alternative to your range. This should not substitute for the no action alternative, because you may lose valuable information on existing impacts by not evaluating the impacts of ongoing activities."

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Because alternative B is the status quo, i.e. the “ongoing activities” that have been implemented in the Seashore since Spring 2008 and will continue to be implemented until approval of the long-term ORV Plan/EIS, it meets the CEQ and NPS requirements for a no-action alternative. Alternative B provides a useful baseline for comparison against the action alternatives. The minimum management alternative concept of the Handbook is oriented to NPS General Management Plans (GMPs). For a GMP, no action is continuing present management into the future without developing a General Management Plan, which would violate law and NPS policy, but provides a baseline for comparison. A GMP “minimal management” alternative would provide a plan to keep the park operational, but without a developed array of visitor, research, education and resource management opportunities. For the Cape Hatteras ORV Management Plan, alternatives A and B provide the baselines of present management during the planning process and Alternative D is analogous to the GMP “minimal management” alternative. It provides simplified management, but without the more complex provisions for ORV and pedestrian access of the other action alternatives that serve to mitigate impacts of species management on visitor experience and economics.

***AL1040 - Alternatives: Alternative C (Substantive)*****Concern ID: 24055**

Concern Statement: Commenters suggested that this alternative could be modified to allow more areas open to pedestrians. Additional commenters stated that alternative C should not be selected because it provides insufficient areas closed to ORV year-round and that ML1 restrictions unnecessarily restrict pedestrian access.

***Representative Quotes:*****Corr. ID:** 90**Organization:** *Not Specified***Comment ID:** 129758**Organization Type:** Unaffiliated Individual

**Representative Quote:** Of the suggested measures, Alternative C would make the most sense to me. I also think that areas that may be closed to driving at certain times of the year, such as the hook at Diamond Shoals, should be open to pedestrians. I think that restrictions to people (pedestrians) in these areas of the National Park would be dismissing of the idea for creating them... "for the benefit and inspiration of all the people of the United States...." (General Authorities Act), 1970 (84 Stat. 825)

**Corr. ID:** 15073**Organization:** Southern Environmental Law Center**Comment ID:** 137728**Organization Type:** Conservation/Preservation**Representative Quote:** I. Alternative C: Seasonal Management

Although the prohibition on ORVs at Cape Point and the spits during the breeding season would benefit nesting shorebirds and colonial waterbirds, this alternative has several shortcomings that lead us to recommend against it. This alternative provides insufficient areas that are closed to ORVs for the entire year (11.9 miles), resulting in excessive recreational conflicts between pedestrians and ORVs and insufficient protection for migrating and wintering shorebirds from ORV-based disturbance at key habitats in the Seashore. Adverse impacts would occur to multiple species, including the threatened piping plover, candidate red knot, and other species that use the beach intertidal zones such as sanderling, dunlin, and black-bellied plover. In addition, the use of ML 1 pedestrian closures for the entire breeding season at certain locations, unnecessarily restricts pedestrian access when a more finely tailored management approach would allow pedestrian access for a longer period while still providing adequate protections for nesting birds.

**Corr. ID:** 15253**Organization:** Environmental Protection Agency**Comment ID:** 139042**Organization Type:** Federal Government

**Representative Quote:** However, EPA understands the need of the NPS to appropriately balance access to CHNS from multiple users based on its enabling legislation and other regulations. If the impacts of implementing Alternative D are considered significantly adverse on other users and socioeconomic factors, EPA recommends implementation of Alternative C, or perhaps some other hybrid alternative, as a reasonable compromise to achieve more access and greater flexibility with regard to ORV designation than Alternative D. Alternative C would provide greater protections for sensitive species with larger seasonal buffers, lower carrying capacities, and much fewer new access ramps, parking lots, and new roads as compared to Alternative F. Alternative C also appears to have approximately similar socioeconomic impacts as the preferred alternative.

**Response:** NPS has modified alternative F to incorporate several changes in response to public comments about relative amounts of pedestrian and ORV access, and these changes address the concerns listed here for alternative C. In response to concerns regarding the need for more pedestrian access and insufficient areas closed to ORV year-round, modified alternative F proposes more mileage of year-round vehicle-free areas 26.4 miles that would be open to pedestrians only year-round, and 12.7 miles of routes open seasonally to ORVs less than six months per year, with 27.9 miles of routes designated for year-round ORV use (subject to resource closures). This compares to approximately 12 miles of vehicle-free areas, 29 miles of seasonal routes, and 27 miles of year-round ORV routes under alternative C. The increase in pedestrian-only areas comes mainly from changing some previously seasonal routes to year-round vehicle-free areas to benefit pedestrians desiring a vehicle-free experience, to address safety and erosion consideration in front of the villages, and to better protect migrating/wintering shorebirds. The 27.4 miles open to ORV year-round in new alternative F is about the same as previously proposed under alternative C, and the NPS believes that this mileage and the seasonal opportunities are sufficient areas for ORV use, given the constraints of resource protection and the objective of providing access for various recreational uses in the Seashore. With regard to the use of ML1 pedestrian closures for the entire breeding season at certain locations, alternative F as modified would eliminate ML1 type management. Standard buffers and monitoring equivalent to the ML2 measures described in Table 10 of the DEIS would be applied throughout the Seashore to allow pedestrian and ORV access for a longer period while still providing adequate protections for nesting birds. In addition, alternative F has been revised to provide that when pre-nesting areas are established, pedestrian shoreline access will be permitted below the high tide line until breeding activity is observed and then standard buffers will apply. The NPS believes that by making these modifications to alternative F, the concerns expressed regarding alternative C will be addressed.

#### ***AL1055 - Alternatives: Alternative D (Substantive)***

##### **Concern ID: 24057**

**Concern Statement:** Commenters stated support for alternative D, but suggested that it be modified to allow for more pedestrian access. Other recommendations included allowing this alternative with an ORV corridor (contingent upon adequate protection of wildlife), increasing parking and dune walk overs, improving interdunal roads, including self-contained vehicle camping, promoting a water taxi service, and designating areas closed year round to ORVs and pedestrians for wintering shorebirds.

##### ***Representative Quotes:***

**Corr. ID:** 1378

**Organization:** Audubon

**Comment ID:** 131000

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Ideally, I feel that three items that were included in Alternative E should be included in Alternative D to optimize both minimal environmental impacts and recreational enjoyment:

(1) the interdunal road and ramp access would be improved, and more pedestrian access would be provided through substantial additions to parking capacity at various key locations that lend themselves to walking on the beach, (2) self-contained vehicle (SCV) camping would be allowed during the off-season at designated Seashore campgrounds under the terms of a permit, and (3) enhanced options for pedestrian access to Bodie Island Spit and South Point Ocracoke by promoting water taxi service when those areas are closed to ORVs.

**Corr. ID:** 13773

**Organization:** *Not Specified*

**Comment ID:** 140120

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Plan D needs to include additional parking areas since more beaches will be closed to vehicles.

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**Corr. ID:** 15043                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137444           **Organization Type:** Conservation/Preservation

**Representative Quote:** The final ORV management plan should be based on environmentally preferred Alternative D in the DEIS, modified to allow pedestrian access subject to standard resource closures when shorebird or colonial waterbird breeding behavior is observed, to allow 100 foot ORV access corridors to Cape Point and South Ocracoke subject to standard resource closures when shorebird breeding activity is observed, to increase the number of parking spaces and dune walkovers, and to designate specific areas closed year round to ORV use for pedestrians and wintering shorebirds.

**Corr. ID:** 15069                   **Organization:** *Not Specified*

**Comment ID:** 138033           **Organization Type:** Unaffiliated Individual

**Representative Quote:** I prefer Alternative D because it strikes a balance, allocating half the beach mileage to nonmotorized use all year. It gives the best assurance of bring back the birds and sea turtles, and it will encourage recreational use of the beach by visitors on foot. A fifty-fifty allocation has proven workable at Assateague Island National Seashore. I also favor the recommendation from North Carolina Audubon to provide more foot access routes between the highway and the beach.

**Corr. ID:** 15073                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137749           **Organization Type:** Conservation/Preservation

**Representative Quote:** We recognize this corridor could result in disturbance to non-breeding birds, as well as adverse impacts to breeding birds if monitors do not promptly detect breeding behavior and implement standard buffers. However, we also acknowledge the value to some visitors of these locations for fishing from vehicles, and we are trying to strike a delicate compromise between adverse impacts and providing ORV recreational access. Our support for a corridor in these two areas is contingent on adequate protection for wildlife in the SMA boundaries, as modified by our suggestions.

**Corr. ID:** 15253                   **Organization:** Environmental Protection Agency

**Comment ID:** 139038           **Organization Type:** Federal Government

**Representative Quote:** EPA agrees with the NPS designation of Alternative D as the environmentally preferable alternative. Alternative D includes the greatest number of shoreline miles closed to ORVs and the least number of miles designated as ORV routes. It also has the least number of new or relocated access ramps, new parking lots, and new ORV interdunal roads. It also provides the greatest level of protection for sensitive species through the establishment of SMAs that involves larger and longer species protection buffers and would not allow pedestrian access once prenesting closures are established. It employs the most restrictive seasonal night-driving regulations to be protective of sea turtle nesting and hatching during that time. It also is the least expensive of any of the action alternatives and requires the least amount of personnel to manage implementation due to its more predictable design of ORV route designation. Therefore, we recommend reconsideration of this alternative as a viable action alternative.

**Response:** Many of the changes proposed under alternative D have been incorporated into alternative F, which has been modified based on the review of public and agency comments . These suggestions, and how NPS incorporated them into the modified alternative F, are discussed below:

The desire for more pedestrian access - Alternative F as modified proposes a pedestrian access trail on Bodie Island and increased parking and associated pedestrian access(the same level proposed under alternative E), with dune walkovers or boardwalks for beach access. Under modified alternative F (from north to south), a new ORV ramp and parking area is proposed 0.5 mile south of Coquina Beach, new parking near ramp 4 and a foot trail is planned from that location to the northern portion of the spit “flats”, and the shoreline at the inlet proper and the Bait Pond shoreline would be vehicle free year-round, with seasonal ORV access along the ocean shoreline to the edge of the inlet. At ramp 23 a year-round vehicle free beach would extend south for 1.8 miles, with a new parking area at that location and a new ORV ramp to provide access to the ORV route south of that point. New parking areas would be constructed near soundside ramps 48, 52, 58 and 60. Pedestrian access to a vehicle free area on South Beach would be enhanced by allowing parking at the west end of the Cape Point Campground and in pullouts along the interdunal road between ramps 45 and 49. Ramp 59 would be relocated to just south of the MP 59 parking lot. Additional



parking would be added at several locations on both Hatteras and Ocracoke Islands.

Allowing an ORV corridor at Cape Point and South Point - This concern is addressed in revised alternative F by designating year-round ORV routes, subject to standard resource protection buffers, at these locations. In addition, the ORV corridor will be reduced from 50 meter to 35 meters during pre-nesting activities. Table 10-1 in the FEIS includes revised text describing ORV corridors at these locations.

Increased parking and dune walkovers- As noted above, there would be increased parking and pedestrian access points in a number of locations throughout the Seashore.

Improving interdunal roads -Modified alternative F includes new interdunal roads between ramps 45 and 49, a short seasonal route near Hatteras Inlet, and two seasonal routes in the South Point area, along with better maintenance of interdunal roads and pullouts or road widening to provide safe passage.

Self-contained vehicle camping – Off-season self-contained vehicle camping in park campgrounds, as described in alternative E, was not included in alternative F due to the staffing needs, operating costs, and permitting, law enforcement patrol, and maintenance workloads associated with keeping campgrounds open in the off-season for a limited number of campers. NPS believes that local commercial campgrounds provide appropriate opportunities for off-season vehicle camping.

Water taxi service - Implementation of a water taxi service would be encouraged to allow pedestrian access to spits, subject to resource closures under the revised alternative F. The NPS would consider applications for CUAs for beach and water shuttle services. The NPS would apply for funding to conduct an alternative transportation study to evaluate the feasibility of alternative forms of transportation to popular sites, such as inlets and Cape Point.

Designating areas closed year-round to ORVs and pedestrians for wintering shorebirds - this was already a component of alternative D, and under modified alternative F, there would be increased miles of vehicle-free areas for protection of wintering birds (to off-set the removal of the proposed “floating” non-wintering closures). In addition, from September 15 – March 14 the ORV route at South Point on Ocracoke would change from a shoreline corridor to an upper beach corridor to reduce vehicular disturbance of migrating birds using the shoreline. These vehicle-free areas would be open to pedestrians because it is not likely that the amount or type of use expected by pedestrians in the winter season would cause more than short-term negligible to minor adverse impacts to these birds.

#### Concern ID: 24061

Concern Statement: Commenters expressed concern that alternative D did not include safety closures. Concerns included ORVs driving on dunes where there was a narrow beach. They felt that this could be avoided with safety closures and provided suggested language for the FEIS.

#### Representative Quotes:

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137751

**Organization Type:** Conservation/Preservation

**Representative Quote:** We are also concerned that the lack of ORV safety closures, DEIS at 73, 11 would result in adverse environmental impacts to dunes and vegetation from ORV use. We have observed repeatedly, under the current, more permissive safety closure policy, that in narrow areas, it is not unusual to see ORV tracks going behind ORV closure posts and over dunes or vegetation. This should not be surprising, as some people who use ORVs will drive through a narrow area at a lower tide, but then, when the tide has come in and the beach width is reduced, the vehicle has to drive through a closed area or over vegetation to avoid exiting the beach in the water.

To reduce these impacts, we suggest the following safety closure language, which is modified from alternative F (additions underlined and deletions struck out): Same as alternative C, plus:

An ORV safety closure would be implemented in the event of a ~~(clear and~~  
~~imminent)~~ threat of significant bodily injury or death, and/or damage to personal property, including vehicles and their contents. Triggers that could justify a safety closure include, but are not limited to:

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- Deep beach cuts that block the beach from dune to surf with no obvious way around.
- Obstacles, such as exposed stumps, shipwrecks, or debris, that cannot be safely bypassed or that block the entire width of the beach and cannot be easily removed.
- Severe beach slope that puts vehicles in an unsafe gradient position and increases the chances of the loss of vehicular control.
- A high concentration of pedestrian users coupled with a narrow beach.
- INSERTED : A narrow beach where there is insufficient width to safely exit the beach in the vehicle corridor during normal (non-storm) high tides.

Triggers do not include:

- ~~A narrow beach by itself.~~
- ~~High tides that block access through portions of beaches occur periodically and predictably, and are an obvious, easily avoidable hazard~~
- Hazards blocking only a portion of the beach, where safe passage is available around the hazard.

ORV safety closures would preclude ORV access, while pedestrian and commercial fishing access would be maintained through most safety closures.

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137752

**Organization Type:** Conservation/Preservation

**Representative Quote:** 10 Alternative D allows vehicles on 27.4 miles of beach, DEIS at 101, which is 144,672 feet of beach. Assuming 1 vehicle every 15 feet (a 7 foot wide vehicle, plus 8 feet between a vehicle), 9,644 vehicles could park on the beach. 11 "ORV safety closures would not be designated; ORV users would drive at their own risk and would be expected to rely on their knowledge of beach driving to determine if an area is safe to access based on their assessment of current conditions." DEIS at 77; see also DEIS at 105.

NPS law enforcement staff will monitor ORV safety closures on a weekly basis. Sufficient reduction or elimination of the conditions prompting the closure, so there is no longer an imminent hazard, would constitute the trigger for reopening a closure.

DEIS at 105. We have modified the safety closure language to remove the narrow beach and high tide language, based on our experience noted above with the current policy, and made it clear that a narrow beach, where there is insufficient space to exit the beach in the ORV corridor during the high tide, is a sufficient grounds for an ORV safety closure. In addition, we have removed the language "clear and imminent" because what may be clear to some experienced beach drivers could be very different - and much more dangerous - to an inexperienced beach driver. The Seashore should protect both kinds of drivers.

**Response:** The NPS is also concerned about having adequate width for safe beach driving to ensure safe passage without having to resort to driving through closed areas or on dunes, and has revised the safety closure language to reflect this. The preferred alternative (alternative F) has designated areas known for hazardous conditions (such as some of the long standing safety closure areas) as vehicle-free routes year-round. The only exception in modified alternative F is from ramp 59 to around milepost 62, which the NPS changed from the DEIS to allow year-round ORV access. The NPS believes that this stretch of beach is sufficiently broad, particularly during summer months when the beaches tend to be wider, and would not require users to leave the main beach to safely cross the area.

**Concern ID:** 24063

**Concern Statement:** Commenters requested that alternative D reflect true wilderness, with no ORVs or pedestrians.

**Representative Quotes:**

**Corr. ID:** 3455

**Organization:** *Not Specified*

**Comment ID:** 135106

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with absence of true wilderness areas with no vehicles, no pedestrians and no roads or human trails. These should be included as a part of Alternative D.

**Response:** Designated wilderness areas under the Wilderness Act of 1964 allow pedestrian use and often contain primitive trails. Alternative D contains numerous miles of beaches that would only allow pedestrian use year round, with the more remote areas providing a wilderness-type experience for visitors. Alternative D provides Species Management Areas (SMAs) that prohibit all visitor use during the breeding season, which would prevent human disturbances to wildlife and allow natural processes to continue in these areas. All alternatives have some locations where breeding season closures overlap with non-breeding season closures, essentially excluding pedestrians and vehicles year-round. Designating large areas of the Seashore as permanently "people free" would not be appropriate, given the mandate of the NPS Organic Act and NPS management policies which encourage visitor use where appropriate and not in conflict with the conservation of park resources.

A study to explore the suitability of wilderness at the Seashore is outside the scope of this planning effort and will be addressed during the upcoming process to develop a new General Management Plan for the Seashore

**Concern ID: 24064**

**Concern Statement:** Commenters stated that alternative D should not be the environmentally preferable alternative because 40% of the Seashore beaches would be open to ORV year round and there is not a true no action, which would be the environmentally preferred.

**Representative Quotes:**

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137746

**Organization Type:** Conservation/Preservation

**Representative Quote:** Of the alternatives presented in the DEIS, Alternative D would result in the least environmental impacts. However, with 27.4 miles of the Seashore designated as open to vehicles year round - or 40% of Seashore beaches, DEIS at 101 - we question how this alternative can be called the Seashore's "environmentally preferred alternative," particularly in light of the failure to include a "no action" alternative of no ORV use which would be environmentally preferable.

**Response:** As described on page 83 of the DEIS, the prohibition of ORVs was considered in the full range of alternatives, but was not carried forward for further analysis because it would not meet the purpose and need of the plan. However, the environmentally preferable alternative must be identified from the alternatives that are fully analyzed. Of those six alternatives, alternative D is considered the environmentally preferable alternative.

Please see response to Concern ID 24084 for why "no ORV use" was not analyzed as a no action alternative.

**Concern ID: 24065**

**Concern Statement:** Commenters suggested that alternative D be modified so that the ML1 designation is more selectively used and that pedestrians be allowed in SMAs until breeding activity is observed.

**Representative Quotes:**

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137748

**Organization Type:** Conservation/Preservation

**Representative Quote:** However, in terms of achieving an appropriate balance of resource conservation and recreation, we believe alternative D is unduly restrictive. Pedestrians can be allowed in SMAs, until breeding activity is observed, at which time the standard buffer distances should apply. Given the role that ORVs play in increasing disturbance in remote areas that are key nesting habitats, prohibiting ORV use at the majority of the important breeding and nonbreeding habitats in the Seashore will reduce the number of pedestrians in those areas. As a result, disturbance from pedestrians will be lower. We believe that an appropriate balancing would be to allow pedestrian access to certain SMAs, until breeding behavior is observed by NPS staff, at which time appropriate buffer distances under Table 11, DEIS at 127, should be implemented.

Second, we agree that vehicles should be prohibited from SMAs during the breeding and non-breeding seasons. The DEIS, an extensive body of scientific literature, and the USGS protocols, clearly provide sufficient scientific basis to support the Seashore's alternative on this issue, given the statutory, regulatory, and policy provisions that govern the

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management of the Seashore's beaches.

However, to achieve a more appropriate balance in terms of resource conservation and recreation, we have crafted the boundaries of the SMAs that are different from the Seashore's SMA boundaries in two major ways. First, for the east facing beach from ramp 44 south to Cape Point there would be an area between the high tide line and up to 100 feet landward for a corridor that is excluded from the SMA. Vehicles would not be allowed outside of the 100 foot corridor, either in the intertidal area or landward of the 100 foot corridor. Pedestrians also would be allowed in both corridors. The second would be a corridor on South Ocracoke from ramp 72 to the easternmost edge of Ocracoke Inlet (but not along the inlet shoreline). A 100-foot vehicle corridor should be established from ramp 72 westward for 1.5 miles being no less than 300 feet from mean high tide. These corridors would be subject to closure based on the standard buffers in Table 11 if breeding behavior is observed, but otherwise, the corridor would remain open to these two popular fishing areas.

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center

**Comment ID:** 137747      **Organization Type:** Conservation/Preservation

**Representative Quote:** We support a modified version of this alternative. A Modified Alternative D should include: First, the FEIS should include more selective use of ML1 designation, rather than designating all SMAs as ML1. Currently, under alternative D, it appears that all SMAs, including intertidal areas, are closed to all pedestrian use during the breeding season, with the closures starting either at March 15 in shorebird areas, or April 15 in colonial waterbird areas.

We understand the Seashore's reasons for providing the Alternative D approach: it would eliminate ORV and pedestrian disturbance for the majority of shorebirds and colonial waterbirds that nest in the Seashore and provide increased protection for nesting sea turtles. In addition, this approach would reduce staff monitoring requirements, as without vehicle or pedestrian activities, the risk of abandonment or take of nests or chicks would be much lower, which would allow less frequent monitoring and reduced expenses for management activities. This approach also would provide increased predictability for the public.

**Response:** The NPS is aware of the restrictive nature of alternative D in the DEIS. As noted in the above comment, the level and types of access provided were based on increased resource protection coupled with simplified management and consistent closure times and dates for the public. One of the reasons that the NPS identified alternative F as the preferred alternative in the DEIS was to provide more options for public access than alternative D, while still providing adequate protection of natural resources. Although the NPS did not identify alternative D as the preferred alternative in the FEIS, the revised alternative F allows pedestrian access seaward of the prenesting areas until breeding behavior is observed at which time appropriate species protection buffers, equivalent to the ML2 buffers described in Table 10 of the DEIS, would be implemented. In addition, the revised alternative F no longer involves the use of Species Management Areas (SMA) or ML1 buffers as described in table 10 of the DEIS. Please refer to Table 10-1 in the FEIS for information on the species management strategies applicable to revised alternative F.

**Concern ID:** 24067

**Concern Statement:** Commenters asked that alternative D be modified to include a more specific carrying capacity that is lower than what the current capacity would allow.

**Representative Quotes:**

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center

**Comment ID:** 137750      **Organization Type:** Conservation/Preservation

**Representative Quote:** Second, a Modified Alternative D should include a specific ORV carrying capacity, rather than only limiting vehicles to "a one-vehicle-deep parking configuration" which would allow a massive number of vehicles on the beach. DEIS at 77; see also DEIS at 108. Under this alternative, over 9,600 vehicles could be allowed on the beach, (Footnote 10) which would result in significant recreational conflicts and increased environmental impacts. The NPS should adopt a sharply lower carrying capacity than proposed in any of the alternatives in the FEIS.

**Response:** The NPS considered several comments and suggested approaches to carrying capacity in developing modified alternative F, which combines the one-vehicle deep parking provision of alternative D with the specific vehicle carrying capacity (260 vehicles/mile) from alternative F, to be applied at all designated ORV routes in the Seashore.

***AL1070 - Alternatives: Alternative E (Substantive)***

**Concern ID: 24068**

Concern Statement: Commenters stated that alternative E does not provide enough resource protection and alternatives E and F do not provide an adequate amount of pedestrian access points or vehicle-free areas.

***Representative Quotes:***

**Corr. ID:** 14561

**Organization:** *Not Specified*

**Comment ID:** 135726

**Organization Type:** Unaffiliated Individual

**Representative Quote:** This leaves Options E & F which are the closest to my preference but do not provide enough pedestrian access points and year around pedestrian only areas.

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137729

**Organization Type:** Conservation/Preservation

**Representative Quote:** Alternative E: Variable Access and Maximum Management

This alternative includes management measures inadequate to prevent harm and harassment of wildlife on the Seashore. It provides insufficient protection for breeding shorebirds and colonial waterbirds, including allowing ORV use in locations/periods when it should not be allowed (such as Bodie Island spit during the breeding season) and allowing an "ORV corridor with pass-through zone." It provides inadequate protection for migrating and wintering shorebirds from ORV based disturbance at key habitats in the Seashore. Adverse impacts would occur to multiple species, including the threatened piping plover, candidate red knot, and other species such as sanderling, dunlin, and black-bellied plover. The adverse impacts would be increased significantly over Alternative C, due to the earlier opening time (September 1 rather than October 15). Alternative E provides insufficient protection for nesting sea turtles, including allowing ORV use before 10 pm at night, allowing camping at spits and points, and allowing opening at 6:00 am, raising concerns that nests could be missed. The use of ML 1 pedestrian \ closures for the entire breeding season at certain locations is unnecessary when a more finely tailored management approach would allow pedestrian access for a longer period while still providing adequate protections for nesting birds. Finally, this alternative provides insufficient areas that are closed to ORVs for the entire year (14.5 miles), resulting in excessive recreational conflicts between pedestrians and ORVs.

**Response:** The NPS has included additional vehicle-free areas for the protection of resources and for the enjoyment of pedestrians desiring a vehicle-free experience in modified alternative F (the preferred alternative). Some of these areas were previously seasonal ORV routes under alternatives E or F. As modified to be year-round vehicle-free areas they will afford protection for migrating and wintering birds and late nesters as well as for summer breeding species. In addition, pedestrian access and parking for this access would be enhanced compared to the original alternative F or alternative E. Protection for sea turtles that has been included in revised alternative F addresses concerns related to night driving by restricting driving -from 9 PM to 7 AM, and ML1 protocols would now be replaced with standard buffers, equivalent to ML2 procedures described in Table 10-1 in the FEIS, that would be applied park-wide and would include more intense monitoring to provide protection for nesting birds.

***AL1085 - Alternatives: Alternative F (Substantive)***

**Concern ID: 24070**

Concern Statement: Commenters stated that they did not agree with the name or content of alternative F, as they feel it did not represent the views of the majority of the negotiated rulemaking committee members.

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**Representative Quotes:****Corr. ID:** 3890**Organization:** *Not Specified***Comment ID:** 137260**Organization Type:** Unaffiliated Individual

**Representative Quote:** NPS presents Alternative F as if it were recommended by the recent Regulatory Negotiation process. However, upon close examination Alternative F is found to be a biased and highly restrictive management plan that is in complete opposition to majority recommendations of the recent Regulation Negotiation process. Alternative F strengthens and codifies the denial of public access provisions of the current consent decree. The public access denying provisions of the consent decree, put into effect April 30, 2008, have been extended and transferred to Alternative F. The majority of Regulatory Negotiation Committee stakeholders (19 vs. 5) and numerous public commentators did not recommend an extension of the restrictive provisions of the consent decree as part of a final ORV plan.

**Corr. ID:** 13414**Organization:** *Not Specified***Comment ID:** 138582**Organization Type:** Unaffiliated Individual

**Representative Quote:** I do not agree Alternative F that reflects the work of the Advisory Committee.

Stated more specifically, Alternative F is not a committee based proposal and it should not be labeled as such. This statement is based upon the final report from the facilitators. In this report, the facilitators note that the advisory committee failed to come to agreement on any aspect of park management. In fact, the positions held by stakeholders were so diametrically opposed to one another that the facilitators didn't even try to summarize the advisory committee's work. Instead, the facilitators simply transmitted 6 addendums ranging from 20 to nearly 1,500 pages each. In sharp contrast the NPS selects elements from the addendums submitted by the 6 groups and combines the elements in ways the groups never intended.

**Response:** Names of alternatives are irrelevant to the decision making process and are merely provided as an aid to the reader. Many of the concepts used in the preferred alternative either originated from Advisory Committee members or were discussed at some point during Committee, subcommittee or work group sessions. The DEIS states clearly on page 80 that "the Committee did not reach a consensus on a recommended alternative" and that "in case of conflicting advice from Committee members about any particular issue, the NPS has made a management judgment as to which approach would make an effective overall ORV management alternative." Since the name and origin of alternative F has created controversy, NPS has changed the name in the FEIS to Alternative F: NPS Preferred Alternative.

**Concern ID: 24071**

**Concern Statement:** Commenters stated that the DEIS was not clear on soundside access. Issues that needed clarification were the amount of soundside areas open to ORVs or pedestrians and the need for additional soundside ramps.

**Representative Quotes:****Corr. ID:** 8742**Organization:** *Not Specified***Comment ID:** 133227**Organization Type:** Unaffiliated Individual

**Representative Quote:** P. 263 Alt F fails to deal with the need for a soundside access ramp on Bodie. Relocating ramp 2 ½ mile So is ill advised. Better to enlarge parking and add handicap ramp at R 1.

**Corr. ID:** 12230**Organization:** Coastal Conservation Association North Carolina**Comment ID:** 140984**Organization Type:** Unaffiliated Individual

**Representative Quote:** The specifics of option F, the NPS preferred option, require at least some comment as commenting on all options would extend beyond the available space and time constraints. Overall, the DEIS suggests there would be 52 of 68 miles of the waterfront "open" to ORV access but it is not clear that this includes any calculation of sound side access for ORVs or pedestrians.

**Response:** Soundside access is described by alternative in table 8 of the DEIS, and access points are depicted on maps for all alternatives. For alternative F, soundside access is available to both ORV and pedestrian users, and soundside ramps would be officially designated as ORV routes and remain open with sufficient maintenance to provide clear passage, with additional signage and posting to prevent damage to wetland vegetation and other

resources. On Ocracoke Island, a new soundside access route would be developed south of ramp 72; this would be a seasonally open ORV route, as shown on map 7 for alternative F and described on table 8, page 103 of the DEIS. Under modified alternative F, the soundside shoreline of the Bait Pond at Bodie Island spit would be vehicle free year-round, with seasonal ORV access along the ocean shoreline to Oregon Inlet. Under a separate planning process, a new vehicle access and boat launch facility is being planned for the soundside access area just south of the Hatteras Coast Guard Station. No additional soundside ramps are proposed in modified alternative F because of the desire to minimize impacts to sensitive wetland vegetation and mud flats, and because the NPS believes that existing and proposed access under alternative F is adequate to meet the demand for use in this area.

**Concern ID: 24072**

**Concern Statement:** Commenters requested that the extent of past pedestrian uses should be considered.

**Representative Quotes:**

**Corr. ID:** 14588

**Organization:** *Not Specified*

**Comment ID:** 139202

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I question the Park's analysis that Plan F will increase pedestrian access to visitors. The history of past beach use has not been put in its proper context. In 2002 there was considerable more ocean beach available to pedestrians seeking recreational activities away from ORV routes than today and what is proposed in plans A, B, C, E, F. For example, just on Hatteras Island: there was an area north (approximately .5 mile) of Avon fishing pier to a spot north of ramp 38 that had been closed to ORV access but open to pedestrian access for considerable time (10 plus years). The entire ocean beach from 1 mile south of ramp 38 to ramp 43 had been open for pedestrian access only in excess of 20 years with portions open for pedestrian access only longer than that. The entire beach from ramp 49 to ramp 55 had been closed to ORV access but open to pedestrian access for at least 15 years. The initial reason these beaches were closed to ORV use is unclear as the beach conditions on many of these beaches were no different than beaches open to ORV access. Past superintendents kept these beaches as pedestrian access only beaches. Superintendent's order # 7 changed the status quo of how these beaches were being managed with respect to pedestrian and ORV access. This is essential information when assigning thresholds impacts while evaluating visitor use expectations and experience.

**Response:** Under NEPA, the baseline for analysis is represented by the no action alternatives. In this case, alternatives A and B serve as the baseline against which all impact topics, including visitor use and experience were compared against. These alternatives consider all areas of existing pedestrian access and the plan/EIS does not include previous or historical pedestrian access areas when determining impacts.

**Concern ID: 24073**

**Concern Statement:** Commenters suggested revisions they would like to see to alternative F including allowing fishing in more areas, establishing firm times for night driving restrictions, longer closure periods, expansion of resource closures for violations, and the addition of noise reducing devices for vehicles.

**Representative Quotes:**

**Corr. ID:** 14242

**Organization:** ENVISCI3330 Land Use Management

**Comment ID:** 140405

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I am in support of Alternative F, with the exception of large areas of open beach access to ORVs and maybe adding a noise reducing device to ORVs. In my studies at the University of Missouri in environmental science: land use, I have come to realize that land, if available, will be utilized by human beings. It is important to consider the appropriate uses of the land with regards to land productivity and its capability for certain uses.

**Corr. ID:** 14642

**Organization:** *Not Specified*

**Comment ID:** 139162

**Organization Type:** Unaffiliated Individual

**Representative Quote:** If Alternative F is used there should be an addition of a vehicle-free area extension for habitat or preservation action violations. This violation extension should also be incorporated in Alternative D.

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**Corr. ID:** 14720                   **Organization:** MPA/MSES 2011, IU-SPEA

**Comment ID:** 133212           **Organization Type:** Unaffiliated Individual

**Representative Quote:** While Alternative D is the most preferable, Alternative F could be a workable compromise given several modifications:

1. Allow fishing in certain parts of Hatteras Inlet;
2. Lengthen the calendar year closure periods;
3. Set firm times for the "dusk to dawn" driving limits.

**Response:** Alternative F has been modified to reflect input from agencies and public comment received during the 60-day comment period on the DEIS. As a result of these revisions, night driving restrictions would be established using firm times (9pm to 7 am) instead of “one hour after sunset until turtle patrol has checked the beach in the morning, at approximately a half-hour after sunrise. Establishing firm times would create more predictability for visitors while providing improved enforcement capability for law enforcement staff. As discussed under the response to Concern ID 24089, night driving restrictions related to sunset and turtle patrol efforts would have created inconsistency for both visitors and staff. The night driving restrictions under alternative F have been further modified to allow for night driving after September 15, only in areas where there are no turtle nests. While closure periods for turtles will not necessarily be lengthened, night driving restrictions would begin on May 15 or after the first nest is found, whichever occurs first. In modified alternative F, ML1 species management measures have been replaced by standard buffers and monitoring equivalent to ML2 measures described in Table 10 of the DEIS, throughout the Seashore in order to provide more predictable access for visitors. Dates have been standardized dates for seasonal ORV routes in resource sensitive areas (March 15 – September 14) so that those routes are vehicle-free to protect bird species involved in nesting, breeding, and foraging activities. Additionally, standard buffers would be implemented in areas of the Seashore that are open to ORVs year-round if breeding activity is observed or a nest is found in order to provide species protection. Fishing will be permitted at Hatteras Inlet, which is designated as vehicle free with ORV access permitted to the end of the interdunal road network.

Automatic buffer expansions for closure violations will not be included under alternative D or the modified alternative F. The NPS believes that the education provided by the proposed permit system and the ability to revoke permits for violations will be adequate tools to accomplish compliance with resources closures, without unfairly punishing law abiding visitors. While the DEIS does not have any specific noise-reducing device requirements for ORVs, all vehicles would be required to be in compliance with state registration and inspection requirements. The NPS feels this compliance adequately addresses proper ORV characteristic requirements.

**Concern ID: 24075**

**Concern Statement:** Commenters stated that alternative F would allow unacceptable impacts to the Seashore's wintering and migrating bird populations by not designating adequate areas free of ORV and by including new interdunal roads. In addition, they stated that colonial waterbirds would receive inadequate protection because of the late starting date for the prenesting surveys and that black skimmers may be at risk due to the proposed end date for prenesting surveys.

**Representative Quotes:**

**Corr. ID:** 15073                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137737           **Organization Type:** Conservation/Preservation

**Representative Quote:** In sum, Alternative F consistently places recreation ahead of natural resource protection where conflicts exist. Alternative F fails to provide adequate and specific habitat free of ORV use to protect wintering and migratory shorebirds and fails to prohibit ORV use on an appropriate area to protect wintering and migratory shorebirds. Alternative F fails to provide timely protection for breeding colonial waterbirds which jeopardizes their ability to establish nesting sites and nest successfully. Alternative F fails to provide adequate protection for federally-listed sea beach amaranth, other native plants, and natural plant communities. Alternative F subscribes to the notion that the only way to experience Cape Hatteras National Seashore is from an off-road vehicle, which is a recreational pursuit of a minority of seashore visitors. Alternative F confines visitors who wish to experience the Seashore without vehicle and vehicle impacts to a few locations that will be overcrowded during many months of the year and provides no area for pedestrian only use where a visitor can experience the Seashore without vehicles on the landscape. As discussed below, a modified version of Alternative D can accomplish these objectives.



**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center

**Comment ID:** 137733      **Organization Type:** Conservation/Preservation

**Representative Quote:** In addition, the purported protection benefits of the 8.3 miles that are not open to ORVs are significantly undermined by the following provisions. First, at Hatteras Inlet Spit, despite one interdune road that already exists that ends very close to Hatteras Inlet, the alternative F mandates the construction of yet another new "interdune" road "extending southwest and northeast of the south end of Pole Road established to provide access to False Point and Inlet." DEIS at 100. It is unclear where this road would be placed, as the distance between the existing pole road and the high tide line in this area is as narrow as 30 yards. In effect, what could occur is that the intertidal area would be closed to vehicles, but vehicles would be allowed to drive just a few yards away through high quality resting habitat, resulting in ORV disturbance. In addition, this new interdune road would allow large numbers of ORVs to quickly and easily reach this remote location in ORVs that could park just a short distance from the ocean, which could allow high levels of pedestrian disturbance in high quality feeding and resting habitats. 9 Hatteras Inlet Spit has had observations of two piping plovers from the endangered Great Lakes breeding population, and is designated by the USFWS as wintering range critical habitat for the piping plover.

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center

**Comment ID:** 137741      **Organization Type:** Conservation/Preservation

**Representative Quote:** Inadequate protections for colonial waterbirds

Initiation of pre-nesting surveys on May 1 is too late to adequately detect breeding activity for colonial waterbirds. This will likely result in abandonment of otherwise suitable nesting areas resulting from off-road vehicle use and the associated human disturbances before colonies become established. It is clear, and has been demonstrated in other areas along North Carolina's coast, that initiation of nesting activities by colonial waterbirds can begin prior to May 1. Data from Pea Island National Wildlife Refuge and other mid-Atlantic sites indicate clearly that colonial waterbirds arrive prior to May 1.

Ending pre-nesting surveys on July 15 will not allow the detection of late-forming colonies of terns and skimmers. This also further limits habitat available for these species and results in short and long-term impacts. Reopening areas with suitable habitats for nesting Black Skimmers on July 31 could prevent this species from establishing colonies and jeopardizes nesting and nesting habitat availability for this species. Black Skimmers can and regularly do initiate nesting during the month of August. Alternative F allows pedestrians in the narrow corridor of Bodie Island spit where the best nesting habitat exists and where nesting is highly likely to occur, and it allows vehicles after July 31st, which will jeopardize nesting Black Skimmers.

Implementation of Alternative F will prevent otherwise suitable habitat from being utilized by nesting waterbirds in areas open to off-road vehicles. It will have direct impacts that will limit nesting areas that are available to these species and it does not provide for adequate, timely detection of breeding activities and the subsequent protection of nesting areas. Implementation of Alternative F will result in depressed populations of these species and failure to recover these species.

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center

**Comment ID:** 137734      **Organization Type:** Conservation/Preservation

**Representative Quote:** DEIS at 100. The intertidal beach in this area is a known feeding location for piping plovers. In addition, the Seashore proposes a new "interdune" road "established parallel to the beach extending from ramp 59 for 0.3 mile northeast toward the inlet, with parking at the terminus." DEIS at 100. This new interdune road would allow large numbers of ORVs to quickly and easily reach this remote location and park just a short distance from the ocean, allowing high levels of pedestrian disturbance in high quality feeding and resting habitats. As with Hatteras Inlet Spit, this location has had an observation of a piping plover from the endangered Great Lakes breeding population, and is designated by the USFWS as wintering range critical habitat for the piping plover.

**Response:** Concerns relating to having sufficient vehicle-free areas to provide protection for wintering and migrating shorebirds were considered and additional year-round vehicle-free areas were incorporated into modified alternative F, as described in the response to Concern ID 24068. In addition, concerns about the number of ramps and interdunal roads were considered, and the number of proposed new ramps was reduced, the proposed interdunal

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route north of Ramp 59 was eliminated, and the number of “connector routes” between the new interdunal road (from ramp 45 to 49) and South Beach was reduced to address concerns about construction in sensitive dune environments. Finally, regarding concerns about the start and end dates for prenesting surveys under alternative F, observations by Seashore staff in recent years have shown that May 1 is an adequate date to capture all early nesting colonial waterbird activity. Although pre-nesting surveys would continue until July 15 for colonial waterbirds, if black skimmer or other species breeding activity occurs later in the season at any location, alternative F provides for monitoring and implementation of buffers based on the observed behavior, as described in the sections of Table 10-1 that follow “Pre-nesting Closures.” In addition, the “Pre-nesting Closures” section of Table 10-1 has been revised to states that “Pre-nesting closures would be removed if no breeding activity is seen in the area by July (or August 15 if black skimmers are present), or 2 weeks after all chicks have fledged, whichever comes later.”

**Concern ID: 24076**

**Concern Statement:** Commenters requested the NPS adopt a modified alternative F, following the recommendations of the United Four Wheel Drive Associations.

**Representative Quotes:****Corr. ID:** 15045**Organization:** United Four Wheel Drive Associations, Inc.**Comment ID:** 137886**Organization Type:** Unaffiliated Individual

**Representative Quote:** For the following reasons outlined below we request the agency adopt in its final decision a modified Alternative F, specifically reestablishing open and seasonal ORV use areas pursuant to maps supplied by UFWDA; removing the DEIS prohibition of access by street-legal motorcycles; prohibit nighttime beach driving during sea turtle nesting and hatchling season only during the hours from 10:00 p.m. until 6:00 a.m. during the dates from May 27 and August 25; during turtle hatch season limit closure to surf line from 1 hour before sunset until dawn, monitored by Turtle Night Nest Watch Team, utilizing keyhole pattern fence to the surf line at night and implement daytime closures that are limited to 10 meters square; Seasonal ORV beach closures for the villages of Frisco, Hatteras, and Ocracoke limited only from May 15 to September 15; addition of access ramps pursuant to maps supplied by UFWDA; provide pedestrian and ORV corridors or bypasses through, around, or below high tide line in all Species Management Areas (SMAs) during the entire breeding and nesting season within guidelines to maintain access; move chick buffers for Piping Plover unfledged chicks as the brood moves rather than expand buffer as proposed. The preceding modifications as well as those suggestions and rationale appearing as part of the UFWDA et al. Addendum to Final Report of the Proceedings of the Negotiated Rulemaking Advisory Committee for Off-Road Vehicle Management at Cape Hatteras National Seashore are incorporated herein and attached hereto.

**Response:** The NPS explored the options presented for a modified alternative F, as suggested by the United Four Wheel Drive Association. ML1 species management protocols have been eliminated in the revised alternative F, which will allow for reduction in the buffer sizes of some species (colonial waterbirds, least terns, and American oystercatcher), while increasing the monitoring for these species to ensure adequate protection. For complete responses to the specific suggestions recommended by the Association please see the responses to Concern IDs 24192 (use of corridors), 24194 (buffer distances), 24150 (protection of non-federally listed species), 24143 (turtle relocation), and 24263 (ecosystem methodology), 24089 (night driving), 24120 (access ramps), 24193 (turtle closures), 24102 (motorcycles), and 24198 (seasonal closures).

**Concern ID: 24077**

**Concern Statement:** Commenters expressed concern that under alternative F, the access stated in the DEIS would not be guaranteed because it would be subject to resource closures and that the DEIS does not reflect the potential for these closures.

**Representative Quotes:****Corr. ID:** 3890**Organization:** *Not Specified***Comment ID:** 137265**Organization Type:** Unaffiliated Individual

**Representative Quote:** The DEIS has failed to inform the public of the extent of expected closures to the most popular recreational sites of the national seashore. Experience with the consent decree closures for the past two years (2008, 2009) provide a clear indication of the extent to which the national seashore will be closed to public

access-ORV and pedestrian. In recent court testimony the National Seashore Superintendent indicated the extent of the closures, but nowhere does that data appear in the DEIS. The public should know what to expect when Alternative F is promulgated.

The Bodie Island Spit was closed a total of 136 days in 2009. Cape Point was closed 101 days in 2009. The Hatteras Island Spit was closed 125 days and south Ocracoke was closed 80 days. These are some of the most popular recreational use areas at the national seashore which will not be accessible to the public during late spring and summer months.

**Corr. ID:** 15010                      **Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140444                **Organization Type:** Conservation/Preservation

**Representative Quote:** DEIS's failure to consider the impact on public access in the determination of buffer distances is only exacerbated by its failure to inform the public about the full extent of the closures that can be expected to occur under Preferred Alternative F. The NPS possesses specific data relating to closures from the implementation of the Consent Decree during 2008 and 2009 that will provide a strong indication of the extent to which Preferred Alternative F will result in the closure of the Seashore to public access, not only for ORV use, but for pedestrian use as well. The DEIS does provide some data for 2008: "From May 15 through August 21, 2008, an average of 10 miles of oceanfront beach at the Seashore was closed to both pedestrians and ORVs. The largest amount of beach closures was reported on May 29, 2008, when 12.8 miles of beach were closed to all recreational use to protect piping plovers exhibiting breeding, nesting, and/or foraging behavior." DEIS at 267. As the NPS is aware, and as the Superintendent for the Seashore recently testified, the following closures occurred in 2009: Bodie Island Spit - 136 days; Cape Point - 101 days; Hatteras Island Spit - 125 days; and south Ocracoke - 80 days. These closures affected some of areas of the Seashore that are most used by the public for recreation, during the late spring and summer months when recreational use is most desirable. Despite the fact that this record of closure provides valuable data for public review and comment, it appears nowhere in the DEIS. This would have been important information to share with the public to accurately inform the public review process.

**Response:** Table 7 of the DEIS states that "when shorebird breeding activity is observed, standard buffers would apply, which depending upon the circumstances could close the access corridor" which indicates that ORV and/or pedestrian access to the points and spits could be restricted during breeding season. Table 37-1 has been added to the FEIS, under Affected Environment Visitor Use and Experience, to display closure dates during 2007 - 2009 for the inlets and Cape Point under alternative B. Although previous details on closures at the Seashore provide a historical perspective of beach access, the exact location, size, and timing of closures are dependent on variables such as species activity and weather that cannot be accurately predicted. Alternative F has been revised to allow for increased pedestrian access seaward of prenesting closures. However, standard buffers would be implemented when breeding activity is observed, which could limit pedestrian access in some places.

**Concern ID: 24080**

**Concern Statement:** Commenters stated that implementation of alternative F would likely lead to additional potential soil and wetland impacts from proposed construction activities. Commenters also indicated that funding may not be available to implement this alternative due to high costs associated with the amount of management flexibility contained in alternative F.

**Representative Quotes:**

**Corr. ID:** 15253                      **Organization:** Environmental Protection Agency

**Comment ID:** 139035                **Organization Type:** Federal Government

**Representative Quote:** EPA's primary concern about the preferred alternative (Alternative F) is that it designates the second-highest amount of shoreline miles for ORV use and includes the greatest number of new (or relocated) access ramps, parking areas, and new roads and trails among the action alternatives. There appears to be a significant number of existing access points and roads on CHNS, and it is unclear from the Draft EIS of the need for this additional access. These trails and roads will likely lead to additional potential impacts to soils and wetlands, particularly from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Alternative F also allows for greater flexibility in the establishment and enforcement of buffer zones during the breeding season, night-time driving restrictions, and has higher carrying capacities in certain areas than other alternatives, which could lead to the disruption to sensitive and endangered wildlife. Alternative F will also require

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significantly more resources and operating costs to fully manage the greater flexibility that it allows while attempting to ensure environmental resources are adequately protected. EPA has concerns that the NPS will not have the ability to fully enforce and maintain the protection of sensitive resources if Alternative F is implemented.

**Response:** In response to EPA's and other comments, NPS has reduced the number or size of new (or relocated) access ramps, parking areas, and new roads, which would reduce the amount of construction required and would lessen the potential for soil and wetland impacts.

NPS has also adjusted alternative F to provide for fixed hours of night-time ORV closure (9:00 p.m. - 7:00 a.m.). The revised preferred alternative F also changed the potential for reopening an area to night driving after Sept 15 from "areas with a "low density" of sea turtle nests to areas with "no nests."

NPS has adjusted carrying capacity to 260 cars per mile on all ORV routes, combined with parking limited to one car deep and maintaining two lanes of traffic at all times. If short-term overcrowding occurs, an emergency closure would be implemented.

NPS believes it will have the funding required to implement the preferred alternative. The cost of the ORV permit required under the action alternatives would be based on cost recovery for the additional staffing and resources needed, above the existing base-funded operations, to implement the ORV management plan.

### *AL1087 - Alternatives: Range of Alternatives*

#### **Concern ID: 24083**

**Concern Statement:** Some commenters stated that the range of alternatives should have considered maximizing access. They stated that all of the alternatives in the DEIS restrict access and only address two different scenarios for buffer sizes, and therefore a full range was not considered. Other commenters stated that the range of alternatives should have included one that puts a greater emphasis on pedestrian access and wildlife management and less on ORV use.

#### **Representative Quotes:**

**Corr. ID:** 9198                      **Organization:** National Parks Conservation Association

**Comment ID:** 131689            **Organization Type:** Unaffiliated Individual

**Representative Quote:** All of the alternatives presented in the draft environmental impact statement privilege ORV use over all other visitors. Overall, this approach is unbalanced and fails to conserve and protect the wilderness, birds, and turtles that make this area nationally significant.

**Corr. ID:** 11416                    **Organization:** *Not Specified*

**Comment ID:** 134279            **Organization Type:** Unaffiliated Individual

**Representative Quote:** NPCA seeks an ORV management plan that places greater emphasis on pedestrian access and wildlife management, especially with regard to endangered sea turtles and shorebirds.

**Corr. ID:** 13810                    **Organization:** cca-nc

**Comment ID:** 139816            **Organization Type:** Unaffiliated Individual

**Representative Quote:** While there are preferred environmental and NPS options, there is no pro-access preferred option. The CHNSRA was established specifically for the American public to enjoy the seashore. To propose no option which provides a maximum access option certainly violates the spirit and perhaps the letter of the laws establishing this national park. Without serving the visiting public, The NPS has failed in its responsibility to our citizens. All the options presented in the DEIS seek to restrict public access well beyond any reasonable or legal requirement.

**Corr. ID:** 14714                    **Organization:** Outer Banks Preservation Association

**Comment ID:** 133687            **Organization Type:** Unaffiliated Individual

**Representative Quote:** While I am appreciative of all of the hard work that went into developing the DEIS, I am greatly disappointed at the lack of exploration into alternatives that is apparent when reading the DEIS. Each

alternative that is offered for choice is excessively restrictive without providing any substantial benefit to resource or wildlife management.

**Corr. ID:** 15010

**Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140440

**Organization Type:** Conservation/Preservation

**Representative Quote:** The NPS failed to properly analyze a range of alternatives to the proposed action in the DEIS with respect to buffer distances, a key element of the ORV management plan. The DEIS identified two no action alternatives and four action alternatives. Each of the four action alternatives would apply identical "standard buffers" to limit access and potentially close access corridors. DEIS at 444 (Alternative C), 452 (Alternative D), 459 (Alternative E), 468 (Alternative F); see DEIS at 73 ("The buffer distances identified as common to all action alternatives are intended to provide adequate protection to minimize the impacts of human disturbance on nesting birds and chicks in the majority of situations, given the level of visitation and recreational use in areas of sensitive wildlife habitat at the Seashore and issues related to non-compliance with posted resource protection areas."). The DEIS did not identify or analyze a single action alternative that would apply different buffer distances than those specified in Table 10 of the DEIS. DEIS at 121-26. Among other reasonable alternatives, the DEIS should have analyzed the alternative method of establishing buffer distances and protection measures specifically outlined by Appendix G of the Piping Plover Recovery Plan, discussed further herein. The NPS's failure to consider any such reasonable alternatives violates the letter and spirit of NEPA and CEQ's implementing regulations. The NPS further circumscribed any meaningful evaluation of reasonable alternatives by making other key elements of an ORV management plan "common to all action alternatives." These include the following:- ORV routes and areas would be officially designated in accordance with the executive orders.- Year-round ORV routes and areas would be designated only in locations without Sensitive resources or high pedestrian use. - Year-round non-ORV areas would be designated. - A new standard set of species management and monitoring measures would include "species management areas" (SMAs) and two levels of species management effort. SMAs include areas at the spits and points in addition to other sensitive resource areas. DEIS at x. The DEIS's alternatives analysis, if done properly, also would have identified and considered alternatives that included variations on each of these key elements. By considering only alternatives that assumed and were identical as to each of these key criteria, the NPS improperly and unlawfully confined its analysis.

**Response:** NPS Director's Order 12 requires that a full range of alternatives be analyzed in an EIS and that the alternatives meet the project objectives to a large degree. The six alternatives analyzed in the DEIS contained considerably different buffer distances. For example, buffers for piping plover ranged from 50 to 1000 meters and buffers for American oystercatcher included "behavior-based" buffers, 150-foot buffers, 150-meter, 200-meter, and 300-meter buffers. The action alternatives contained two different buffer distance scenarios based on two different management strategies. A limited number of buffer types were included in the action alternatives because proposed buffers were determined by minimum distances that would provide adequate species protection to best meet the objectives for threatened, endangered, and other protected species as documented in table 12 of the DEIS, entitled "Analysis of How Alternatives Meet Objectives". The inclusion of inadequate buffer distances in the action alternatives would not meet the natural resource protection objectives of the plan or the provisions of the Endangered Species Act and other relevant law and policy nor allow progress towards achieving desired conditions for shorebirds at the Seashore.

The NPS considers alternative A to be similar to a "maximum access" alternative as suggested by the commenter. This alternative provides for ORV use in most areas of the Seashore 24 hours a day, subject to temporary resource closures, safety closures, or administrative closures. A "maximum access" option involving removing additional ORV restrictions from alternative A, would be a form of unrestricted ORV use, which was dismissed as an alternative because it would not meet the purpose, need, and objectives of this plan/EIS (DEIS p. 85). Furthermore, a "maximum access" alternative as described by commenters would not meet the criteria of Executive Order 11644 for the location of ORV areas and trails.

Although there are several elements that are common to all action alternatives, which is common and accepted in NEPA practice, the action alternatives contained numerous different alternative elements, as indicated on tables 7 and 8 in the DEIS. NEPA regulations require agencies to evaluate a range of alternatives, including the no-action alternative(s). Therefore, the NPS has fulfilled the requirement of Section 1505.1(e) of the CEQ NEPA regulations by evaluating in detail six different alternatives with numerous differing alternative elements as well as the full range of alternatives that includes those considered but dismissed from further analysis (DEIS p. 83-90).

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Alternative F has been revised to provide some seasonal ORV routes with more months of vehicle-free areas. For example, on village beaches there would be seasonal ORV routes for Rodanthe-Waves-Salvo, Avon, Frisco, and Hatteras that would be open to ORVs November 1 through March 31 (7 months closed to ORVs, 5 months open), with a minimum beach width criteria that would prompt a safety closure of portions of village beaches not meeting the criteria. Beaches fronting Buxton would be vehicle free year-round. Also, other seasonal ORV closures have been changed to March 15 through September 14 to provide a full six months for the vehicle free period.

**Concern ID: 24084**

**Concern Statement:** Commenters stated that the no action alternative was incorrect and did not represent a "true" no action alternative. The reasons for this varied with some commenters stating that no ORVs should be the no action and some stating it should be ORV use with no regulation to represent a worst case scenario. One commenter stated that the discussion of impacts should be quantitative instead of qualitative.

**Representative Quotes:****Corr. ID:** 12002**Organization:** *Not Specified***Comment ID:** 134149**Organization Type:** Unaffiliated Individual

**Representative Quote:** 1.NO-ACTION ALTERNATIVE. From my experience, Congress intended that the no-action alternative be technically analyzed as a worst-case condition so other alternatives could be compared to no-action. In this case, no action should be what would happen if there were literally no ORV management and vehicles drove everywhere. NPS should then discuss impacts associated with no action. These impacts should be quantitative; and they should be compared to quantitative impacts associated with other plans. For example, for Piping Plover you should state the impacts to the species for open access ORV use. What is the National implication to the overall species? (Probably very little - the CAHA population is quite small). What is the regional implication? (Probably would result in the loss of PIPL at the Seashore). It is then possible to compare the numbers of PIPL that could be expected under various alternatives. This is the No Action Plan as Congress intended.

Your current method of comparing plans is descriptive rather than quantitative and the basis for the differing description of impacts associated with each alternative is not clear.

By examining experience at Cape Lookout National Seashore, with much less visitation and minimal ORV use, you should be able to make an estimate of what the outcome to the species would be under Alternative F under this DEIS.

With boundaries (worst case - a true no-action; and best case-Alternative F) set, you should estimate quantitatively what the impacts are for various alternatives. How will productivity rates improve from Alternative A to Alternative F- How will populations fare under all alternatives-

The lack of qualitative analysis indicates a lack of rigor in the scientific analysis and questions the validity of the DEIS. It presents the appearance of opinions rather than science.

**Corr. ID:** 13807**Organization:** American Bird Conservancy, Center For Biological Diversity, et al**Comment ID:** 137415**Organization Type:** Unaffiliated Individual

**Representative Quote:** The final EIS should include a true "no action" alternative of no ORV use on Seashore which will provide an appropriate baseline for assessing and evaluating environmental impacts of the action alternatives.

**Corr. ID:** 14433**Organization:** *Not Specified***Comment ID:** 136733**Organization Type:** Unaffiliated Individual

**Representative Quote:** Although I've read the explanation of why the "No Action" plan does not prohibit ORV access, I believe that complete prohibition should have been presented. A fortiori, virtually unrestricted ORV access should not be the line from which increased conservation and management policies should have to prove their worth.

**Response:** Although prior CEQ regulations implementing NEPA required a worst-case analysis, current regulations do not. Furthermore, there has never been a requirement to define the "no-action" alternative as a "worst case condition."

NEPA does not require that NEPA documents discuss only quantifiable impacts. The NPS Director's Order #12 Handbook states, "If you can meaningfully and accurately quantify the magnitude of this impact, this is the best way to present the information. If you have little confidence in an absolute number, you may want to use a range of reasonable impacts; rather than conveying false confidence, documents should give the decision-maker and the public a true picture of how well you can predict an impact. You must support qualitative and quantitative impact analyses with the scientific literature and/or other experts' testimony. Such references should be cited liberally in the impact section." (Section 4.5.G.1) To the extent that impacts can be quantified, they have been quantified in the DEIS. When they cannot, they have been discussed qualitatively.

As discussed above under Concern ID 24020, ORV use is to be allowed only if NPS can determine that off-road vehicle use on the routes to be designated will not adversely affect the natural, aesthetic, or scenic values of the Seashore (including listed and non-listed park wildlife). To the extent there is a scientific burden of proof, it must be met to allow ORVs, not to restrict them. Because quantitative data simply are not available for many of the sorts of impacts and resources at issue, it would probably be impossible for NPS to allow any ORV use in the Seashore without relying on qualitative analyses.

As discussed on p. 59 of the DEIS and in the No-Action Alternatives section of the FEIS, to provide continued visitor access through the use of ORVs, the NPS must promulgate a special regulation authorizing ORV use at the Seashore. The purpose of the Plan/EIS is to develop such a regulation. Without a special regulation, continued ORV use would conflict with NPS regulations (36 CFR 4.10). The consent decree recognizes this and sets a deadline for the ORV plan and regulation. As the district court has recognized in another case, absent an ORV plan and regulation, as a legal matter ORV use is "prohibited." If NPS does not promulgate a regulation, continuing its past inaction, this legal prohibition would remain, and the result could be that the district court would expressly ban ORV driving on the Seashore. "No ORV Use" thus could represent a result of NPS past inaction continued into the future, and thus might satisfy the first purpose of a no-action alternative (i.e. to represent the agency's past and current actions or inaction on an issue continued into the future). NPS does not believe, however, that a "no ORV use" alternative would fully serve the function of a no-action alternative, because it would not satisfy the second purpose of a no-action alternative (i.e. to set a baseline of existing impacts continued into the future against which to compare the impacts of action alternatives). ORV use has occurred continuously before and since the Seashore was authorized and established. Given this history, a complete ORV prohibition cannot be considered as the "current management direction or level or management intensity" or as "continuing with the present course of action," which is how CEQ describes this role of the No-action alternative under NEPA.

As discussed on p. 83 of the DEIS and in the Alternative Elements Considered but Dismissed from Further Consideration, Prohibit the Use of off-Road Vehicles section of the FEIS, the NPS did consider prohibiting ORV use at the Seashore as an action alternative. However, the purpose of this plan is to "develop regulations and procedures that carefully manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors." ORV use, if effectively managed, provides convenient access for many appropriate visitor activities at some popular beach sites, including, for example, activities that use vehicles to transport substantial amounts of gear for the activity. Prohibition, rather than management, of ORV use could substantially diminish such visitor experience opportunities. Therefore prohibition of all ORV use would not meet the plan need. Also as discussed in the DEIS and FEIS, ORV use is a historical use at the Seashore that has been accounted for in Seashore planning documents. Because a complete prohibition of ORV use does not meet the purpose, need, and objectives of this plan/EIS and because ORV use is a use that is accounted for in Seashore plans, elimination of all ORV use at the Seashore was not carried forward for further analysis as an action alternative.

### ***AL1115 - Alternative Elements: Nighttime Restrictions***

#### **Concern ID: 24087**

**Concern Statement:** Commenters stated that the night driving restriction should be removed from the alternatives. They stated that there is no scientific evidence that shows night driving has any impact on turtle nesting or hatchling

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survival and people on the beach at night would be a deterrent to predators, without impacting the wildlife. Commenters asked for night driving to be allowed year round, subject to obtaining a permit.

**Representative Quotes:**

**Corr. ID:** 249                      **Organization:** *Not Specified*

**Comment ID:** 130590            **Organization Type:** Unaffiliated Individual

**Representative Quote:** There should be no night-time restrictions of driving or of beach fires. There is no evidence that such use of the Seashore beaches effects turtle populations in any manner. Restriction of beach access during night time hours will not preclude the need for law enforcement coverage. It will not increase law enforcement's ability to address problems during daylight hours because there never has been, nor is there now, night time coverage that can be shifted to daylight hours. Finding an on-duty NPS law enforcement ranger within the Seashore after 11pm is something that happens very infrequently. Extremely limited and inadequate law enforcement coverage has existed within the Seashore for many years. The solution is to hire more rangers. One of the Seashore's primary visitor activities, fishing for red drum and striped bass, is best done during hours of darkness. Many visitors come to the Seashore primarily to enjoy a beach fire. These activities should not be restricted without definite proof they significantly reduce turtle usage of the Seashore beaches. Turtle closures provided for in the NPS preferred alternative are much too large. All turtle closures should provide for pedestrian and ORV passage at all hours of the day and night. During the "hatch window" passage should be provided at all hours, either between the nest and the dune line or in front of the nest with NPS volunteers overseeing the nest to insure that vehicle passage will not interfere with hatching turtles.

**Corr. ID:** 946                      **Organization:** *Not Specified*

**Comment ID:** 132298            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Night driving restrictions are apparently instituted to protect the nesting Sea Turtles. With a permit requirement that had an education part (NO FEE), this restriction should not be necessary. In any case, access should be granted 1 hour prior to sunrise, at a minimum.

**Corr. ID:** 15000                  **Organization:** *Not Specified*

**Comment ID:** 140248            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Examination of the NPS annual records proves that those two controls are ineffective.

In the past 10 years of data no adult turtle was ever impacted or killed by night vehicle operation. Turtle egg or hatchling impacts have been 0.01% of the resource from night driving. Missed nests have never been a serious problem at CHNSRA being of the order of 1%. Further reductions in missed nests could be accomplished by use of trained dogs or enlistment of night ORV operators to assist in location of new nests. Prohibition of night driving is not warranted by the science.

**Corr. ID:** 15045                  **Organization:** United Four Wheel Drive Associations, Inc.

**Comment ID:** 137929            **Organization Type:** Unaffiliated Individual

**Representative Quote:** I. Decisions are arbitrary and capricious based on the parks own statistics. The DEIS, Alternative F, proposes a night driving ban in effect for sea turtle nesting habitat from May 1 to Nov 15. DEIS at 81 and 82. Yet only twice in the past 11 years have turtle nests been recorded within the unit prior to May 27. Even if a no-impairment standard is implied May 1 is too early.

Similarly, a nighttime driving ban is proposed to be in effect for sea turtle nesting habit through Nov. 15. This limitation is arbitrary as it is not statistically supported. All other protection measures would still be employed while allowing driving. In the past 11 years, only 1% of turtle nests remained after August 28 of each year. Utilizing a reopening date of September 16 is still too late compared to statistics showing only 1% of nests remain as of August 28 of each year. Labor Day is traditionally a very high use visitor weekend and thus provides the North Carolina economy with a disproportional amount of revenue compared to a non-holiday weekend. Proposing a beach closure at night that extends into the Labor Day weekend, occurring the first Monday in September, disproportionately impacts the local economy as compared to the low probability of the actual nest protection that could be achieved.



**Corr. ID:** 15095      **Organization:** *Not Specified*  
**Comment ID:** 139591      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I'd like to address night driving issues on page 369 of the DEIS Alternative F says, "May 1 to November 15, designated ORV routes and potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore and dunes) would be closed and non-essential ORV use one hour after sunset until turtle patrol has checked the beach in the morning, at approximately a half-hour after sunrise." Last night, David Scarborough commented that there was no need for night driving restrictions, as it does not meet the requirements of a major adverse impact as defined on page 369 of the DEIS. All you need to do is to look at the history here, recorded in the annual sea turtle reports, and you'll find the following: "From 2000 through 2003, four years, with night driving and wood -- two by two wooden stakes at closures, the false crawl ratio was 0.75 to 1. 2004 and 2005, was white Carsonite stakes at closures, the false crawl and nest ratio jumped to 1.62 to 1." Neither National Park Service, the U.S. Fish and Wildlife, or North Carolina Wildlife Resource Commission flinched at this dramatic increase. Only I showed this problem to you, Mike, and you made the change. 2006 and 2007, you started using brown Carsonite stakes and closures, while night driving was still allowed and the false crawl and nest ratio dropped to 0.98 to 1, without the unexplained 24 false crawls in the hook bird closure at Cape Point. In 2008 and 2009, with brown Carsonite stakes and no night driving because of the Consent Decree, the false crawl ratio was 0.95 to 1. That's the lowest false crawl ratio to nest, in the last 10 years, has been with night driving, and wooden stakes. It's clear that the Cape Hatteras National Seashore recreational area false crawls have increased by the use of Carsonite stakes and not reduced by a ban on night driving. I repeat. Not reduced by a ban on night driving. It's also worth noting that the false crawl ratio in front of villages on Hatteras Island in the last 10 years as been 0.67 to 1. U.S. Fish and Wildlife false crawl expected ratio on undeveloped islands is 1 to 1. Please use science from here at Cape Hatteras and not from Florida.

**Corr. ID:** 15141      **Organization:** *Not Specified*  
**Comment ID:** 139036      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the plan to prohibit night ORV beach access in the May 1 through September 15 time frame. Night ORV and pedestrian access should be managed using the guidelines that were followed prior to the Consent Decree.

**Response:** Based on public and agency comments regarding the duration (both calendar and daily) of night driving restrictions and the ambiguity of the "low density" terminology for periods from September 16 to November 15, the NPS has revised alternative F with regards to night driving restrictions. Under the revised alternative F, all non-essential vehicle use will be restricted or prohibited from 9:00 pm until 7:00 am from May 1 until November 15. From September 16 to November 15, ORV routes with no turtle nests remaining will reopen for night.

Alternative F has also been revised to allow daytime pedestrian access through the intertidal zone below nests once turtle closures have been expanded during the hatching window; however, pedestrians will not be allowed to walk up into the closure or to remain in the area below the closure. The calendar duration of night-time driving restrictions better match the actual nesting season of the turtles at the Seashore while also protecting hatchlings. Beginning the night driving restrictions at 9:00 pm and ending them at 7:00 am balances resource protection with public access including allowing park staff to complete turtle patrols in the morning to identify and protect nests prior to the onset of ORV use each day.

Driving on the beach at night does impact nesting sea turtles and hatchlings both directly and indirectly. Because visibility is reduced at night, there is also the potential for nesting, live stranded, or hatchling turtles to be hit by ORVs operating at night. (NMFS and USFWS 1993; Cohen et al. 2010). In addition, because there are not the resources to monitor the entire beach 24 hrs per day, the number of recorded incidents resulting from human activities, especially at night, likely underestimates the actual number of incidents that occur. In areas that people would not normally access due to distance, the Seashore has documented vehicle lights, people with lights and cameras causing false crawls; false crawls that would likely not have occurred if ORVs had not brought the people to those locations. In 2007 an adult female was documented crawling parallel to the ocean towards vehicle headlights after nesting. When park staff asked the vehicle owner to turn the lights off the turtle headed directly into the ocean. False crawls or turtles being attracted to and nesting adjacent to fire pits have also been documented in the Seashore, and while the majority of beach fires occur in the village areas, ORVs provide access to remote areas of the beach that would otherwise not experience beach fires that impact turtles. Hatchlings have been documented crawling towards and into beach fires, including an incident where hatchlings crawled approximately 300 m into a

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beach fire in 2008. Evidence that hatchlings have been caught in tire ruts left behind by vehicles have been documented. Vehicles running over nests at night prior to morning turtle patrols discovering and protecting the nests have been documented at the Seashore – some with recorded damage to eggs.

Though it is the only known recorded incident at the Seashore where an adult nesting turtle was struck and killed by an ORV, the recent death of a an adult nesting turtle that likely occurred during the early morning hours of June 24, 2010 indicates that the potential does exist for vehicles driving at night to strike and kill nesting turtles.

When night driving was allowed prior to the consent decree predation by fox, ghost crabs, and other predators still occurred and indicates that the presence of ORVs and pedestrians on the beach at night does not act as a deterrent to predators.

As indicated in the EIS (page 373) false crawls are known to be caused by many different factors, both natural and human, and even when witnessed, and most are not, it can be difficult to attribute a cause to it (e.g. suboptimal sand conditions, noise, light pollution etc.). It is not known if the type of posts used to mark resource closures contributes to false crawls or not and there is no scientific data to back up claims for or against the argument. From 2000 to 2003 when wooden stakes were used false crawl to nest ratios ranged from a high of 1.17:1 to a low of 0.55:1, and during other years of high false crawl to nest ratios white carsonite stakes were not used exclusively. Given all of the natural and human factors that can cause false crawls, it is not possible to attribute a high or low false crawl rate during any given year to a single factor such as the color of carsonite stakes used to mark resource closure areas.

**Concern ID: 24089**

Concern Statement: Commenters suggested variations for the proposed night driving restrictions including:

- the NPS clarify what constitutes a "low density of turtles nests" where night driving would be permitted to better analyze the impacts of this alternative.
- night driving restrictions be in place whenever and wherever turtle nesting is occurring.
- night driving be allowed if vehicles use red tape for their headlights.
- night driving restrictions from dusk to dawn
- night driving restrictions June 1 to September 15, 1 hour after sunset to one hour after sunrise
- night driving restrictions from 10 pm to 5 am
- allow vehicles to remain parked at night
- begin night driving restrictions 1/2 hour after sunset (instead of one hour)and remove language that says the beach will open "approximately one-half hour after sunrise" as this may not be possible in remote areas
- begin night driving restriction on April 1

**Representative Quotes:****Corr. ID:** 10**Organization:** *Not Specified***Comment ID:** 126151**Organization Type:** Unaffiliated Individual

**Representative Quote:** The ban on night driving on the beach should be flexible enough to allow ORV on the beach after dark and still protect turtles. This could be accomplished by allowing ORV to remained parked after dark on all open areas. The most popular spots, cape point, south point and others should have a small corridor to allow limited traffic after dark.

**Corr. ID:** 11206**Organization:** *Not Specified***Comment ID:** 135449**Organization Type:** Unaffiliated Individual

**Representative Quote:** I oppose the NPS turtle protection plans as described in Alternative F. The NPS plan calls for round the clock closure from nest to surf line (p. 125 of DEIS). I support the Coalition position for closure to surf line from 1 hour before sunset until dawn with monitoring by Turtle Night Nest Watch Teams. The NPS proposes a ridiculous nest closure size of 105 meters wide (p. 125) whereas the Coalition proposes a more realistic closure size of 10 meters square during the day like that used successfully on Pea Island. The NPS also proposes using a U shaped light filter fence to orient hatchlings. I support the Coalition proposal to use the successful Pea Island style keyhole pattern fence to the surf line at night.

**Corr. ID:** 13400      **Organization:** *Not Specified*  
**Comment ID:** 139926      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Nothing in the DEIS goes to solve the problem of people and wildlife, and instead would rather just prohibit access, instead of managing the two as it is their mission statement to do. In regards to night driving, I recommend that red tape be mandated for use by people wanting to use ORVs at night. This could mitigate any potential impacts to sea turtles. Not to mention the fact that there have been no studies done to date to qualify or quantify effects on nesting sea turtles at CAHA regarding use of the beach at night.

**Corr. ID:** 13400      **Organization:** *Not Specified*  
**Comment ID:** 139988      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** -Mandate red tape for night-time ORV use during the sea-turtle nesting season

**Corr. ID:** 14515      **Organization:** *Not Specified*  
**Comment ID:** 134641      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Night Driving Restrictions based on when and where turtles nest not arbitrary dates. The night driving restrictions start on may 1st. Last year the first turtle nest was may 22nd.

**Corr. ID:** 14571      **Organization:** *Not Specified*  
**Comment ID:** 135712      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** We do not support the night time access ban. A more reasonable approach would allow access from one hour before daylight until one hour after sundown. This would allow fishermen access to the prime fishing hours of dawn and dusk.

**Corr. ID:** 14819      **Organization:** *Not Specified*  
**Comment ID:** 136305      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I AGREE ON NIGHT CLOSING. BUT SHOULD BE HOURS FROM 10:00 PM TILL 5:00 AM

**Corr. ID:** 15051      **Organization:** *Not Specified*  
**Comment ID:** 138197      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Night driving on the beaches should be prohibited from dusk to dawn, especially during the turtle breeding/nesting season.

**Corr. ID:** 15074      **Organization:** Southern Environmental Law Center  
**Comment ID:** 137784      **Organization Type:** Conservation/Preservation  
**Representative Quote:** Regarding protection for turtle nests that have not hatched by September 15, we are very concerned about the language that "selected ORV routes with no or a low density of turtle nests remaining (as determined by the NPS) would reopen to night driving, subject to the terms and conditions of a required permit." DEIS at 82. We do not know what "low density of turtle nests" means, which prevents adequate disclosure of the impacts of this provision. Moreover, given the known, significant risks to sea turtle hatchlings from nighttime ORV use, we strongly oppose any night driving near or behind turtle nests. In support, we note that filter fence does not always serve its intended purpose, as the material can be pushed over by blowing sand, or there can be a gap between the sand and the fence. Thus, while the material may help in certain instances, it does not ensure that the hatchlings will be protected from light, nor does it ensure that the hatchlings will not end up in ORV areas and crushed or stuck in tire tracks. That threat is amplified if ORVs are allowed to pass behind or near nests. While we do not object to ORV routes (that are not part of SMAs) being reopened to ORVs if turtle nesting and hatching have been completed, we strongly urge the Seashore to remove "or a low density of" from the provisions governing turtle management. As long as there are sea turtle nests, night driving restrictions need to be in place to protect all nests.

**Corr. ID:** 15074      **Organization:** Southern Environmental Law Center  
**Comment ID:** 137782      **Organization Type:** Conservation/Preservation  
**Representative Quote:** We support the provision that the beach not be re-opened "until NPS turtle patrol has checked the beach (by approximately one-half hour after sunrise) .... " We have several concerns about this

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however. Based on our observation of turtle patrols at the Seashore for many years, we question if the staff will be able to complete the turtle patrol by one-half hour after sunrise.

While that may be possible for some areas, more remote areas will be difficult to monitor during that time period. If a nest has to be moved, or if multiple nests are found, we strongly question whether the one-half hour after sunrise timing would be met. Moreover, if turtle patrol starts too early in the morning, there is a possibility that late-nesting turtles could be missed by turtle patrol, due to the turtle emerging from the water after the turtle patrol has observed the area. The words "(by approximately one-half hour after sunrise)" should be removed from the language.

**Corr. ID:** 15074                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137781           **Organization Type:** Conservation/Preservation

**Representative Quote:** We support the provision in the DEIS that "From May 1 through September 15, all potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use at night until NPS turtle patrol has checked the beach in the morning (by approximately one-half hour after sunrise) to provide for sea turtle protection and allow enforcement staff to concentrate their resources during the daytime hours," DEIS at 82, with one important modification: the closure time should be changed to sunset.

We strongly urge the Seashore to change the timing of this provision to one-half hour after sunset, rather than 1 hour after sunset, to reduce the chance that sea turtle nesting could be adversely impacted by ORV use. All ramps should be physically closed to recreational vehicle use (such as by a pressure operated gate), one-half hour after sunset to ensure full compliance with the beach driving time limitation.

We would strongly oppose any requirement to allow beach driving until 10:00 pm during the nesting season. The majority of sea turtle nesting occurs between sunset and midnight; accordingly, allowing beach driving until 10:00 pm could significantly increase the risk of false crawls, aborted nesting attempts, missed (non-detected) nests due to the crawl tracks being obliterated by ORV tracks, and resulting risk of take of nests or hatchlings. Allowing nighttime driving, or even driving to 10:00 pm, would violate the statutory, regulatory, and policy provisions governing the Seashore, likely lead to take of nests or hatchlings, and result in the impairment of Seashore values.

**Corr. ID:** 15074                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137763           **Organization Type:** Conservation/Preservation

**Representative Quote:** Night driving restrictions to protect nesting sea turtles extend from May 1 to November 15 in the action alternatives, The Moderate protections recommend night driving restrictions begin April 1.

**Response:** Based on its legal mandates, as well as taking public comments on the proposed night driving restrictions into consideration, the NPS has revised alternative F to try and achieve an appropriate balance between resource protection and public access.

Under the revised alternative F, from May 1 to November 15 designated ORV routes in potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 9:00 p.m. until 7:00 a.m. However, from September 16 to November 15, ORV routes with no turtle nest remaining will reopen for night driving. On ORV routes with any remaining turtle nests, the night driving closure will remain in effect. The Seashore will use 105 m wide buffers (i.e., 52.5 meters on either side – left or right - of the nest, with 10 meters behind, or landward, of the nest) around turtle nests as described in table 10-1.

Beginning night driving restrictions on May 1 reduces the chances of impacts to early season nests. Only reopening beaches with no nests to night driving after September 15, removes the ambiguity of defining "low density of nests", continues to protect hatchlings from night driving impacts, while also not unnecessarily restricting public access to areas of the Seashore where there are no turtle nests, especially during the fall fishing season. As noted, resource protection is not the only factor the NPS has to consider during the management of its resources and restricting night driving between the hours of 9:00 pm and 7:00 am provides an easily understood, enforceable restriction that provides a balance between conservation and public access by encompassing the majority of the nesting and hatching periods at night while generally allowing turtle patrol staff time to find and protect nests prior to ORVs being on the beach each day. Protection of hatchlings from night driving light impacts prior to 9:00 pm later in the season when sunset occurs earlier would still occur by use of filter fencing and expanded buffers.

Opening the beach to ORV use prior to 7:00 am would not allow staff ample daylight hours to patrol the entire Seashore for turtle nests prior to ORV use, or would force them to start before daylight, which may cause them to miss turtle nests or late nesting turtles.

Regarding other restrictions and management policies suggested by public comments: Placing red filters or tape over vehicle headlights reduces the visibility of the driver at night, and the NPS will not require the public to alter their vehicles in a manner that potentially compromises their safety. Additionally, standards for any red filters would need to be developed to ensure their adequacy at protecting sea turtles/hatchlings from light impacts and the NPS does not have the ability to inspect all vehicles on the beach at night to enforce compliance. Allowing vehicles to remain parked on the beach in resource sensitive locations for the duration of the night would be difficult to patrol and enforce, and could place an unrealistic expectation on visitors parked in such locations to strictly comply with the night driving restrictions. The NPS does not have the resources to patrol the entire park at night to enforce compliance, and placing more park vehicles on the beach at night would potentially result in additional compliance problems that would cause the same adverse impacts as other non-essential ORVs.

**Concern ID: 24091**

**Concern Statement:** One commenter stated that the DEIS described night driving restrictions differently in different sections of the document, and requested clarification.

**Representative Quotes:**

**Corr. ID:** 15010

**Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140453

**Organization Type:** Conservation/Preservation

**Representative Quote:** In fact, it is unclear how restrictive Alternative F's night-driving restrictions really are, because the DEIS itself states them inconsistently. At page 358, the DEIS states that "Under alternative F, all nonessential ORV traffic would be prohibited from all areas (other than soundside access areas), from one hour after sunset until approximately one-half hour after sunrise from May 1 to November 15.

From November 16 to April 30, ORV use would be allowed 24 hours per day in designated ORV routes for vehicles with a valid ORV permit. Furthermore, the NPS would retain the discretion to limit night driving to certain areas or routes, based on resource protection considerations." Yet, at pages 81-82, the DEIS states that "Designated ORV routes would be open to ORV use 24 hours a day from November 16 through April 30. From May 1 through September 15, all potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 1 hour after sunset until NPS turtle patrol has checked the beach in the morning (by approximately one-half hour after sunrise) to provide for sea turtle protection and allow enforcement staff to concentrate their resources during the daytime hours. From September 16 through November 15, selected ORV routes with no or a low density of turtle nests remaining (as determined by the NPS) would reopen to night driving, subject to the terms and conditions of a required permit." Although it appears that the description at pages 81- 82 is the intended one, and it is clear that one way or the other the night-driving restrictions in Alternative F are more restrictive than those in the Consent Decree, the DEIS's inconsistency is troubling and makes it difficult for the public to respond appropriately to this element of the NPS's proposal.

**Response:** The description of night time driving restrictions on pages 81-82 in the DEIS is correct. The revision of alternative F included changes to the night driving provisions. The description on page 358 of the DEIS has been clarified in the FEIS by adding the additional statement that from September 16 through November 15, ORV routes with no turtle nests remaining (as determined by the NPS) would reopen to night driving, subject to the terms and conditions of a required permit.

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**AL1120 - Alternative Elements: Permits****Concern ID: 24094**

Concern Statement: Commenters asked for clarification on what cost-recovery for a permit system might include and what that fee could be, stating that based on the information in the DEIS, these permits are likely to be cost prohibitive. They further stated that the information provided about cost-recovery in the DEIS was confusing and not informative.

**Representative Quotes:****Corr. ID:** 14967**Organization:** *Not Specified***Comment ID:** 137330**Organization Type:** Unaffiliated Individual

**Representative Quote:** How is the general public expected to understand how the ORV permit fee is to be determined? In the first 258 pages of the DEIS NPS Director's Order and Reference Manual 53 appears only on page 107 which happens to be an exact repeat of page xxiii. In a search of the remaining 552 pages this language appears only three times in the section relating to Impacts of Alternative F: and does not reveal any of the content of this Director's Order or Manual 53. Thus, there is absolutely no explanation of how the weekly and yearly ORV permit fees will be set. No explanation of how the proceeds will be spent or who will spend them. Page xxx of the DEIS indicates that Alternative F might cost \$3,717,000.00 or \$71,284.93 per week for staffing and materials. Of this figure, \$2,078,300.00 is projected for protection costs. The DEIS does not state if these costs are the total Seashore figures or are reduced for protection costs related to non ORV issues like : Hwy. 12 radar, lighthouse security, lighthouse visitor health issues. Hwy 12 accidents, Pea Island protection, pedestrian heart attacks on the beach, campground security or a whole host of other non ORV related duties of NPS enforcement rangers.

Without knowing the probable cost, or even an estimate, of an ORV permit, how is the public expected to weigh the cost of purchasing a permit with the benefit of the greatly limited access proposed by Alternative F? This is asking the taxpaying citizens of America if they want the NPS to charge an unknown amount of money to visit public property created by the U S Congress as a Recreational Area which may not even be accessible.

**Corr. ID:** 14971**Organization:** *Not Specified***Comment ID:** 138954**Organization Type:** Unaffiliated Individual

**Representative Quote:** The DEIS does not provide any estimate of these costs but if you consider the fact that the annual cost estimate for Alternative F is \$3 -7 million (Footnote 9) the cost of a permit could be cost prohibitive for the average visitor. Furthermore, since the purchase of a permit will not guarantee access if the peak use limit has been reached, it is very possible that many visitors will be unable to justify an expenditure for something they may not be able to use.

**Corr. ID:** 15063**Organization:** Rodanthe-Waves-Salvo Civic Association**Comment ID:** 138989**Organization Type:** Civic Groups

**Representative Quote:** The Draft Environmental Impact Statement states, at page 107, an "ORV permit fee would be based on cost recovery.. ." and refers the reader to a 309-page document to figure out what costs would be recovered and therefore what the charge might be. This is not informative.

**Response:** As a cost recovery program administered under NPS Director's Order 53, the actual price of the ORV permit will be derived by determining all the additional operational costs (staffing, supplies, equipment and other non-personnel services costs), above and beyond base funded operations<sup>1</sup>, that will be necessary to administer and manage the ORV program, divided by the estimated number of permits by type (annual and 7-day) that will be sold, to determine the cost per permit by type. The costs that are above and beyond those currently covered by base operating funds include staffing to issue permits and enforce permit requirements; additional staffing needed to implement new ORV management activities related to law enforcement, resource management, maintenance, and education outreach; ORV informational materials, signs, and supplies; and other program support costs necessary to administer and implement the plan and special regulation. The initial price will inherently involve some subjective analysis because of the uncertainties about the total number of permits and the number of permits by type that might

<sup>1</sup> Base operating funds is the part of the annual appropriation from Congress for Operation of the National Park System (ONPS) which is allocated by the NPS to each park to fund salaries and other expenses such as utilities to operate the park.

be purchased. However, based on prices at Cape Cod (CACO) and Assateague Island (ASIS) National Seashores for similar types of permits, as a starting point it is reasonable to expect the price to be within the following range:

- Annual permit: \$90 - 150 (ASIS VA & MD Day Only Permit, \$90; CACO annual ORV permit \$150)
- 7-day permit: 50% - 33% of the annual price (up to 50% if the annual price is lower in the price range; as low as 33% if annual price is higher in the price range)

The ORV permit is not intended to guarantee access all the time to all areas designated as ORV routes. ORV routes are subject to resource, administrative and safety closures and to user capacity limits. However, past experience indicates that even during the breeding season many miles of seashore beach would remain open to ORV use, and user capacity limits would likely come into play only in a few highly popular areas during major holiday week-ends.

**Concern ID: 24095**

**Concern Statement:** Commenters provided suggestions for requirements to obtain a permit for ORV use such as watching an educational video, having permit holders report turtle crawl activity, and having permittees check in before use.

**Representative Quotes:**

**Corr. ID:** 80                      **Organization:** California State Polytechnic University, Pomona

**Comment ID:** 129743        **Organization Type:** Unaffiliated Individual

**Representative Quote:** Without further scientific studies the beaches should be placed in limited access to only permitted individuals. These individuals could be checked in and have maps of specific areas of interest that cannot be disrupted. Checkpoints could present a very effective way of monitoring.

**Corr. ID:** 249                      **Organization:** *Not Specified*

**Comment ID:** 143010        **Organization Type:** Unaffiliated Individual

**Representative Quote:** Any educational component should be no more than receipt of NPS brochure along with the permit.

**Corr. ID:** 732                      **Organization:** Coastal Conservation Association

**Comment ID:** 133159        **Organization Type:** Unaffiliated Individual

**Representative Quote:** I agree the beach permit should have an educational element to it. This element should be in the form of a pamphlet guide outlining safe and preferred beach driving procedures. These procedures should encourage using existing track sets on the upper and/or lower beach, encouraging drivers to remain off the middle section of beach as much as possible. This would hopefully allow for increased numbers of ghost crabs to have safe, livable beach habitat, and would also improve the aesthetic value of the beach in general. Assateague is a good example of this. Wide areas of beach have few tracks in the middle.

**Corr. ID:** 13877                **Organization:** *Not Specified*

**Comment ID:** 136553        **Organization Type:** Unaffiliated Individual

**Representative Quote:** If a special use permit is deemed required, a requirement could be the reporting of any turtle crawl activity.

**Corr. ID:** 14642                **Organization:** *Not Specified*

**Comment ID:** 139143        **Organization Type:** Unaffiliated Individual

**Representative Quote:** - Required all those applying for an annual/seasonal Oversand Vehicle Permit to view a short 8-15 min video highlighting the species and natural processes the park is attempting to preserve, general beach driving rules and why with a warning that permits will be revoked for many beach driving violations.  
- Highlight the negative effects on wildlife and their habitat due to the increase in humans at NPS areas.

**Corr. ID:** 14877                **Organization:** *Not Specified*

**Comment ID:** 136500        **Organization Type:** Unaffiliated Individual

**Representative Quote:** I support education for beach-users including a permitting process for ORV- drivers, that would require attendance at informational sessions about the protection needed by the birds and turtles on the beach.

## Appendix C

**Corr. ID:** 15043      **Organization:** Southern Environmental Law Center  
**Comment ID:** 137455      **Organization Type:** Conservation/Preservation  
**Representative Quote:** ORV management should include a permit system with a mandatory education component.

**Response:** Alternative F as revised in the FEIS would require all ORV permit applicants to complete a short educational program at the Seashore, which would involve a short video or printed educational materials. To ensure that each applicant completes the program, alternative F has been revised to require that applicants watch the video or read the educational materials in person at a designated location at the Seashore. Although all of the details of the educational materials have not yet been finalized, the subject matter would include natural resource protection, safety, ORV driving tips, rules and regulations, and information about permit revocation for violations. To reduce the burden on NPS staff and the public, the testing requirement has been removed from alternative F; however, the requirement that the permit applicant sign the permit to acknowledge understanding of the rules and regulations governing ORV use at the Seashore remains. The language on pages xxiii, 73, 82, and 107 (table 8) of the DEIS has been revised to delete the test requirement and the availability of permits online.

Although the Seashore encourages the public to report certain species activities, including turtle crawls, *requiring* the public to report turtle crawls would not be appropriate as part of an ORV permit program.

**Concern ID: 24096**

**Concern Statement:** Commenters suggested fee structures for a permitting system, with requests for fees to go to resource protection, law enforcement, and all other costs to manage the program.

Specific suggestions for a fee structure included:

- no fee
- \$50 a week, \$150 a year
- \$5 a day, \$10 a week
- \$10 a year
- \$100 a year
- make it so expensive to reduce ORV traffic volume or discourage use
- certain populations be exempt from permit fees (or have discounted fees) including local residents and members of the North Carolina Beach Buggy Association (NCBBA) be exempt from any permitting system.

**Representative Quotes:**

**Corr. ID:** 15063      **Organization:** Rodanthe-Waves-Salvo Civic Association  
**Comment ID:** 147028      **Organization Type:** Civic Groups  
**Representative Quote:** The draft statement calls for an annual and weekly permit. The civic association board recommends, in addition to a free annual and weekly permit, a free one- or two-day permit also be made available for those visitors passing through this national seashore.

**Corr. ID:** 12      **Organization:** *Not Specified*  
**Comment ID:** 126140      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Why not just charge an access fee (seasonal, monthly, weekly and daily) make it steep enough to discourage the curious. Issue decals, patrol the beach and right large fines for violations. This would pay for the patrol effort, provide additional revenue to maintain ramps and other beach maintenance items and most importantly reduce the volume of traffic on the beach.

**Corr. ID:** 12      **Organization:** *Not Specified*  
**Comment ID:** 126142      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Locals could be provided a significant discount to the fee structure



**Corr. ID:** 52                   **Organization:** OBPA  
**Comment ID:** 128850       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Additionally, I do not mind paying for this right of access. Every visitor should apply/pay for a park ORV pass \$ 5.00 per day, 10.00 per week, 50.00 per year. This will provide a means to educate the users and make them more aware of the wildlife and fines/penalties for breaking use restrictions.

**Corr. ID:** 207                   **Organization:** California State Parks  
**Comment ID:** 130516       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** If people want to drive on the beach, they should pay a fee which would support the monitoring of shorebird populations and enhancement of habitat for them.

**Corr. ID:** 249                   **Organization:** *Not Specified*  
**Comment ID:** 130594       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** ORV permits should not be required unless they are readily and easily accessible to all visitors. Present NPS staffing and facilities are inadequate to handle an ORV permit requirement. Any cost for these permits should be negligible, no more than \$10.00 for an annual permit.

**Corr. ID:** 867                   **Organization:** Fishing Fleet  
**Comment ID:** 132550       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** -create a ten day pass to non-locals sold only in tackle shops.  
-Dare and Currituck should be able to acquire year long passes for the same amount as the ten day pass. The pass should be looked at as a means to create funds to help solve the environmental situations we are dealing with right now.

**Corr. ID:** 3930                   **Organization:** OBPA  
**Comment ID:** 130905       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** First off, it needs to be a PERMIT system only !!  
for the purpose of SURF FISHING only open all year 24 hrs a day.  
This would stop most people who come down just for a quick ride that tear up the beaches as well as do do-nuts and bring ATVs to ride. You could charge 100.00 per vehicle PER YEAR and either give out a sticker or a metal plate like they do in Delaware. Fees could vary for instate, out of state and Dare County land owners  
You could also come up with a plan for a FREE permit for Commercial fishermen, guides etc as well as a GROUP fee for the rental companies to offer a renter, this way NO ONE loses out on revenue which as you know keeps Hatteras Island open.

**Corr. ID:** 5757                   **Organization:** *Not Specified*  
**Comment ID:** 133383       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I commend the establishment of a fee structure as well. This fee should be set at a rate (based on an estimate of the maximum vehicle use during summer weekends at CAHA) to offset the costs of hiring additional seasonal law enforcement personnel to monitor the beach use and implement control measures.

**Corr. ID:** 10625               **Organization:** *Not Specified*  
**Comment ID:** 136520       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I feel that any permitting system discussed in the DEIS options must freely accommodate members of the North Carolina Beach Buggy Association (NCBBA). For over 40 years, members of this group have worked tirelessly, on a volunteer basis, to safeguard the resources and recreational opportunities of the seashore.

1. Active dues-paying members of the North Carolina Beach Buggy Association (NCBBA) should be exempt from the need to purchase and display a permit and complete a training class as a requirement of the permit.
2. The NCBBA license plate with a membership sticker for the current year would fulfill the vehicle identification requirement of the permit instead of a NPS-issued permit.
3. The NCBBA Code of Ethics, to which all members agreed to abide, and the NCBBA Beach Driving Guidelines Pamphlet would fulfill the training requirement of the permit. Perhaps these documents could be used as a basis for the beach driving training provided to others.

## Appendix C

**Corr. ID:** 13562                   **Organization:** OBPA

**Comment ID:** 138985           **Organization Type:** Unaffiliated Individual

**Representative Quote:** I am not opposed to a permit requirement to access the beaches. But, permits should be readily available from all park rangers and all ranger stations. I also think the fee for a permit should be under \$50 per year and should not be used as a mechanism to earn income. The permit should be a mechanism for those who truly want to be on the beach and will care for it. This should deter the once a year weekend warrior just wanting to see if his/her 4x4/suv really does work.

**Corr. ID:** 13766                   **Organization:** *Not Specified*

**Comment ID:** 135539           **Organization Type:** Unaffiliated Individual

**Representative Quote:** A Vehicle permitting system is something that can be accommodated but with a provision that allows for a Permanent Resident to have a year round permit at no cost. This would be similar to the Hatteras Ferry Pass permanent residents now have.

**Corr. ID:** 13864                   **Organization:** *Not Specified*

**Comment ID:** 143011           **Organization Type:** Unaffiliated Individual

**Representative Quote:** Finally, it should be stated that any fees collected through a permit system must be used to maintain or increase ORV access.

**Corr. ID:** 14816                   **Organization:** *Not Specified*

**Comment ID:** 136320           **Organization Type:** Unaffiliated Individual

**Representative Quote:** The proposed Cost Recovery Fee Permit for vehicular use to access beach areas which may be too distanced for many citizens to reach on foot is in conflict with the U.S. government's original plan for U.S. Public Parklands.

The U.S. Park Service is mandated to protect and preserve historical and cultural aspects related to public lands. Historically, island village inhabitants accessed distant beach areas by horse transportation. Motor vehicles have replaced horses for transportation. For government to charge a fee for historical and cultural activity of island inhabitants is an act toward destruction of historical and cultural activities of historical villages held by the confines of U.S. Parkland. Any plan for a Permit to use a vehicle for access to beach areas must omit any Fee for said Permit in order to preserve and protect the critical history and culture of the islands villages.

**Corr. ID:** 14831                   **Organization:** *Not Specified*

**Comment ID:** 137136           **Organization Type:** Unaffiliated Individual

**Representative Quote:** It's past time that the Cape Hatteras National Seashore joins the other National Seashores and charges a fee for permission to drive on the nation's beach. The cost to manage this program must include the cost to repair the damage that reckless drivers have caused for 30 years.

- Set a weekly and an annual fee for permits. In other National Seashores today it's \$50 a week, \$150 for a year. Consider it a parking fee: anywhere else we pay maybe 25 cents an hour or \$7 for the day.

**Corr. ID:** 15041                   **Organization:** *Not Specified*

**Comment ID:** 137985           **Organization Type:** Unaffiliated Individual

**Representative Quote:** In conclusion, I would like to suggest a combination of the alternatives proposed in the environmental impact statement. Since we already pay for fishing and hunting licenses, which are essentially permits that allow us to do the things we love to do, I am not opposed to the idea of permits for beach access. As long as the costs of said permits remain reasonably tied to reality, and the actual expenses that the National Park Service will incur as a result of the enforcement of the eventual ORV management plan when all of their other sources of income are also taken into consideration, and said permits are not used as a de facto method of restricting access to only the wealthy, I will continue to come to the Outer Banks.

**Response:** The NPS is proposing to implement a fee-based ORV permit system as an enforcement and educational tool and not for the purpose of limiting the number of ORVs on Seashore beaches. The NPS believes that carrying capacity requirements, rather than permit limits, would be the proper mechanism for addressing safety and visitor

experience concerns associated with the density of ORVs in particular areas of the Seashore because it is not possible to predict when and where visitors will use their permits to access the beach.

The cost of the ORV permit would be based on a cost recovery system in accordance with guidance in NPS Director's Order 53 and the associated reference manual. The fees collected from ORV permit issuance would be used to cover the costs of implementing the elements of the ORV management plan, which include costs incurred from resource management, education and outreach, law enforcement, and other related management actions associated with implementing the plan. Fees collected from ORV permits would be used only to recover costs to implement the elements of the ORV management plan that are not covered by existing base funding and not for other purposes. As a unit of the National Park Service, the Seashore is open on the same basis to all members of the public, regardless of where they live. Therefore, the cost of ORV permits would be the same for all ORV users and would not vary based on their state, county, or village of residence or their membership in a particular organization. Please refer to the response to Concern ID 24094 for additional information on estimated costs for ORV permits based on the cost recovery system.

**Concern ID: 24097**

**Concern Statement:** Commenters suggested that the permit system be tied into the saltwater license provided by the North Carolina Department of Marine Fisheries to reduce duplication in effort.

**Representative Quotes:**

**Corr. ID:** 13864

**Organization:** *Not Specified*

**Comment ID:** 136533

**Organization Type:** Unaffiliated Individual

**Representative Quote:** We suggest that if ORV permits are required in the seashore, that the administration of the permits be tied into the secure NC DMF saltwater license website [www.ncalvin.org](http://www.ncalvin.org) and administered by NC Fish & Wildlife. This will significantly reduce NPS costs and allow ORV permit buyers a reasonably accessible alternative to NPS sites. Duplicating effort with a second website will only foster visitor frustration over governmental bureaucracy.

**Response:** Specific details on the administration of the ORV permit system have not yet been determined. However, because of the on-site educational requirements associated with the issuance of ORV permits, the permits will not be available online as is the North Carolina Saltwater Fishing license. NPS experience with ORV permit systems in other Seashores indicates that they can be administered in an efficient manner.

Please refer to the response to Concern ID 24094 for additional information on estimated costs for ORV permits based on the cost recovery system.

**Concern ID: 24098**

**Concern Statement:** Commenters stated that if a permit system is implemented, it should not just be for ORV users, but other Seashore users as well.

**Representative Quotes:**

**Corr. ID:** 11858

**Organization:** *Not Specified*

**Comment ID:** 134839

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I suggest rather than only requiring permits for ORVs, a general admission permit for all CHNSRA users to spread these costs among all users. Anyone using an NPS parking lot or other facility needs to contribute to the support of the recreational area, not just ORV users.

**Corr. ID:** 14678

**Organization:** *Not Specified*

**Comment ID:** 133916

**Organization Type:** Unaffiliated Individual

**Representative Quote:** While I understand that budget shortfalls are rampant in every area of government and for most business's. I can understand the need for a permit system in order to help offset this deficit and to help with the management of this park, but I am unable to accept this responsibility by myself, as an ORV user. It is the job of the NPS to find ways to disperse this cost amongst all the users groups. It is unacceptable to put this cost just on the ORV users and the NPS should not institute an ORV permit fee, until the NPS can develop other means to collect money.

## Appendix C

Whether this is with collection agents at popular day use areas and/or the use of parking meters at all public ramps. The temporary or year round permit holder should be allowed to use these lots at no additional costs, while all others are charged by the hour, day, etc. It is unfair for the ORV user to front the cost of the proposed new lots or any reconstruction of an existing lot, as it is equally unacceptable for the ORV user to face the brunt financially of the wildlife management.

**Response:** The following language has been added to Chapter 2 in the FEIS, under Alternative Elements Considered but Dismissed from Further Consideration:

The idea of an entrance or admission fee for the Seashore was discussed thoroughly during the negotiated rulemaking process and was dismissed primarily due to administrative and financial obstacles. The establishment of an entrance fee would require the NPS to install manned entrance gates in the Seashore to collect visitor fees. However, there are thousands of local residents that have to travel through the Seashore to gain access to their property. The logistics of collecting entrance fees from all visitors would result in delays at entrances and would restrict travel along NC-12. In addition, parking and access fees are managed under the Federal Lands Recreation Enhancement Act (FLREA), which does not provide for a cost recovery program. Therefore, the Seashore would be able to retain only a portion of the entrance or parking fees collected and could not use those funds to support key functions associated with an ORV management program, such as law enforcement, maintenance of routes or parking lots, or resource management. Therefore, the collection of access and parking fees was not carried forward for further analysis.

**Concern ID: 24099**

**Concern Statement:** One commenter requested clarification about how the permit system would be applied to current commercial uses in the park (guides, schools, etc).

**Representative Quotes:**

**Corr. ID:** 29

**Organization:** *Not Specified*

**Comment ID:** 126095

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I CANNOT FIND ANY MENTION OF PLANS ON HOW TO DEAL WITH CURRENT PERMITEES (GUIDES, SCHOOLS, ETC.) THAT OPERATE IN THE PARK AND HOW THEIR PERMITS WILL BE MESHED OR CONSIDERED WITH NEWLY REQUIRED VEHICLE PERMITS. I WOULD SUGGEST THAT YOU ALLOW US TO OPERATE AND OUR STUDENTS TO FISH UNDER OUR EXISTING BUSINESS PERMIT. WE COULD BE ISSUED PERMANENT REARVIEW MIRROR PERMITS FOR DISTRIBUTION TO OUR STUDENTS. WE COULD BE RESPONSIBLE FOR MAKING SURE THEY KNOW AND ABIDE BY PARK RULES. WE COULD PROVIDE NECESSARY TRAINING IN OUR CLASSROOM SESSION.

AT THE VERY LEAST, YOU MUST ACKNOWLEDGE AND HAVE SOME PLAN FOR ACCOMODATING THOSE STUDENTS FISHING UNDER OUR "USE PERMIT."

FOR EXAMPLE, MY PARTNER AND I OPERATE 3 FISHING SCHOOLS EACH YEAR MOSTLY FISHING BEACHES IN THE PARK. WE WILL HAVE 12-25 PEOPLE IN EACH CLASS AND WE USHER 10-15 VEHICLES ON AND OFF THE BEACH FOR 1-2 DAYS DURING EACH PROGRAM. WILL EACH OF THESE VEHICLES BE REQUIRED TO PURCHASE A PERMIT? WE CURRENTLY PAY THE NPS \$200.00 PER YEAR TO OPERATE IN THE PARK- AND HAVE DONE SO FOR 4-5 YEARS- ONE OF THE FEW BUSINESSES TO DO SO I BELIEVE. TO REQUIRE OUR PARTICIPANTS TO PURCHASE VEHICLE PERMITS OVER AND ABOVE THE PERMIT WE NOW PURCHASE SEEMS EXCESSIVE.

**Response:** Persons holding a commercial use authorization (CUA) issued by the superintendent would not be required to obtain a separate ORV permit for the operation of a vehicle as prescribed by the conditions of the CUA. However, the CUA would not serve as blanket coverage for the CUA holder's customers, as the NPS would still be tasked with ensuring that permit applicants receive the proper educational information and that they acknowledge their responsibility for complying with the ORV rules and requirements, with the possibility of permit revocation for noncompliance. If some CUA customers do not plan extensive ORV use during their visit, several options exist,

including carpooling onto the beach in permitted vehicles or suggesting that customers obtain less expensive weekly ORV permits.

**Concern ID: 24101**

**Concern Statement:** One commenter requested a permit system that provided permits for different areas, which would allow the NPS to control use numbers in these areas.

**Representative Quotes:**

**Corr. ID:** 831

**Organization:** *Not Specified*

**Comment ID:** 132670

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I would like to see a program where a permit could be applied for a certain area of beach, ex. Ocracoke island, or from ramp x to ramp y. The number of vehicles could be kept to a limit by doing this, but the public could still use and enjoy the area

**Response:** The following language has been added to the FEIS, under Alternative Elements Considered but Dismissed from Further Consideration:

The ORV permit system is an enforcement and education tool to reduce adverse impacts to park resources and visitor experience. It is not intended to limit the number of ORVs on Seashore beaches. Also, during internal and public scoping and during the negotiated rulemaking process, the NPS considered various methods for establishing an ORV permit system. A common theme among the alternatives for ORV permits was that fees should be kept reasonable so that all visitors, regardless of income level, would be able to afford to purchase an ORV permit. The most logical method of implementing an ORV permit system would be to use the special park uses authority under 16 USC 3a which would allow the Seashore to recover the cost of implementing the ORV management program. A permit system that required a different permit for different locations in the Seashore would be complex to implement, resulting in increases in NPS management costs, which ultimately would be passed along to ORV users because the permit fees would be based on cost recovery. Therefore, more complex permitting systems were considered but not carried forward for analysis in the DEIS. Therefore, the concept of establishing vehicle limits in certain areas through an ORV permit system was not carried forward for further analysis.

***AL1125 - Alternative Elements: Species Closures/Buffers***

**Concern ID: 24192**

**Concern Statement:** Commenters suggested that pass through corridors be allowed through all species closures/buffers. They stated this was necessary to allow access to various areas of the Seashore year-round.

**Representative Quotes:**

**Corr. ID:** 46

**Organization:** *Not Specified*

**Comment ID:** 128835

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Any plan should allow people to have a few feet above the high tide line to drive and park on most if not all of the island.

**Corr. ID:** 3490

**Organization:** *Not Specified*

**Comment ID:** 141204

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I agree with the opinion that:

- buffers use breeding / nesting buffer distances to establish ORV pass through only corridors to ensure beach access is always maintained

**Corr. ID:** 3863

**Organization:** *Not Specified*

**Comment ID:** 132740

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Corridors need only be small paths around a resource closure to provide access to an area that would otherwise be blocked. In some cases, these corridors can go through or around closures.

## Appendix C

In many places, a corridor can easily be established below the high tide line. Since unfledged chicks are not found in this area, it is a perfect solution to providing access in a way that does not negatively affect wildlife.

As outlined in DEIS pages, roman numeral 12 and 17, and on page 468, corridors are only allowed in Management Level 2 portions of SMA's. Even these limited corridors are subject to resource or safety closures at any time.

Corridors are effective tools for access and should be established throughout the entire seashore including the highly restrictive Management Level 1 portions of SMA's.

**Response:** A buffer or resource closure is an area surrounding a sensitive resource, such as bird nests or chicks, which is closed to visitor access during critical life cycle stages in order to reduce human disturbance and the risk of mortality due to pedestrians and ORVs. Any passages, corridors, or pass-throughs that cut directly across/through a resource closures would essentially undermine the biological function of the closure and, for all intent and purpose, render it compromised, perhaps even useless to the species it is meant to protect.

The sensitivity of beach-nesting birds to human disturbance varies by species and can even vary among individual birds of the same species depending upon the circumstances. Therefore, closures need to be established and managed such that this inherent variability within and among species is anticipated. At the very core of the DEIS is the need to establish ORV routes and areas, while protecting species at the Seashore. Resource closures are established such that they can provide each protected species with the access they may need to key critical habitat elements during the point in their annual cycle that they require it. Unless resource closures are established and subsequently enforced, (including not allowing any pass-throughs/corridors), their ability to provide this critical access to resources and buffers to minimize disturbance would be significantly compromised. Where corridors are provided for under alternative F, the allowable corridor has been reduced in the FEIS as discussed under Concern ID 24207.

**Concern ID: 24193**

**Concern Statement:** Commenters stated that the buffers proposed for turtle nests were too large, and smaller buffer sizes. One commenter suggested that the exit to the ocean be no more than 18 inches wide. They suggested these closures be removed in the morning as is done at Pea Island National Wildlife Refuge. Other commenters suggested that nests be closed off from the nest to the surfline from one hour before sunset until dawn.

**Representative Quotes:**

**Corr. ID:** 893

**Organization:** *Not Specified*

**Comment ID:** 132451

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I currently reside in Englewood Florida and on the gulf beaches here there are similar concerns for nesting turtles and birds. In this area the nests are roped off with signs, approx 20 feet in every direction, and dogs must be kept on a leash. There are fines for anyone that disturbs a nest. This solution is working while still allowing vacationers to access the beach.

**Corr. ID:** 3376

**Organization:** *Not Specified*

**Comment ID:** 137030

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The proposed turtle nest buffer in areas with ORV traffic of 105 meters wide is excessive. All turtle nest areas should be a consistent area of 5 meters by 5 meters bounded by symbolic fencing and signage. I am concerned that a few irresponsible people will be tempted to encroach on a buffer zone that is obviously unreasonably oversized. Bigger is not always better. Smaller buffers will have a lower rate of human intrusion.

**Corr. ID:** 3490

**Organization:** *Not Specified*

**Comment ID:** 141211

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the NPS barriers 105 meters wide (p. 125) this cuts off all access and one nest at the beginning of two consecutive ramps would block the entire section of beach between the two ramps. This does not take into account all of the beach between two different nests that are cut off completely because the blockage is all the way to the surf line leaving zero passage.

I agree with the statement that "Closure should be 10 meters square during the day" This is a more effective way to allow for access.

**Corr. ID:** 13485

**Organization:** *Not Specified*

**Comment ID:** 138912

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I also believe that the turtle closures are extreme. I oppose the around the clock closure from nest to surfline and the size of the turtle closure buffers. I agree with the Coalition for Beach Access in their request to have the buffers run from nest to surfline from one hour before sunset until dawn. To have this area closed during the day when turtles will not be hatching is unnecessary. I also strongly disagree with the size of the buffers and feel that they should only surround the turtle nest during the daylight hours. The National Park Service has an established Turtle Night Nest Watch Program which has proved to be effective in the past.

**Corr. ID:** 14099

**Organization:** Avon Property Owners Assoc.

**Comment ID:** 141076

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Nest enclosures should be no more that 10x10 and the exit to the ocean no more than 18 inches wide. They should be set up in the evening and removed in the morning as done in the USFW Pea Island Refuge.

**Corr. ID:** 14774

**Organization:** *Not Specified*

**Comment ID:** 137825

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Pro-active turtle night nest watch programs would insure no ORV impact. NPS wants 105 meter wide closures as described on page 125 and nowhere else in the country are there any closures this big for turtles. It seems odd to me that everywhere else closures 10 meters square during the day have worked just fine. Inco-operated with the Keyhole pattern fencing to the surf line at night during hatching would allow less chance of light disorientation and would allow the beaches to remain open at night for those who enjoy fishing in peace and quiet and out of the hot summer sun!

**Corr. ID:** 14964

**Organization:** *Not Specified*

**Comment ID:** 137332

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Nest Closures/Buffers Table 10. Species Management Strategies for Action Alternatives  
Approximately 50-55 days into incubation, closures will be expanded to the surf line. The width of the closure will be based on the type and level of use in the area of the beach where the nest was laid:

1. Vehicle-free areas with little or no pedestrian traffic-25 meters wide (total).
2. Village beaches or other areas with high levels of pedestrian and other non-ORV use-SO meters wide (total).
3. Areas with ORV traffic-105 meters wide (total).

On the landward side of the nest, the closed area will be expanded to 15 meters from the nest where possible, but no less than 10 meters landward from the nest. If appropriate, traffic detours behind the nest area will be established and clearly marked with signs and reflective arrows.

No science is listed anywhere in the entire DEIS document to justify any of the buffer distances included above (the 10 to 15 meters behind the nest or the widths of 25, 50 or 105 meters). Page 381 changes these distances as follows: 10 to 15 meters is changed to 9.1 to 15.2, 25 meters to 22.9 meters, 50 meters to 45.7 meters and 105 meters to 106.7 meters and still no science.

The "Sea Turtle Management - A Common Sense Approach for the Cape Hatteras Seashore Recreational Area" as submitted by OBPA, NCBBA and CHAC and available electronically at <http://www.obpanc.org/turtles/TurtleMgmtProgram.pdf> would not only add added protection for nests and hatchlings but save enforcement money and increase access for the visiting public. The nest watch program as outlined in the document would also greatly increase public awareness regarding the plight of sea turtles.

**Response:** Impacts on emerging turtle hatchlings from pedestrians and vehicles driving on the beach (light pollution, vehicle ruts etc) are known from the scientific literature and from experience at the Seashore. However, studies relating to buffer distances and their ability to sufficiently protect species are scant. Therefore, the size of expanded buffers for turtle resource areas once a nest reaches it hatching window is based on best professional judgment, taking into consideration the potential impacts and knowledge of the local physical, biological and human environment.

Management of the species also takes into consideration the ability to implement and enforce the policies relative to available staffing levels. Given the number of nests at the Seashore, expanding buffers/fencing from the nest to the shoreline on a nightly basis is not feasible. For a full explanation of why the NPS is not implementing management protocols similar to those implemented at Pea Island National Wildlife Refuge as well as a discussion regarding

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relocation of nests to protect against weather related events, see the NPS response to Concern ID 24143.

Where possible and appropriate, the alternatives provide traffic detours behind turtle nests when they have reached their hatching window. However, creating these detours does not include destroying dune or other sensitive habitat which the NPS is charged with protecting.

**Concern ID: 24194**

Concern Statement: Commenters suggested a range of buffer distances for bird species, including disagreement with the 1,000 meter buffer for unfledged piping plover chicks. They felt that there was not ample scientific rationale for this buffer distance. Commenters also suggested that these buffers move with the brood, rather than being expanded.

Commenters suggested the following set of buffers for species at the Seashore (in order of breeding behavior, nest buffer, and unfledged chicks):

Piping plover: 50 meters, 30 meters, 100 meters, 200 meters, 300 meters

American oystercatcher: distance at which they flush plus 15 meters, distance at which they flush 15 meters, 15 meters

Least Terns and all other species of colonial waterbirds: 30 meters for all stages

**Representative Quotes:**

**Corr. ID:** 3490

**Organization:** *Not Specified*

**Comment ID:** 144278

**Organization Type:** Unaffiliated Individual

**Representative Quote:**

- Piping Plover unfledged chicks buffer should move with the brood as it relocates to reliable food source, not expanded

**Corr. ID:** 782

**Organization:** CHNSRA regular visitor

**Comment ID:** 141234

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I would support these Shorebird / Water bird Buffers:

Species Breeding Behavior/ Nest Buffer ORV Pass-through Unfledged Chicks

Piping Plover 50 m 30 m 200 m

American Oystercatcher Flush + 15m Flush + 15m Flush + 15m

Least Terns 30 m 30 m 30 m

Other Species CWB 30 m 30 m 30 m

**Corr. ID:** 12971

**Organization:** *Not Specified*

**Comment ID:** 140274

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I strongly disagree with the proposed buffer of 1000 meters, or 2/3 of a mile. In many locations, the road itself is less than 200 meters from the beach - providing a huge linear buffer along the beach, but ignoring the road nearby appears to provide a false sense of protection. A corridor of 200 meters or less has been used at other sites. For example, in the Natural Resource Conservation Service, buffers for piping plover at Apple Creek Watersheds is a minimum of 200 feet or 60 meters. In the Mass. Audubon Society pamphlet, they indicate a 50 meter buffer, with a 200 meter buffer for kite flying only.

**Corr. ID:** 13068

**Organization:** *Not Specified*

**Comment ID:** 132418

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Pg. 124: Nonbreeding shorebird SMAs. Protecting important habitat is good, but a language should be included for buffering known foraging and roosting sites, similar to the language about buffering foraging sites in the breeding season. For instance, erect 50 m buffers around any place piping plovers were observed foraging or roosting at least twice in the nonbreeding season, until monitoring confirms the site is no longer used.



**Corr. ID:** 13427      **Organization:** *Not Specified*  
**Comment ID:** 140934      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Buffer size is also an important aspect of the regulations currently under consideration.

Our National Parks allow humans to experience the natural beauty of sensitive environments on a grand scale. Proper management practices help in preserving and encouraging sensitive species development within that environment. Protective buffers, as part of that management strategy, should be adequate to serve their intended purpose. The USGS Patuxent Wildlife Research Center developed an unbiased analysis specifically related to this issue. In that analysis adequate buffer sizes for protection of threatened and endangered species and species of special concern at Cape Hatteras National Seashore were established. The LARGEST recommended buffer size in that study was 200 meters. A smaller buffer size, supported by a Biological Opinion from the US Fish and Wildlife Service, details a 375 foot radius, or approximately 10 acres, as sufficient distance for protection from sight and noise disturbance for certain raptors. (USDI. 2004. Appendix 1 from: Biological opinion and letter of concurrence for effects to bald eagles, marbled murrelets, northern spotted owls, bull trout. Olympic National Forest. Lacey, Washington, August 2003, revised September 2004). Earlier scientific studies have been performed in a series of habitat suitability index (HIS) models published by the U.S. Fish and Wildlife Service for a variety of wildlife species, including birds, mammals, reptiles, and amphibians (e.g., Raleigh, 1982; McMahon, 1983; Sousa and Farmer, 1983; Raleigh et al., 1984; Schroeder, 1984). These studies demonstrated a need for buffer widths UP TO 106.7 meters, depending on the particular resource needs of individual species. I support the Coalition for Beach Access position of moving the buffer with the brood as it relocates toward reliable food sources.

In summary, buffers sizes up to 200 meters in width, with access corridors around these buffers, satisfies the objectives of National Park Service recreational access AND meets reasonable scientifically recommended MAXIMUM buffer size to protect species.

**Corr. ID:** 13553      **Organization:** *Not Specified*  
**Comment ID:** 132639      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Please just rope off small areas (25 yards?) of beach if birds or turtles are nesting to protect the wildlife, but don't keep out the people all season who support and love this area.

**Corr. ID:** 14942      **Organization:** NC Wildlife Resources Commission  
**Comment ID:** 136796      **Organization Type:** State Government  
**Representative Quote:** Buffer distances for shorebird/waterbird protection: The shorebird/waterbird protection buffers associated with Management Level 1 (ML1) specified on page 127 of the DEIS are based upon results of research appropriate for determining buffer distances (Erwin 1989, Sabine 2005, Rodgers and Smith 1995); However, the additional buffer distances associated with Management Level 2 (ML2) exceed the empirically derived distances associated with ML1. Given the competing demands for the seashore and the importance of balancing human and wildlife uses of CHNS, we recommend using only the buffer distances listed under ML1.

**Corr. ID:** 14973      **Organization:** *Not Specified*  
**Comment ID:** 137183      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I totally disagree with the 1000 meter buffer zones which does not allow for corridors to wide areas of open beach. No piping plovers have been harmed by ORV's. I believe these buffers should be reduced to 100 meters with corridors that allow access to open areas. As broods move instead of expanding the buffer zone, they should be moved.

**Corr. ID:** 15010      **Organization:** Cape Hatteras Access Preservation Alliance  
**Comment ID:** 140442      **Organization Type:** Conservation/Preservation  
**Representative Quote:** Moreover, Appendix G of the Piping Plover Recovery Plan explicitly provides managing agencies with flexibility to address situations such as those at the Seashore where restrictions would impede vehicle access. The Recovery Plan specifically states that, while the USFWS recommends the protection measures described in Appendix G, "[s]ince restrictions to protect unfledged chicks often impede vehicle access along a barrier spit, a number of management options affecting the timing and size of vehicle closures are presented here." Piping Plover Recovery Plan at 66,193. Thus, Appendix G sets forth two methods of motor vehicle management. The first option reflects the 1,000 meter buffer incorporated into each of the DEIS's action alternatives. The second-again, designed

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for situations just like that at the Seashore where restrictions would impede vehicle access-allows for management pursuant to a plan that obtains the concurrence of the USFWS, and that: (1) "[provides for monitoring of all broods during the chick-rearing phase of the breeding season and specifies the frequency of monitoring"; and (2) "[specifies the minimum size of vehicle-free areas to be established in the vicinity of unfledged broods based on the mobility of broods observed on the site in past years and on the frequency of monitoring."

**Corr. ID:** 15010      **Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140441      **Organization Type:** Conservation/Preservation

**Representative Quote:** Rather than reflect any independent consideration of the multiple objectives that the NPS must weigh in developing its ORV management plan, and consider any alternative buffer distances in any of its action alternatives, the DEIS simply adopted the buffer distances specified in the USGS protocols and Piping Plover Recovery Plan. By their own admission, however, "[these protocols do not attempt to balance the need for protection of these species with other activities that occur at CAHA." Cohen, J.B., Erwin, R.M., French, J.B., Jr., Marion, J.L., and Meyers, J.M., 2010, A review and synthesis of the scientific information related to the biology and management of species of special concern at Cape Hatteras National Seashore, North Carolina: U.S. Geological Survey Open-File Report 2009-1262, at 99.

**Response:** Resource closures are established such that they can provide each protected species with the access it may need to key habitat elements during the point in its annual cycle that it requires it. Unless resource closures are established and subsequently enforced, the ability to provide this critical access to resources and buffers to minimize disturbance would be significantly compromised. Yet, in cases where a resource closure impacts human access, every effort has been made to provide alternate routes and points of entry. Similarly, resource closures are managed such that they are re-opened as soon as it has been confirmed that their primary role of providing buffers between protected species and human activity has been fulfilled. Given this, the NPS has modified buffer sizes alternative F to for some species by eliminating the ML1 and ML2 distinctions where ORV use is permitted, and using at all locations standard species management measures, equivalent to those described for ML2 in Table 10 of the DEIS. While the requested corridor would not be provided, buffer sizes will be modified and monitoring increased to allow for more access where ORV are permitted, while maintaining the contiguous closure to protect the species.

After review of public and agency comments, the NPS did make some adjustment to the buffer sizes under alternative F. While buffers for piping plover remained the same, buffers for other species were revised as follows, using ML2 buffers with increased management:

- American oystercatcher breeding and nesting buffers were reduced from 300 meters to 150 meters, buffers for unfledged chicks were reduced from 300 meters to 200 meters.
- Least tern breeding and nesting buffers were reduced from 300 meters to 100 meters, buffers for unfledged chicks were reduced from 300 meters to 200 meters.
- Other colonial waterbird buffers were reduced from 300 meters, for all breeding and nesting stages to 200 meters.

Along with a decrease in buffer sizes, increased monitoring would occur to ensure adequate protection for these species.

Regarding concerns that a 1,000 meter buffer around mobile chicks is unjustified and excessive, it is important to realize that piping plover chicks at the Seashore have been regularly observed/documentated to have moved 500 meters or more and sometimes even further than the 1,000 meter buffer. For example, in 2005, a piping plover chick from a recently hatched nest moved nocturnally approximately one-half mile, from its nest on South Beach to a feeding location at Cape Point. In 2006, the brood from nest #4 on Ocracoke Spit moved 644 meters from their nest to a sound side foraging area by day 4 (NPS 2007c). In 2007, four chicks from brood #7 on Ocracoke, moved approximately 610 meters from the nest enclosure behind the dunes on the ocean side to the sound-side mudflats (NPS 2008c). In 2008, three chicks from brood #2 on Ocracoke moved 1000 meters from the nest enclosure southwest along the dunes to the tidal flats on the sound. On Cape Point, the brood from nest #4 foraged near the nesting site for three days then moved 800 meters east to establish a foraging territory at the mouth of the small Salt Pond. The brood from nest #5, on Cape Point, moved a total distance of 800 meters from the nesting area to the east side of the small Salt Pond. After brood #3 on Ocracoke hatched, the adults and chick traveled 1500 meters from the nest

enclosure to the sound side mudflats, and then over to the twin dunes (NPS 2009b). In 2009 a plover chick was observed to have moved as much as 1,200 meters from its nest on South Ocracoke (NPS 2009). Because piping plover chicks at the Seashore have a history of moving quickly and can range at distances in excess of 1,000 meters, the 1,000 meter buffer is supported at the Seashore.

**Concern ID: 24196**

**Concern Statement:** One commenter questioned the effectiveness of buffer areas because of issues related to population counts and timing of buffer implementation and suggested further research on piping plover patterns is needed.

**Representative Quotes:**

**Corr. ID:** 13090

**Organization:** *Not Specified*

**Comment ID:** 140953

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Additionally, buffer zones aren't very effective at providing protection for the species. One of the necessary parameters to create a quality management plan is an accurate population count. Unfortunately, breaking the plover's habitat into segmented buffers presents a huge challenge in doing so, consequently underestimating the amount of space the specie needs. Furthermore, these buffers require impeccable timing in order to be useful, which also reduces their value.

The park service is planning to use these buffers for the management of the wintering/nonbreeding piping plover populations as well. These birds face all the above issues, along with other challenges admitted but not addressed within the plan. The first difficulty is the assumption that despite posted signs, the plover habitat will be disturbed and destroyed. The proposed solution is to further research the piping plovers patterns to decide the best protective measure. Not only will the population dwindle as researchers decide how to best protect the species, valuable habitat will also be destroyed.

**Response:** The DEIS makes sufficient provisions to monitor bird species upon their arrival to the Seashore and in locations where there has been historic nesting and within suitable habitats such that all necessary buffers and closures can be established to provide protection during critical reproductive stages. The Seashore agrees that additional research on such matters is always beneficial and that the relationships between future research and resource management is iterative over time. Given this, the Seashore is still compelled to make judgments on resource management approaches now. Also, see response to Concern ID 24199.

**Concern ID: 24197**

**Concern Statement:** Commenters stated concerns with the proposed floating resource closures. One of the stated concerns is that the measurement on Ocracoke is not correct and is actually 1.3 miles, resulting in an almost total closure of the area when the 1 mile floating closure is applied, with some stating that the floating closures should have clearer criteria. Commenters also suggested wider application of floating closures throughout the Seashore to adapt to constantly changing conditions.

**Representative Quotes:**

**Corr. ID:** 10507

**Organization:** *Not Specified*

**Comment ID:** 131771

**Organization Type:** Unaffiliated Individual

**Representative Quote:** It is not clear how many 1.5 mile non-breeding floating zones (page 81 and others) will be imposed on the public at a given time. Additionally with all the miles of permanent closure and all the nesting site specific closures, there seems to be no case for additional beach closures especially if these areas also exclude pedestrians. There does not appear to be a technical basis for these floating zones. Without such a basis the NPS cannot justify additional closure and denial of ocean access.

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**Corr. ID:** 13737      **Organization:** *Not Specified*  
**Comment ID:** 135006      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I disagree with the minimum ten year time frame for closure of designated beaches on Hatteras Island due to wildlife nesting sites. A floating closure is a more practical solution given that nesting areas can change from season to season.

**Corr. ID:** 14398      **Organization:** Ocracoke Civic and Business  
**Comment ID:** 140613      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Pg 101 states ".5 mile SW of ramp 72 to inlet" is "3 miles" it is not 3 miles and has been grossly overstated. This area what is called South Point of Ocracoke is the most important fishing area on our whole beach. For NPS to make such an error in measure is hard to believe. The actual distance to South Point is 1.3 miles. How could NPS miss this by 1.7 miles. Pg. 101 states "there would be 1.0 mile of "floating" ocean shoreline area for nonbreeding shorebirds. Area would be bypassed via the ORV corridor on the upper beach during nonbreeding season." With only 1.3 miles of beach there is no room for a "floating" area. What happens when part of the South Point washes away like it has in the past? Does it then close off South Point? There are too many unknowns to such an important area to close it off. 95% of this area is already closed in breeding season and over 75% is closed in non-breeding season this is to both ORV's and pedestrians, is this not enough? Pg. 124 states "if resource protection staff determines that any single activity or collection of activities is negatively impacting shorebird use of specific location they NPS may implement additional restrictions on compatible activities." This area is extremely imp. to fishermen, shellers, families, etc. so if the fish are really biting in this 1.0 mile closure and there are a lot of fishermen will it be closed off. We cannot take this chance and this 1.0 mile "floating" area should be removed from Alt. F. There is enough room for both people, ORV's and bird to share.

**Corr. ID:** 15010      **Organization:** Cape Hatteras Access Preservation Alliance  
**Comment ID:** 140452      **Organization Type:** Conservation/Preservation  
**Representative Quote:** Year-round closures that are fixed rather than floating are not adaptable to the changing nature of the Seashore's barrier islands. Over time, areas designated for permanent closure today due to their current value as species habitat may no longer be attractive habitat. Map 4 of the Seashore's 2009 Annual Piping Plover Report, titled "Hatteras Inlet PIPL Nesting Activity 2000-09," is illustrative of this point. Piping Plover (*Charadrius Melodus*) Monitoring Cape Hatteras National Seashore 2009 Annual Report, Appendix A, Map 4. This map depicts piping plover nests from 2000 through 2009, as well as 2009 prenesting areas. As depicted on the map, as of the date the aerial photograph was taken (indicated to be August 2008), every piping plover nest site identified on the map was underwater. Although the NPS continues to maintain that primary constituent elements remain at the area and established prenesting closures there for this year, the area is nonetheless a poor nesting site, as there are ephemeral pools at the area only at low tide.

Floating closures provide appropriate flexibility to ensure that the areas subject to closure reflect those areas that actually have value as species habitat, and help ensure that areas no longer suitable for species habitat are not being unnecessarily closed to recreational use and enjoyment. CHAPA believes the use of floating closures for the protection of breeding birds represents sound adaptive management practices that can be beneficial to both natural resources and recreational activities. CHAPA recommends that NPS revisit the permanent closures contemplated under Preferred Alternative F and incorporate floating closures instead of fixed closures where practical. However, CHAPA also believes that the three floating closures currently including in Preferred Alternative F are unnecessary and should be omitted from the final plan, because their purpose is to isolate migratory birds during the non-breeding season.

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center  
**Comment ID:** 137736      **Organization Type:** Conservation/Preservation  
**Representative Quote:** Another concern is the lack of criteria in this alternative for the proposed "floating" shorebird closures between ramps 23 to 34 and 55 to 59 totaling 3 miles. Instead, there is vague language that allows almost unlimited discretion on the part of the NPS where the floating closure is placed. DEIS at 121 and 124. This open-ended language allows the floating closures to be placed in low or moderate quality habitats, rather than high quality habitats.

We have experience with the implementation on non-breeding closures under the Interim Plan, and the experience is mixed at best, with some areas of high quality habitat being closed, and other areas being open. In some cases, a full component of high and low tide habitats were not protected, resulting in disturbance during certain parts of the tidal cycle. For example, at the east end of Ocracoke, high tide roosting habitat often was fully open to ORVs, as the nonbreeding closure occupied the north side of the spit, and this area frequently flooded - thus not being suitable for high tide roosting habitat. While this closure protected low energy, low elevation sound side feeding habitat, it did not protect the higher elevation areas where piping plovers likely roosted during high tide periods, which were inside the area open to ORVs.

In addition, there could be variation in the closures between years, but not in a manner that was based on habitat quality. For example, in the 2008-2009 winter, areas on the northeast of the "bait pond" were closed to ORVs. However, during the 2009-2010 winter, the NPS allowed an ORV corridor to be placed through this high quality feeding habitat. A corridor in this area was particularly inappropriate, given that the southeast side of the bait pond was going through vegetative succession, which reduced its value as feeding habitat, and increased the importance of the northeast corner even more. We are skeptical that the provisions in alternative F are sufficient to ensure that the NPS actually will select the high quality habitat to protect. Instead, as has occurred time and again, we will hear howls of protests to the Seashore from a vocal minority of beach drivers, the Seashore will cave to the political pressure, and the natural values of the Seashore will be impaired.

**Response:** Alternative F has been modified to remove the floating closures. As modified, alternative F would provide year-round ORV areas, year-round vehicle-free areas, and areas that restrict ORV use seasonally. Specific seasonal ORV routes under alternative F include ocean shoreline access to Bodie Island Spit, the village beaches from Rodanthe pier to Ramp 23, Avon, Frisco and Hatteras; a short seasonal route south of Pole Road on Hatteras Spit; 0.5 miles north of Ramp 68 to Ramp 68 (Ocracoke Campground); and two short seasonal routes north of South Point that provide soundside access. The reallocation of access areas would allow for species protection in historical breeding areas while accommodating a variety of visitor uses and access, and increased areas of reduced disturbance for nonbreeding shorebirds, in lieu of "floating closures." The seasonal ORV spur route to the northeast side of the Bait Pond on Bodie Island Spit has been eliminated; however, pedestrian access will be allowed to portions of the Bait Pond shoreline. If habitat changes, the NPS would be able to revise these areas under the Periodic Review element, which includes responding to changes after storm events, which would provide the needed flexibility and more accurately reflect nesting habitats. Areas designated for year-round ORV access would still be subject to safety and resource closures if breeding activities are seen or a nest is found. Maps found on pages 175 to 181 of the DEIS have been revised to reflect year-round and seasonal ORV areas and to more accurately represent the existing conditions within the Seashore, including changes in the land area that have occurred since the development of the DEIS. These map changes have also resulted in a change in the calculation of distances, including the south point of Ocracoke, reflected in the addition of table 7-1 in the FEIS.

**Concern ID: 24198**

**Concern Statement:** Commenters stated that certain areas of the Seashore should not be closed year round due to SMAs especially those spits that are very important to the recreational and commercial fishing public. These areas include:

- Cape Point and the inlet spits as they are desirable for watersports
- Ocean shoreline from 0.2 miles southwest of Bone Road to the inlet should remain open
- 0.2 miles west of the hook to ramp 45, and on to new ramp 47 should be open year round instead of seasonally
- Access between ramps 27 and 30 should be maintained
- Areas to the west of Ramp 55 (Hatteras Inlet)

**Representative Quotes:**

**Corr. ID:** 3620

**Organization:** Frank & Fran's The Fisherman's Friend, Inc.

**Comment ID:** 137689

**Organization Type:** Unaffiliated Individual

**Representative Quote:** This comment is in regard to the pre-nesting bird closures throughout the seashore and the early additional closures now installed when only 2 piping plovers have nests within the Cape Point closure and 7 oystercatcher nests in the entire seashore have been found.

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**Corr. ID:** 3974                   **Organization:** *Not Specified*  
**Comment ID:** 138413       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I strongly disagree with the permanent exclusion of the areas to the West of Ramp 55 commonly known as the Inlet. (p. 99 - 107).I could not find and justification for this extreme measure as that area is under constant flux due to the wind and tidal conditions the survivability of any species in that area is subject to the environmental conditions NOT due to any human encounters. The NPS has not presented any evidence to support their position.

**Corr. ID:** 5736                   **Organization:** N.C. Marine Fisheries Commission  
**Comment ID:** 131068       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** In addition to the above comments, the Marine Fisheries Commission is concerned about the recommendation that Hatteras Inlet Spit and North Ocracoke Spit areas be classified as non-ORV areas year round. These locations are very important to the recreational and commercial fishing public. We believe seasonal access could be allowed while protecting species of concern.

**Corr. ID:** 13403               **Organization:** *Not Specified*  
**Comment ID:** 138569       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I disagree with the restrictions (as proposed in Alternative "F" p. 97-101) of the ORV access between ramps 27 and 30 at the Hatteras Inlet, Ocracoke Inlet, and all other locations in the park. There must be a method to allow pedestrian and ORV access points to these areas without disturbing the natural resources.

**Corr. ID:** 13869               **Organization:** Tradewinds Tackle  
**Comment ID:** 136534       **Organization Type:** Business  
**Representative Quote:** We disagree with the ORV closure at the north end of Ocracoke. This area has not had any significant breeding pairs of shorebirds, and it is a critical area for recreational fishermen. Closing this area to ORV' s and setting it aside as pedestrian-only will not enhance the pedestrian visitor's experience.

**Corr. ID:** 14958               **Organization:** *Not Specified*  
**Comment ID:** 137327       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I disagree with the Alternative F recommendation to close the Hatteras Island Spit at Hatteras Inlet to ORV access year round, and to pedestrian access from March 15 thru July 31. Hatteras Inlet is a traditional, high use visitor area. It is noted for the surf fishing experience in the spring, summer and fall, and as fertile commercial fishing grounds as well. The proposed designation of this area as ML1 suggests the closures are due to resource protection goals. The severe changes that regularly occur to the landscape due to ocean and weather events make this an unfavorable area for successful breeding events. Records show that many of the areas used occasionally by piping plovers in the past are now under water. As a result, no plover nesting has occurred on Hatteras Island Spit for several years.

**Corr. ID:** 15113               **Organization:** *Not Specified*  
**Comment ID:** 138462       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Another thing that I found was these maps. The over-washed pre-nesting closure recommendations were South Beach and Hatteras Inlet co-closure recommendations and at North Point, Ocracoke closure recommendations, show no piping plover nests in the last two years. Under Alternative F, please explain why these areas are going to be closed permanently, not only to ORVs but to pedestrians.

**Corr. ID:** 15206               **Organization:** *Not Specified*  
**Comment ID:** 139158       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** On page 16 of the executive summary, I respectfully disagree with ML1 closure restriction under Alternative F. The ocean shore line from .2 miles southwest of Bone Road to the inlet. I believe this area should remain open and an ORV route year-round.

**Corr. ID:** 15206**Organization:** *Not Specified***Comment ID:** 139155**Organization Type:** Unaffiliated Individual

**Representative Quote:** I will offer a few comments on the DEIS with respect to Alternative F, the NPS preferred alternative, as described on xi and xii, the executive summary that directly relates to vehicle access to the beach. On page 15 of the executive summary, I respectfully disagree with ML1 closure restrictions. Under Alternative F for Cape Point, .2 mile west of the hook to ramp 45, and onto new ramp 47, from March 15 through July 31. I believe this area should remain an ORV route year-round.

**Response:** Alternative F was revised so that many of the points and spits would be open to pedestrian access, but closed to ORVs either seasonally (Bodie Island spit) or year-round (South Beach west of Cape Point, the southern portion of Hatteras Inlet spit, North Ocracoke spit, the sound shoreline at South Point Ocracoke). This was done primarily for protection of nesting birds and (where closed year-round) in recognition of the value of these areas for migrating and wintering shorebirds and vehicle free visitor experience opportunities. Under new alternative F, many of these areas will be accessible on foot, and at South Beach, alternative F has been modified to provide for parking off the interdunal road and access to the shoreline via periodic foot trails. Pedestrian access and parking will be enhanced at the north point of Ocracoke. The area between ramps 27 and 30 and from 0.3 mile west of Cape Point to milepost 47 would remain vehicle free year-round to protect habitat for breeding and nonbreeding birds and to provide visitors the opportunity to experience a vehicle free beach. In all cases, resource closures using standard buffers would apply. Watersport recreationists, recreational fishermen and other visitors would have vehicular access to seasonal ORV routes when open for ORV use and access to year-round vehicle free areas via parking areas adjacent to walkovers or boardwalks, or pedestrian access from interdunal roads in some locations. Commercial fishermen would be authorized to enter vehicle-free areas except for full resource closures, so access to these spits and points would be available outside of resource closure events, which would generally include the fall and winter fishing seasons. Revisions to the level of access provided under alternative F were made with resource protection as the primary concern, but also attempting to provide ORV access to mitigate adverse impacts to ORV visitor experience and the local economy.

**Concern ID:** 24199

**Concern Statement:** Commenters suggested alternative methods of species protection including the use of enclosures to keep out predators, better signage for enclosures, providing access though a permanent pedestrian path between Cape Point to the parking areas at Ramp 43 and 44, reviewing closures weekly for relevance, allowing pedestrian corridors in some areas closed to ORVs, and not posting closures until nests are discovered.

**Representative Quotes:****Corr. ID:** 911**Organization:** *Not Specified***Comment ID:** 132431**Organization Type:** Unaffiliated Individual

**Representative Quote:** The beach should NOT BE POSTED because of suitable habitat, but only for identified actual nests

**Corr. ID:** 12609**Organization:** Durant station condominium association**Comment ID:** 140556**Organization Type:** Unaffiliated Individual

**Representative Quote:** Pedestrian foot traffic such as anglers, surfers, beachcombers, runners, etc., which are commonly seen on beaches, should always be allowed to occur on beaches. Any proposed buffer zones for pedestrians should be substantially smaller than any corresponding buffer zones that apply to vehicles. No protection scheme should include a ban on foot traffic/pedestrian use! There is no evidence that shorebirds or other species are harmed in any way by pedestrians when given a small buffer zone to protect nesting activity. Common sense would indicate that a bird would typically not choose to nest in an area or amidst any level of activity, which it found to be uncomfortable and/or disruptive to its reproductive cycle.

**Corr. ID:** 14226**Organization:** Outer Banks Anglers Club**Comment ID:** 137860**Organization Type:** Unaffiliated Individual

**Representative Quote:** I would also suggest that the Park Service consider cutting a permanent pedestrian path from Cape Point to the parking areas at Ramps 43 and 44, and the campground. This path could be cut through the brush between the west side of the sand dunes and the east side the pond at Cape Point. This path would have no negative impact on the Park's resources. The path would provide reliable year round access to Cape Point when all other access is lost during times of resource and safety closures. This access would be safer than wading around the enclosures at night and could prove useful for resource observation, predator management and park enforcement.

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**Corr. ID:** 14341 **Organization:** *Not Specified*

**Comment ID:** 137386 **Organization Type:** Unaffiliated Individual

**Representative Quote:** Reading different articles on the Piping Plovers it seems the use of "enclosures" is an effective way of notifying people where the birds are nesting and keeping the predators away. If one of the nests are found in a heavy traffic area and it is in emanate danger; move it as in the case of a Hurricane. No need to close the beach and grant the bird so much real estate. Post signs within a reasonable limit of the nests so everyone with binoculars can observe natures beauty if they like. If someone is caught doing intentional harm to any of the wildlife on our beaches they should be prosecuted. The majority of the visitors and residents would never do anything to harm the wild life.

**Corr. ID:** 14837 **Organization:** *Not Specified*

**Comment ID:** 138925 **Organization Type:** Unaffiliated Individual

**Representative Quote:** Corridors are fine for pedestrians but ORV corridors have a greater negative impact on T/E species attempting to breed, feed, germinate, etc. in this particular barrier island habitat. Save them as a reward when T/E species numbers are routinely up to those needed to take them off the Endangered Species Listing.

**Corr. ID:** 14954 **Organization:** *Not Specified*

**Comment ID:** 138023 **Organization Type:** Unaffiliated Individual

**Representative Quote:** ENCLOSURES SHOULD HAVE SIGNAGE POSTED IN ALL DIRECTIONS AND A MAP OF THE ENCLOSURE WITH AN EXCERPT SHOWING A DIGITAL PIC OF THE ACTUAL NEST, THIS VISUAL PROOF WOULD PROVIDE THE FAIRNESS THAT THIS OPERATION NEEDS AND PREVENT UNJUST CLOSURES.

**Corr. ID:** 15167 **Organization:** Coastal Conservation Association

**Comment ID:** 139645 **Organization Type:** Conservation/Preservation

**Representative Quote:** And finally, there's no implementation of some of the things that are done up in the Northeast, particularly for plovers. There are some large cages that are put around -- around nests up there that keep predators out, and so forth. None of those actions are described, and they -- and yet we focus on ORV access, which is less than one percent, you know, a small fraction of one percent of the activity around -- around the birds. So, I think that you really need to reconsider that -- those buffers, et cetera.

**Response:** As described in DEIS Table 10 (FEIS Table 10 and Table 10-1) specific closures would be adjusted during the breeding season to respond to species activity. Standard buffer distances would be reviewed on a longer time frame. Several years of data are needed to determine population trends and whether management intensity could be decreased as desired conditions are met or whether it needs to be increased if population trends are away from desired conditions. The following text in the FEIS (Table 10-1 for Alternative F under Pre-Nesting Closures) has been added to provide pedestrian access along the shoreline outside pre-nesting closures until breeding activity is observed and standard buffers applied.

“Pedestrian shoreline access below the high tide line will be permitted in front of (i.e. seaward of) pre-nesting areas until breeding activity is observed, then standard buffers for breeding activity will apply. Pets and horses are prohibited in pedestrian shoreline access areas in front of pre-nesting areas. ORVs, pedestrians, pets and horses are prohibited within all resource closures, including pre-nesting closures.”

Table 11 has also been revised in the FEIS to allow for a reduced pedestrian buffer of 300 meters around unfledged piping plover chicks, while the ORV buffer distance would remain at 1000 meters. See response to Concern ID 24192 (but may move to 24194) for a discussion of the reasons for not allowing pedestrians inside resource closures and response to Concern ID 24069 for a discussion of the primary purpose of the national parks as mandated by the Organic Act.

Page 192 of the DEIS describes the use of exclosures at the Seashore. Piping plover exclosures are effective as a predator control method but are not large enough to provide the needed protection from human disturbance. Plover nests are not moved during hurricanes. See Alternative Elements Considered but Dismissed from Further Consideration, Relocate Bird and Turtle Nests, section, at the end of Chapter 2 in the FEIS for a discussion of why moving piping plover nests to maintain ORV access is not a reasonable alternative.



Under all alternatives, signs and symbolic fencing would be used to alert the public to the presence of a protected nesting area. The symbolic fencing would be placed at a distance sufficient to avoid disturbance of breeding birds. NPS does not consider posting a map of the enclosure with the nest location and picture of the nest to be prudent or efficient management nor necessary for "fairness" and declines to adopt this suggestion.

When indicators for desired conditions are reached then management modifications may be considered to enhance ORV access while maintaining desired conditions. Based on past experience and consultation with the FWS the NPS believes the limited corridors provided for in the FEIS alternative F can be provided without unreasonably interfering with the attainment of desired conditions for shorebirds and sea turtles. The following text change has been made to the last sentence of the DEIS definition for periodic review in the definitions section of FEIS Table 10-1 for alternative F to clarify that more increased restrictions on recreational use may result if monitoring shows that progress is not being made towards attainment of desired conditions:

In the sentence "Where progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may provide for additional management including appropriate restrictions on recreational use," delete 'may provide for additional management including appropriate restrictions on recreational use' and replace with "may result in increased restrictions on recreational use."

**Concern ID: 24201**

**Concern Statement:** Commenters stated concern over the amount of mileage that could be closed under alternative F due to the establishment of prenesting areas, Species Management Areas (SMAs), and the use of the ML1 strategies.

**Representative Quotes:**

**Corr. ID:** 14920

**Organization:** *Not Specified*

**Comment ID:** 137688

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with Alternative F in regards to the Special Managed Areas.

Page 468 states there will be 7 SMAs, managed under ML 1 procedure and would be closed to both ORVs and pedestrians during the breeding season. Of these, four SMAs would be designated as non-ORV year round ( Table 7 pages 97-101) to include Ramp 27-30, approximately 1.7 miles south of Ramp 38 to Buxton line with new Ramp 39 across from Haulover and new sound side parking at Kite Point, Ocean Shoreline 0.2 miles Southwest of Bone Road to Hatteras Inlet and Ocracoke North-south Inlet to 0.25 miles Northeast of Ramp 59. One SMA would be designated as non-ORV March 15" thru October 31, 0.5 mile Southwest Ramp 68 to 1.2 mile Northeast of Ramp 70. Two SMA would be designated as non-ORV March 15th through July 31st, but there are actually three SMA listed (table 7, pages 97-101, new Ramp 32.5 thru Ramp 34, Cape Point 0.2 miles West of the hook to Ramp 45 and Ramp 45 to Ramp 47. In addition to 8 (not 7) there will be 3 areas managed under ML2 which are subject to corridor closures according to breeding activity. The proposed areas of the buffer zones are much to large than what is necessary. This closes down 16 miles of beach SMA managed under ML1 and 23 miles designated for seasonal use.

The areas stated above are predetermined to be closed or limited to access when it is not for sure that the breeding will take place in these areas. Closures should only be determined on actual occurrences, not WHAT MAY HAPPEN. The weather is unpredictable in reference to storms and natural erosion, no one is to say how this will effect the breeding of any species and where they will go to breed.

**Corr. ID:** 14971

**Organization:** *Not Specified*

**Comment ID:** 138952

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Alternative F defines an unprecedented standard for species management outside of the Species Management Areas--namely, ML 1(Footnote 4). ML 1 protocols use "larger, longer-lasting buffers" to protect wildlife. While it is not possible to predict the number of miles that will be closed by these unprecedented protocols, it is possible to use the pattern of closures that have resulted from the past two years of management under the consent decree to make a fairly accurate estimate of potential closures. A review of the Beach Access reports for 2008 and 2009 shows a pattern of wide-spread full-beach resource closures spanning the period of 5/15 to 8/15 (Footnote 5). Based upon the fact the predicted ML1 closures will be added to the mandated Species Management Area closures, it is more than likely that the resource management proposal will relegate access for

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ALL visitors to either the high density village front beaches or 15 miles of shoreline spread over 10 areas. The length of the shoreline available in these 10 areas will likely range from as little as 1/2 mile to a maximum of 2.7 miles (Footnote 6). In effect, the resource management proposal will likely turn the beaches available outside of the village fronts into virtual parking lots with the only opportunity for a remote experience being relegated to pedestrian day use at Pea Island. Furthermore, by reducing access areas to such small spaces, the potential for overcrowding and user conflicts will increase dramatically.

**Response:** Instead of using SMAs, alternative F in the FEIS has been revised to provide more intensive monitoring and response to changes in bird activity, equivalent to that described under ML2 in the DEIS, rather than the less intensive monitoring with larger and longer lasting closures described in ML1 in the DEIS. The purpose of this change is to simplify the plan and to lessen the amount of time that designated ORV routes would be affected by resource closures.

As described in the DEIS it is necessary to provide pre-nesting closures, based on an annual habitat assessment and past breeding data, before the birds arrive to provide undisturbed habitat where they can begin breeding activity. For those inlet spits and points designated as ORV routes, alternative F has been revised to provide pedestrian and ORV access along the shoreline when pre-nesting closures are established. Once shorebird breeding activity is observed, standard buffers would apply and adequate beach-width for continued ORV or pedestrian access may or may not be available depending on the location of the breeding activity. See response to Concern ID 24077 for more discussion of the potential effect of resource closures on designated ORV routes.

NPS estimates that under alternative F as revised in the FEIS, 27.3 miles of the total 68.9 miles of beach would be designated as year-round ORV routes, 26.4 miles would be vehicle-free year round, and 12.7 miles would allow seasonal ORV use equal to or less than six months a year. As stated before, it is not possible to know exactly how much or which specific areas will be closed to ORVs or to pedestrians during the breeding season for shorebirds and sea turtles. Experience managing under alternative B during the past three years indicates that the amount of miles that are temporarily closed for resource protection will vary from year to year, and from area to area. Table 37-2 has been added to the FEIS, under Affected Environment Visitor Use and Experience, to display closure dates during 2007 - 2010 for the inlets and Cape Point under alternative B.

NPS believes that providing more choice of areas for visitors to use without the presence of vehicles would result in fewer conflicts because visitors may self select which type area they wish to visit.

**Concern ID: 24202**

**Concern Statement:** Commenters questioned how commercial fishermen would be able to access the beach under the proposed species management procedures and questioned how law enforcement personnel would enforce regulations related to commercial fishing access.

**Representative Quotes:****Corr. ID:** 14831**Organization:** *Not Specified***Comment ID:** 137139**Organization Type:** Unaffiliated Individual

**Representative Quote:** The DEIS proposes that the National Park Service allow commercial fishermen to drive Anywhere in the National Seashore as long as they can show a recent receipt from a local fish house. This rule is open for widespread abuse. - Describe specifically how the Park Service will monitor and enforce the rule protecting access for commercial fishermen.

**Corr. ID:** 15137**Organization:** *Not Specified***Comment ID:** 138471**Organization Type:** Unaffiliated Individual

**Representative Quote:** And we want to know why there is so little reference to the commercial fishing industry's access to the beach. Yes, ya'll say it's included, that the way you've got the closures at -- set up -- how're we going to get there?

**Response:** Page 114 of the DEIS (Chapter 2, Table 8) provides a detailed explanation of commercial fishing access under all alternatives, including alternative F. Under alternative F, commercial fishing will continued to be allowed in accordance with 36 CFR 7.58(b). Permitted commercial fisherman would be authorized to enter vehicle-free

areas, with the exception of full resource closures or lifeguarded beaches. Additionally, eligible commercial fisherman would have modified night driving hours, with restrictions from 9 pm to 5 am, instead of the proposed 9 pm to 7 am restriction. The NPS determined that fish house receipts are an adequate way to determine the eligibility of a commercial fisherman as they demonstrate an income based on fishing and recent fishing activity. To further assist law enforcement with compliance, To further assist law enforcement compliance, special use permits for commercial fishermen permit would be a different color than recreational ORV permits so they are easily identifiable.

**Concern ID: 24205**

**Concern Statement:** Commenters recommended additions to the Seashore's bird monitoring and data gathering procedures including recording the GPS location for banded birds, that scopes be used rather than binoculars, use of experimental design comparing bird populations in areas open or closed to vehicles, and discontinuing use of the SECN protocol for monitoring. A suggestion was also made that non-breeding surveys be designed to occur at multiple distinct tidal stages. Commenters suggested striking out specific language and additional language was suggested for how non-breeding seasons would be conducted.

**Representative Quotes:**

**Corr. ID:** 13068

**Organization:** *Not Specified*

**Comment ID:** 132417

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Pg. 123: Nonbreeding surveys. I would just add that the design should ensure specific sites are surveyed at multiple distinct tidal stages (low and high but also rising and falling). At CAHA this means taking into account not just predicted lunar tides but, because of wind effects, actual tidal height.

**Corr. ID:** 15074

**Organization:** Southern Environmental Law Center

**Comment ID:** 137780

**Organization Type:** Conservation/Preservation

**Representative Quote:** Fourth, we added recording of GPS location for banded birds, so that precise location data can be provided to the scientists who banded the birds; while Seashore biologists may be aware of where "South Point" is, a biologist who banded breeding or migrating birds hundreds of miles away may not be familiar with the area, and providing a GPS location will be very helpful to these scientists in accurately locating the resight location. We also have added the requirement that a spotting scope will be used to scan the legs of piping plovers for color bands. We support the proposal's inclusion of observers recording color bands. However, based on our extensive experience with non-breeding surveys for piping plovers and knowledge of the locations at the Seashore, we are very concerned that without a requirement that a scope be used, many, if not most, of color bands on piping plovers will be missed. Using binoculars clearly is not sufficient to detect difficult-to-observe color bands, especially at the distances that are involved in some locations. Band returns can provide very valuable data about non-breeding birds for the Seashore and scientists working on bird recovery efforts (e.g. Stucker et al 2010). The survey methodology should be designed in a way that actually allows a reasonable chance of band resight data being collected. Finally, we added the start and end time, so it is clear how long the surveys actually take.

**Corr. ID:** 15074

**Organization:** Southern Environmental Law Center

**Comment ID:** 137778

**Organization Type:** Conservation/Preservation

**Representative Quote:** Second, if one of the objectives of the monitoring effort is to determine whether ORV use at the Seashore is impacting piping plovers or other non-breeding birds, the current monitoring approach will not provide a reliable answer to that question. The methodology only provides the number of birds that are detected outside of bird closures or inside of bird closures. Those two numbers do not tell us, however, whether piping plovers or other shorebirds are in a bird closure because the habitat is better habitat, or the disturbance is lower in the closure, or some other factor. If the Seashore wishes to address specifically the issue of how ORV use effects non-breeding shorebirds, the Seashore should be employing an experimental design that compares beach areas that are fully open or closed to vehicles, rather than a design that uses a beach that has a vehicle corridor along the ocean and inlet. Researchers at both Assateague (Forgues 2010) and Cape Lookout (Tarr 2009) have recently completed papers that use experimental designs as suggested here to address disturbance that may provide guidance.

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**Corr. ID:** 15074                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137777           **Organization Type:** Conservation/Preservation

**Representative Quote:** DEIS at 123. Our reasoning for the suggested changes is as follows. We removed the language "using the SECN protocol." First, we are concerned about the reliability of the data generated by the current methodology for monitoring non-breeding piping plovers. The 2009 Annual Report (Map 17) shows parallel survey transects that are approximately perpendicular to the sound and ocean shoreline, and, from the scale, appear to be spaced almost 0.2 miles apart. Non-breeding piping plovers can be very difficult to detect due to their small size, plumage color, and how well they blend in to the surrounding habitat. If piping plovers are resting in a depression or behind a piece of wrack, they are very difficult to detect, even at 50 yards. Having transects 0.2 miles apart likely will result in numerous piping plovers not being detected. The SECN protocol is significantly different from previous shorebird methodologies for beaches and those used on the Seashore.

**Corr. ID:** 15074                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137776           **Organization Type:** Conservation/Preservation

**Representative Quote:** The DEIS, at Table 10, includes non-breeding surveys; these surveys would be included in the preferred alternative as well as other action alternatives. We have the following suggestions for the language regarding these surveys (additions underlined, deletions struck out):

The NPS will monitor presence, abundance, and behavior of migrating and wintering shorebirds from July 1 through May 31 (Strike OUT using the SECN protocol) Survey sites will include all Nonbreeding Shorebird SMAs and the 100 foot corridor area at Cape Point and South Point. The NPS will obtain data similar to International Shorebird Survey data. The following information will be recorded: Date, start and end time, and location of observations; identity of observer; species and number of birds observed; band combination and GPS location of any banded birds; weather variables (start underline) such as wind direction, speed, visibility, and other relevant information, such as whether the flats are flooded from strong winds (end underline), and tidal stage; habitat; behavior of the majority of birds in the flock (foraging, resting, disturbed [source will be recorded], other); site management in effect where birds are seen, (start underline) including whether the birds are in full closure, pedestrian only area, or ORV area (end underline); and number of pedestrians, pets, ORVs and other potential disturbances. Species to be surveyed include piping plover, American oystercatcher, Wilson's plover, red knot, and representative species of colonial waterbirds. (start underline)A spotting scope will be used to scan the legs of piping plovers for color bands. (end underline)

**Response:** For the following reasons, NPS would continue to do what it has been doing for the nonbreeding shorebird surveys. First, SECN is the NPS Southeast Regional Office Inventory and Monitoring Program data collection arm, and it is appropriate for the Seashore to follow its technical guidance on monitoring methodology. Second, the concern expressed that the transects are too far apart to accurately count plovers is not an issue because the counts are not meant to count every single bird, but are designed to show trends over time. Trends over time can be monitored without counting every bird. Third, the current transects are timed transects, which means they cannot be interrupted to obtain band data. Finally, the recently signed Memorandum of Understanding (MOU) between the U.S. Fish and Wildlife Service (FWS) and the NPS (<http://www.fws.gov/migratorybirds/Partnerships/NPSEO13186Signed%204.12.10.pdf>) commits NPS to working with its Inventory and Monitoring Program, of which SECN is a part, for migratory bird data collection. However NPS recognizes that it is desirable to retain flexibility in case improved survey methodology is developed during the life of this plan. Therefore the following text changes have been made in the FEIS to alternative F:

Alternative F has been deleted from Table 10.

In the new Table 10-1 for Alternative F, the phrase "using the SECN protocol" has been deleted.

On DEIS page 470 in the first sentence in the Wintering/Nonbreeding Management section, the phrase "according to the NPS SECN survey protocol" have been deleted.

NPS has no objection to and would consider an application for a research study comparing areas open to ORVs to areas closed to ORVs, with respect to disturbance of non-breeding shorebirds.

**Concern ID: 24206**

Concern Statement: Commenters stated that there was ambiguity related to how buffers would be implemented inside pre-nesting closures at a distance from the edge of the closure that is less than the standard buffer distance. Suggested language was provided to reduce the perceived ambiguity.

**Representative Quotes:****Corr. ID:** 15074**Organization:** Southern Environmental Law Center**Comment ID:** 137772**Organization Type:** Conservation/Preservation

**Representative Quote:** The DEIS is unclear on two critical issues: 1) what will happen if a shorebird or colonial waterbird is scraping at a location that is inside a pre-nesting closure, but at a distance from the edge of a closure that is under the standard distances provided in Table 11; and 2) what will happen if a bird is nesting near an area with a "designated ORV access corridor" and the distance between the nest and the corridor are less than the standard buffer distance in Table 11.

**Corr. ID:** 15074**Organization:** Southern Environmental Law Center**Comment ID:** 137775**Organization Type:** Conservation/Preservation

**Representative Quote:** Nest Buffers - ML1 and ML2: "A 75-meter buffer/closure will be established around nest(s). Buffers will be increased in 50-meter increments if human disturbance occurs." DEIS at 122.

If a buffer falls within the intertidal zone, a full-beach closure will result." DEIS at 122. The DEIS is unclear if standard Table 11 buffers will apply, if a bird is found scraping or nesting inside a pre-nesting closure at a distance from the edge of a closure that is less than the standard buffer distance. (Footnote 13) These suggested changes will resolve this ambiguity. Failure to implement standard buffers in these critical circumstances would result in a significant reduction in protection at critical nesting sites, potentially leading to abandonment of sites or nests.

Footnote 13 - This concern is exacerbated especially for piping plovers, for unlike the other species, there is no statement in the nest buffer section that "For nests that occur inside a pre-nesting closure and require a buffer expansion of the prenesting area, the buffer expansion maybe removed to the original pre nesting closure after 2 weeks with no breeding activity if the nest is lost to overwash or predation, DEIS at 122 (emphasis in original), as is listed in the columns

**Corr. ID:** 15074**Organization:** Southern Environmental Law Center**Comment ID:** 137774**Organization Type:** Conservation/Preservation

**Representative Quote:** Relevant provisions are quoted below, and our suggested changes - which address the piping plover provisions - are indicated with underlines for additions and deletions for language that should be removed to address our concerns; similar changes, with buffers appropriate to the species, also should be made for the columns for American oystercatcher/Wilson's plover and Colonial Waterbirds:

Pre-nesting Closures: "Upon the first observation of breeding activity, the standard buffers (please refer to table 11, Shorebird/Waterbird Buffer Summary) will apply, (BEING STRIKE OUT-which depending upon the circumstances may close the access corridor END STRIKE OUT)." DEIS at 121.

Courtship/Mating Buffers: "In unprotected areas, a buffer will be established immediately when courtship or mating is observed." DEIS at 122.

Courtship/Mating Buffers - ML1/ML2: "If breeding activity is observed outside of an existing closure, a buffer will be established or expanded to ensure a 75-meter buffer for the observed birds; (start underline)if breeding activity is observed inside of an existing closure at a distance under 75 meters from the closure boundary; the closure will be expanded to ensure a 75-meter buffer. (end underline)" DEIS at 122.

**Response:** The language in Table 10 has been revised in Table 10-1 of the FEIS as follows: " If breeding activity is observed outside of an existing closure or within a closure less than the prescribed buffer distance from the closure boundary, a buffer will be established or expanded to ensure a 75-meter buffer for the observed birds.

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**Concern ID: 24207**

Concern Statement: One commenter requested that the description of ORV corridors for ML2 areas remove the word "generally" as this leaves the exact size of the closure unclear to staff (generally 50 meters could be more or less than 50 meters). The commenter also indicated that ORV corridors should be no more than 100 feet wide.

**Representative Quotes:**

**Corr. ID:** 15074

**Organization:** Southern Environmental Law Center

**Comment ID:** 137771

**Organization Type:** Conservation/Preservation

**Representative Quote:** We note that Table 10 indicates that the "ORV access corridor at ML2 sites will generally be no more than 50 meters wide above the high tide line ...." DEIS at 121. We are concerned about the word "generally" as it leaves it unclear to the reader - and NPS staff who will have to implement this provision - (start italics)where(end italics) the corridor can be greater than 50 meters, or by (start italics)how much(end italics) it can be greater than 50 meters wide. We are concerned that this vague language could result in a corridor that may be 100, or 200 meters wide in certain areas, which would significantly increase the adverse impacts of ORV use. To address this concern, the word "generally" should be removed. In addition, we see no reason why a 50 meter corridor is necessary. The corridor should be reduced to the minimum that is necessary for a vehicle to park perpendicular to the shoreline and two other vehicles traveling landward of a parked vehicle and parallel to the shoreline to pass safely going in opposite directions. To address this purpose, a corridor 100 feet wide would be sufficient, so we urge the Seashore to implement this corridor width limitation.

**Response:** Under modified alternative F, two levels of species management measures (ML1 and ML2) no longer exist. Species management measures, equivalent to the ML2 described in the DEIS, will be applied at all locations under modified alternative F. In table 10-1, "Pre-nesting Closures", has been revised to state "ORV corridors at Cape Point and South Point: When pre-nesting closures are implemented by Mar 15, the ORV access corridor at Cape Point and South Point will be established at 35 meters (115 ft) wide above the mean high tide line. The pre-nesting closure will not be modified if the beach erodes into the ORV corridor or into the protected habitat. Once breeding activity is observed, standard buffers will apply."

Based on experience enforcing the interim strategy and consent decree and comments received on the DEIS, the NPS has determined that an initial breeding season corridor closer to 100 feet wide than 150 feet wide is adequate for resource protection, is more in keeping with recent nesting patterns, and is less likely than to need as many modifications after the pre-nesting area is established. The NPS revised alternative F to provide for a 35 meter (instead of 100 feet) wide corridor to use a metric-based whole number (multiple of 5 or 10) that was close to 100 feet.

The intent is that, at these sites when the pre-nesting area is installed, the initial ORV corridor width will be no more than 35 meters (115 ft) above the mean high tide line, recognizing that field conditions make precise marking difficult. As the season progresses, the beach width will typically change; however, the pre-nesting closure will not be reduced to accommodate ORV use if the corridor becomes more narrow due to erosion and, absent observed breeding activity that would prompt the implementation of standard buffers, the pre-nesting area will not be expanded if the beach widens.

**Concern ID: 24208**

Concern Statement: Commenters stated that provisions for pre-nesting closures should be modified so that these closures would be removed August 15 instead of July 15 to account for species that nest later. Concern was expressed that pre-nesting management using ML2 procedures would require intensive management and higher costs and NPS would need to choose between this approach and one that closes the area for a longer period of time but requires less monitoring.

**Representative Quotes:****Corr. ID:** 15074**Organization:** Southern Environmental Law Center**Comment ID:** 137767**Organization Type:** Conservation/Preservation

**Representative Quote:** The other approach is that chosen in the DEIS under the ML2 approach, which utilizes pre-nesting closures, combined with intensive monitoring to close areas for the period where there is breeding activity observed. This approach is less predictable than the first approach: those who are skilled at shorebird and waterbird nesting behavior can predict the approximate areas where nesting will occur, but the precise timing and location of closures is unknown, requiring intensive monitoring, and it is possible that a bird may nest in an unexpected location, requiring monitoring of lower value areas. In addition, this approach places increased risk on the nesting species: if monitors do not detect nesting behavior in a timely manner and install closures in the appropriate location, the breeding birds could fail to set up a territory, abandon a nest, or there could be direct take of nests or chicks by pedestrians or vehicles. Finally, this approach increases administrative costs: there have to be larger numbers of skilled people, who observe breeding birds on a regular basis, and quickly implement closures based on observed breeding activity.

Fundamentally, NPS, or any other management entity, has to choose one or the other alternatives (or a combination of the two) in determining how to conserve nesting shorebirds and colonial waterbirds.

**Corr. ID:** 15074**Organization:** Southern Environmental Law Center**Comment ID:** 137769**Organization Type:** Conservation/Preservation

**Representative Quote:** Table 10 notes that "Pre-nesting closures would be adjusted to the configuration of the Nonbreeding Shorebird SMAs for the respective sites (as described later in this table) if no breeding activity is seen in the area by July 31, or 2 weeks after all chicks have fledged, whichever comes later." DEIS at 121 (bold in original), Alternative F summary uses similar language. DEIS at 81 ("through July 31, or until two weeks after all chicks have fledged and breeding activity has ceased, whichever comes later"). We are concerned that July 31 is not late enough for black skimmers, which nest even into September, and least terns, which can continue nesting into August, from ORV based disturbance. As an entire colony of waterbirds can relocate after the colony is lost to predation, disturbance, or weather events, the July 31 reopening date could conflict with late season colonial waterbird nesting attempts. We request the Seashore replace July 31 with August 15.

**Response:** NPS has revised the language for alternative F in Table 10-1 in the FEIS, "Pre-nesting Closures", to state that, "Pre-nesting closures would be removed if no breeding activity is seen in the area by Jul 31 (or Aug 15 if black skimmers are present), or 2 weeks after all chicks have fledged, whichever comes later. Nonbreeding shorebird habitat protection would be implemented, as described later in this table, before pre-nesting areas are removed." If black skimmers are present at a site and breeding activity is observed, then the monitoring and buffers described in Table 10-1 following the "Pre-nesting Closures" section would be implemented for late nesting birds. NPS believes that this will adequately provide for the protection of late nesting birds and recognizes that the success of this management action depends on monitoring to detect breeding behavior and increases administrative costs.

**Concern ID: 24210**

**Concern Statement:** Commenters stated that the DEIS does not establish enough vehicle free area for use by non-breeding and migratory shorebirds. Commenters requested that specific non-breeding SMAs be designated, rather than leaving this decision to a later date. It was suggested that six non-breeding SMAs be provided at the Seashore, based on use by migratory and wintering species. Commenters further stated that the review of these areas should be every three years instead of every five years. Commenters suggested areas where non-breeding and migratory shorebird closures should occur such as: Bodie Island Spit 0.1 miles south of Ramp 4 to the inlet; 0.2 miles northwest of Cape Point to Ramp 49; Hatteras Inlet Spit ocean shoreline and backshore beach, and dunes 0.68 miles west of Ramp 55 to the soundside of the inlet; North Ocracoke Spit inlet 1 mile west of Ramp 59 and; South Point Ocracoke 0.2 miles west of Ramp 72 to the inlet.

**Representative Quotes:****Corr. ID:** 15073**Organization:** Southern Environmental Law Center**Comment ID:** 137719**Organization Type:** Conservation/Preservation

**Representative Quote:** The following changes (stikeouts and additions) were proposed by the commenter: ~~Points and Spits: An annual habitat assessment will be conducted after all birds have fledged from the area. Nonbreeding~~

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resource closures will be established at the points and spits based on habitat used by wintering piping plovers in more than one (i.e., two or more) of the past 5 years, the presence of birds at the beginning of the migratory season, and suitable habitat types based on the results of the annual survey. This may include non-ORV areas as well as areas closed to all recreational use. Actual locations of suitable foraging and roosting habitat may change periodically due to natural processes. Access to the inlet shorelines, where permitted, will be maintained by a corridor to be determined by NPS staff based on the annual habitat assessment.

**Ocean Shoreline Areas:** In addition to the nonbreeding resource closures at the points and spits described above, the NPS will establish non-ORV areas along the ocean shoreline that will provide relatively less disturbed foraging, resting, and roosting areas for migrating and wintering shorebirds. These may include wider sections of beach with an upper beach ORV corridor that has a buffer of at least 50 meters above the high tide line, and/or sections of beach that have been designated as non-ORV for other reasons, such as to provide pedestrians with opportunities for a natural beach experience. The following activities are generally compatible with migrating/wintering shorebird use of these areas: pedestrian access for fishing, beach walking, bird watching, kayaking, kiteboarding, paddleboarding, photography, picnicking, sailing, shelling, stargazing, sunbathing, surfing, swimming, wildlife viewing, windsurfing, and commercial fishing due to the relatively low number and frequency of occurrences. If resource protection staff determines that any single activity or collection of activities is negatively impacting shorebird use of a specific location, the NPS may implement additional restrictions on compatible activities. The location(s) of all ocean shoreline Nonbreeding Shorebird SMAs will be subject to periodic review."

"Non-breeding SMAs will be re-evaluated and re-designated every 3 years, or after a hurricane, tropical storm, or extra-tropical storm that significantly modifies habitat quality or quantity. The reasoning for these changes is as follows. Some non-breeding SMAs could be installed in areas where there are not breeding closures; in this event non-breeding SMA management would go into effect by July 15. Since we recommend specific areas where nonbreeding SMAs are to be designated, we have removed the additional language regarding "Points and Spits" and "Ocean Shoreline Areas." Instead, we have indicated that, similar to breeding SMAs, there will be a periodic re-evaluation process that occurs after a certain time period or after storms. We have shortened that period to 3 years, due to how quickly habitat changes can occur at the Seashore. For example, at the east end of Ocracoke, due to accretion, the quality of the habitat for non-breeding piping plovers has increased significantly in the last three winters, and the level of use by piping plovers has increased. If a 5 year period were used instead, we would be concerned that emergent, high quality habitats from natural accretion may not be protected from disturbance until after several years pass, due to the long review window."

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137717

**Organization Type:** Conservation/Preservation

**Representative Quote:** "Nonbreeding Shorebird SMA: Area of suitable nonbreeding habitat that has had (cross out concentrated) foraging or (start underline)roosting/resting (end underline) by migrating/wintering shorebirds in more than 1 (i.e., 2 or more) of the past 5 years and is managed to reduce human disturbance during the nonbreeding season. This may include portions of breeding SMAs that provide suitable nonbreeding habitat during periods of overlap between the breeding and migrating season and designated non-ORV areas that are set aside to provide pedestrians with the opportunity for a natural beach experience. (start underline)The following areas have been initially designated as Non-breeding SMAs:

- Bodie Island Spit: 0.1 miles south of ramp 4 to inlet.
- 1 mile south of ramp 23 to one mile north of ramp 34.
- 0.2 mile northwest along the shoreline from Cape Point to ramp 49, including Cape Point Interior.
- Hatteras Inlet Spit: Ocean Shoreline and backshore beach, and dunes .68 of a mile west of Ramp 55 to soundside of inlet.
- North Ocracoke Spit: Inlet to 1 mile west of ramp 59.
- South Point (Ocracoke): 0.2 miles west of ramp 72 to inlet." (end underline)

Our first suggested change is to remove the word "concentrated" from the description. With rare species such as piping plover, relative low numbers will be found at most sites. For example, in the 2001 International Piping Plover Winter Census, of the 118 sites where piping plover were found, 56.8% contained 1-10 birds (Ferland and Haig 2002). The word "concentrated" could be used as a reason not to protect certain important non-breeding sites at the Seashore.



Second, the SMA language should be amended to add "or roosting/resting" to the habitat types that are protected in SMAs. Protecting only feeding habitats is inadequate. The two habitats are not necessarily the same; indeed, some of the highest quality feeding locations at the Seashore are under water at high tide and unavailable for use. Piping plovers during the winter can spend a significant percentage of their time roosting, so this important behavioral activity also must be protected.

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center

**Comment ID:** 137718      **Organization Type:** Conservation/Preservation

**Representative Quote:** Third, the FEIS must designate specific non-breeding SMAs, rather than leaving this important process to some later date. The Seashore is one of the most significant sites for migrating and wintering shorebirds on the Atlantic coast of North America. In addition, as noted by the USFWS, survival during the nonbreeding season plays a critical role in determining whether the population is increasing, stable, or decreasing. The NPS should identify and designate these areas in the FEIS, rather than leaving their designation to some future process that is not subject to public review and comment and not part of the rulemaking. Accordingly, we propose an initial designation of six nonbreeding SMAs at the Seashore, based on use by migrating or wintering shorebird species, migrating colonial waterbirds, and habitat quality. The DEIS (p. 124) provides the following additional information regarding the process for designating non-breeding SMAs. We will suggest specific modifications to the provisions, using underlines to show language additions and strike outs to show deleted language, and then provide a discussion of why these provisions should be changed as requested.

All Species: Nonbreeding Shorebird SMAs are (delete will be) established and managed to reduce disturbance of migrating/wintering shorebirds at various locations throughout the Seashore. Such closures will be installed no later than when breeding season closures are removed at the same location(s), or by July 15 if the location does not have a breeding season closure. Pets will be prohibited within Nonbreeding Shorebird SMAs as well as the corridor to Cape Point and South Beach.

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center

**Comment ID:** 137715      **Organization Type:** Conservation/Preservation

**Representative Quote:** In addition, the DEIS does not adequately address non-breeding shorebird SMAs. The DEIS, at Table 10, has four paragraphs that are devoted to non-breeding shorebird SMAs. DEIS at 121 and 124. Because of the critical importance of these areas to meeting the stated goals of the DEIS as well as meeting the Seashore's statutory, regulatory, and policy provisions, we are reproducing these provisions in full in the text below. We will suggest specific modifications to the provisions, using underlines to show language additions and strike outs to show deleted language, and then provide a discussion of why these provisions should be changed as requested.

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center

**Comment ID:** 137723      **Organization Type:** Conservation/Preservation

**Representative Quote:** Based on these criteria, non-breeding SMAs should be established at the following areas:

- Bodie Island Spit: 0.1 miles south of ramp 4 to inlet, including all moist soil habitats, soundside intertidal areas, and adjacent dry sand resting/roosting habitats. This area merits designation due to its use by migrating and wintering piping plovers (Critical Habitat NC-1), red knots, and many other shorebird species.
- 1 mile south of ramp 23 to 1 mile north of ramp 34. This area merits designation due to its use by migrating and wintering Willet, sanderling, black-bellied plover and many others.
- 0.2 mile northwest of Cape Point to ramp 49, including Cape Point interior. This area merits designation due to its use by migrating and wintering piping plover (Critical Habitat NC-3), red knots, and many other species of shorebirds, and the area can be used by several species of migrating terns during spring migration.
- Hatteras Inlet Spit: Ocean Shoreline and backshore beach, and dunes .68 of a mile west of Ramp 55 to soundside of inlet. This area merits designation due to its use by migrating and wintering piping plover (Critical Habitat NC-4), including birds from the endangered Great Lakes breeding population and many other shorebird species.

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- North Ocracoke Spit: Inlet to 1 mile west of ramp 59. This area merits designation due to its use by migrating and wintering piping plover (Critical Habitat NC-4), including birds from the endangered Great Lakes breeding population, red knot and many other shorebird species.

- South Point (Ocracoke): 0.2 miles west of ramp 72 to inlet, excluding a 100 foot corridor as discussed in Section IV.D. 4 below. This area merits designation due to its use by migrating and wintering piping plover (Critical Habitat NC-4), including birds from the endangered Great Lakes breeding population. This area is also the most important area in the Seashore for red knots. This area is also used extensively by other shorebird species and colonial waterbirds, common tern, black skinner, and American oystercatcher, and piping plover. Alternative A provides insufficient protections for migrating and wintering shorebirds, including the threatened piping plover and candidate red knot as well as other species.

**Response:** The NPS has taken into account many comments requesting additional year-round non-ORV areas for better protection of migratory and wintering shorebirds, as well as to better balance the various desired uses in the Seashore. To this end, alternative F has been modified to designate more vehicle-free areas year-round, as described in the response to Concern ID 24055. The following responds to the specific suggestions made in these comments, with regard to the proposed designations under new alternative F :

Bodie Island Spit: 0.2 miles south of ramp 4 to inlet - This is proposed to remain seasonally open to ORVs from 0.2 miles south of ramp 4 to the inlet from September 15 to March 14. The NPS recognizes that this area is used by wintering birds and has decided to eliminate the proposed seasonal ORV access to the Bait Pond and along the inlet shoreline for shorebird protection, but to designate the ocean shoreline to Oregon Inlet for seasonal ORV use from September 15 to March 14.

1 mile south of ramp 23 to 1 mile north of ramp 34 - The NPS examined this area and retained one portion as closed to ORVs year-round, based on relative bird use. However, part of this area will remain open to ORV use year round because of the desire to provide areas for ORV access where the use could be best accommodated, since an objective of this plan is to manage ORV use to provide for a variety of visitor use experiences.

0.2 mile south/west of Cape Point to ramp 49, including Cape Point interior - This area had been designated for seasonal ORV access, but in revised alternative F, the NPS decided to change this to vehicle-free year-round to milepost 47, and to reduce the proposed number of connector routes from the interdunal road to the ocean beach from two to one, based on the value of this area as a consistent nesting area, important nonbreeding habitat, and opportunities for a vehicle free beach experience.

Hatteras Inlet Spit - Ocean Shoreline and backshore beach, and dunes 0.68 of a mile west of Ramp 55 to soundside of inlet. Dates for a new seasonal ORV route with parking near the end of the spit have been changed to allow ORV use from September 15 to March 14 to facilitate spit access for fall fishing and forms of recreation at this popular location during the less resource sensitive months.

North Ocracoke Spit- Alternative F has been revised to eliminate the proposed interdunal road and to move the ORV route boundary and ramp to the south side of the MP 59 parking lot. A longer ORV route has been designated south of the MP 59 parking lot, since that area receives limited nesting activity.

South Point (Ocracoke) - 0.2 miles west of ramp 72 to inlet, excluding a 100 foot corridor. In an effort to accommodate both resource protection and the demand for several uses at this popular area, the modified alternative F designates an ORV route with a corridor (subject to standard buffers) that will be established at 35 meters (115 ft) wide above the mean high tide line when the pre-nesting closure is installed. The pre-nesting closure will not be modified if the beach erodes into the ORV corridor or into the protected habitat. Once breeding activity is observed, standard buffers will apply (subject to resource closures). The ORV corridor at South Point will change from a shoreline corridor Mar 15 – Sept 14, as described above, to an upper beach ORV corridor Sept 15 – Mar 14 that is 35 meters (115 ft) wide and located approximately 35 meters (115 ft) above the mean high tide line. The upper beach corridor will begin approximately 0.7 mi SW of Ramp 72 and extend approximately 1 mile south for the benefit of migratory and wintering shorebirds that forage on the shoreline. To add more wintering and migratory bird habitat, another segment of beach between ramps 68 and 70 was changed to vehicle-free year-round.

Regarding the review period, language has been added to Chapter 2 of the FEIS to indicate that periodic reviews would be done after storms or other events that significantly change or create new habitat. Please refer to the response to Comment ID 24126 for an explanation of why the length of time between reviews would not be reduced to three years.

**Concern ID: 24213**

Concern Statement: Commenters stated that how SMAs are designated should be adjusted to include areas of high quality habitat, even if there has not been recent breeding activity as that may have been due to high disturbance levels. Language and additional areas where SMAs should be established or expanded was provided. They further asked that the past 10 years of nesting history (rather than 5) be considered when establishing these areas.

**Representative Quotes:**

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137714

**Organization Type:** Conservation/Preservation

**Representative Quote:** - "South Beach: ramp 45 to new ramp 47." We agree that the listed area merits designation as an SMA, due to use by breeding piping plover, American oystercatcher, and least tern.

However, for the reasons listed above, we object to the construction of a new interdune ramp 47 (and 48) to the beach. "South Beach: ramp 45 to (cross out new ramp) mile marker 47."

- "Hatteras Inlet Spit: Ocean Shoreline south of the Pole Road to soundside of inlet." We agree this area should be an SMA, based on breeding by colonial waterbirds, American oystercatcher, and historical breeding by piping plover. However, the designated area does not include habitat to the east (towards Hatteras village) that has been used by American oystercatcher and least terns. In addition, the utilized nesting habitat is not only the "shoreline" but also the backshore and dune areas. Therefore, the language should be modified as follows (additions underlined, deletions struck out): "Hatteras Inlet Spit: Ocean Shoreline (start underline)and backshore beach, and dunes .68 of a mile west (end underline) (delete south) of Ramp 55 (cross out the Pole Road) to soundside of inlet."

- "North Ocracoke Spit: Inlet to .25 miles northeast of ramp 59." Based on existing habitat quality, the SMA should start at ramp 59, rather than extending east of the ramp.

Therefore, the language should be modified as follows (additions underlined, deletions struck out): "North Ocracoke Spit: Inlet to (crossed out .25 miles northeast of )ramp 59."

- "South Point (Ocracoke): 0.5 miles southwest of ramp 72 to inlet." Based on existing habitat quality as well as use by American Oystercatcher this year, the SMA boundary should be extended east. Therefore, the language should be modified as follows (additions underlined, deletions struck out): "South Point (Ocracoke): 0.2 (cross out 0.5) miles west (delete south)of ramp 72 to inlet."

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137709

**Organization Type:** Conservation/Preservation

**Representative Quote:** 2. Species Management Areas: The implementation of a 5-year window for the establishment of SMAs will begin at a time when the Seashore experienced the lowest number of nesting shorebirds and waterbirds in the history of the Seashore. This is not adequate to identify SMAs and implement adequate closures for the protection of shorebirds and waterbirds. This will serve only to limit habitats and nesting sites available to nesting shorebird and waterbirds. Pre-nesting closures and mandatory SMA status should be applied to all areas used by shorebirds and waterbirds in two or more of the previous 10-year period. The SMAs should include the sites listed below and all other areas used by shorebirds and waterbirds in two or more of the previous 10-year period. The DEIS lists 10 SMA areas. DEIS at 64. We support the concept of an SMA, as it highlights areas where shorebird and colonial waterbird breeding is most likely. However, in certain instances, the DEIS does not supply boundaries that are consistent with the provided definition of breeding locations. In addition, the NPS should be able to designate SMAs in areas where habitat quality is high, even if there has not been recent breeding activity, perhaps because of high disturbance levels. Based on breeding history and habitat quality, we have the following modifications to the specific SMA areas:

- "Bodie Island Spit: 0.2 miles south of ramp 4 to inlet" DEIS at 64. With the increase in the quality of nesting habitat just south of Ramp 4 due to the erosion of the dunes, and the nesting of American Oystercatcher in the area in 2009 and 2008, the SMA boundary should be modified as follows (additions underlined, deletions struck out): "Bodie Island Spit: (start underline)0.1 (end underline) (cross out 0.2) miles south of ramp 4 to inlet."

- "New Ramp 32.5 to ramp 34" DEIS at 64. While we support the establishment of an

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SMA in this area, we disagree, for the reasons stated above, that a new ramp should be constructed in this area. Therefore, the language should be modified as follows (additions underlined, deletions struck out): "(start underline) From mile marker (end underline) (deleted New Ramp) Ramp 32.5 to ramp 34." - "Approximately 1.7 miles south of ramp 38 to north boundary of Buxton"

**Response:** In Table 10-1 for revised alternative F, SMA terminology has been eliminated and replaced by changes in the amount of vehicle free areas. The "Pre-nesting Closure" section of the table has been revised to state "By Mar 1, Seashore staff will evaluate all potential breeding habitat for piping plover, Wilson's plover and American oystercatcher and recommend pre-nesting closures for those species based on that evaluation. CWB breeding habitat will be evaluated by Apr 1. Areas of newly created habitat will also be evaluated during the annual habitat assessment Areas of suitable habitat that have had individual PIPL, Wilson's Plover or American Oystercatcher nests, or concentrations of more than 10 CWB nests in more than one of the past five years and new habitat that is particularly suitable for shorebird nesting, such as the habitat at new inlets or overwash areas, will be posted as pre-nesting closures using symbolic fencing (string between posts) or with other closure signs by Mar 15 at sites involving piping plover, Wilson's plover, and/or American oystercatcher; and by Apr 15 at sites involving only colonial waterbirds. Because CWB colonies may shift locations from year to year, ramps that have had colonies in more than one of the past five years will remain open until scraping or nesting is observed. Pre-nesting closures will still be established in these areas, however, the closure will allow vehicle access through the areas until scraping or nesting is documented at which point the appropriate buffer will be established."

Due to the fact that so much potential nesting substrate is impacted and rearranged on an annual basis, especially during fall and winter storms, it is believed that it is sufficient to use breeding and nesting location data for up to 5 previous years in conjunction with an annual pre-season habitat assessment. Given how much annual change there is in suitable nesting substrates on barrier islands, 10 years of nesting/breeding data would very likely capture many sites that do not presently have sufficient potential to support breeding populations.

The increased number of vehicle-free areas, combined with pre-nesting areas based on an annual habitat assessment buffers consistent with the best available science on the expected movement of adults and young birds, provide complementary and appropriate protections for breeding birds. This is inherently an inexact science because movement varies among individual birds and is influenced by distribution and abundance of food, cover and predators, all of which vary in space and time. Furthermore, there is competing pressure from recreation for the limited space available on the Seashore. Nevertheless, the application of these measures is believed to be sufficient to provide for the spatial needs of the species they are meant to protect.

### ***AL1130 - Alternative Elements: Vehicle/Operator Requirements***

#### **Concern ID: 24102**

**Concern Statement:** Commenters requested that ATVs and motorcycles not be banned from the Seashore and claimed that the DEIS did not provide an adequate rationale for prohibiting the use of these types of vehicles on Seashore beaches.

#### ***Representative Quotes:***

**Corr. ID:** 3544

**Organization:** Horizon Engineering & Consulting, Inc.

**Comment ID:** 135509

**Organization Type:** Unaffiliated Individual

**Representative Quote:** My second concern is that all alternatives appear to exclude use by ATVs. I believe this is a mistake from a legal and a practical standpoint. Proper and reasonably operated ATVs do much less damage, consume less fuel, emit less contaminants and provide less obstruction than full size ORVs. Their use should be encouraged and not prohibited. I have not seen in the documents that there is an adequate justification for excluding ATVs or for requiring that all vehicles meet "street legal" requirements (license, inspections, registration, etc.) It should not be difficult to conclude that the vehicles accessing the beaches at the time of the Act (1937) would not meet these requirements since most, if not all, were not in effect at that time. Again, we should not be taking actions that serve to further limit or restrict any such access, vehicular or otherwise beyond what was directed in the enabling Act. Excluding a class of vehicles or requiring that all vehicles meet certain prescribed standards without first demonstrating the necessity of such requirements, should be considered arbitrary and capricious.

**Corr. ID:** 14255                    **Organization:** *Not Specified*  
**Comment ID:** 139957            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Whether riding on the beach or the road, I abide by the regulations. My motorcycles make less noise than many heavier vehicles. My motorcycles return better than 50 miles per gallon and I am frequently carrying a passenger. I do not ride on the dunes or the wrack line and am quite capable of traveling safely through any sand conditions that I have encountered on the Outer Banks. I create a tire track on the beach that is less than 7 inches wide. In other words, the motorcycles allow me to travel efficiently and produce less impact than driving my truck while abiding by the same regulations as 4-wheeled vehicles.

My understanding of the DORVMP/EIS is that unless either of the "no action" options (A or B) is chosen, motorcycles will be prohibited on the beach. I urge you to continue to apply the same rules to motorcycles that you currently apply to all other street legal vehicles, allowing the same beach access. Please do not discriminate against people who choose to use motorcycles for regular conveyance. Please amend options C,D,E, and F so that all street legal vehicles are treated in an equitable manner. In addition, I ask that you not burden the motorcyclist with needless equipment requirements. A jack is not necessary on a motorcycle.

**Corr. ID:** 15045                    **Organization:** United Four Wheel Drive Associations, Inc.  
**Comment ID:** 137937            **Organization Type:** Unaffiliated Individual

**Representative Quote:** b. Motorcycle Prohibition on Ocean Beachfront.

An element common to all action alternatives is the prohibition by motorcycles on the ocean beachfront. DEIS at 62. Nowhere within the DEIS does it state the rationale, justification, or evaluation of whether motorcycles should be allowed or prohibited on the ocean beachfront. As such, the DEIS fails to provide a clear basis for choice among the options by the decisionmaker and the public. Not only does the DEIS lack any evaluation of the issue of motorcycle access, it lacks any choice. As stated above, every action alternative proposes a prohibition of motorcycle use on the ocean beachfront. Conversely, none of the action alternatives consider the use of street-legal motorcycle access on the ocean beachfront. Throughout the Negotiated Rulemaking process UFWDA provided information to the NPS regarding the suitability, accessibility, and manageability of street-legal dual-sport motorcycle use on the ocean beachfront as a means of vehicular access in pursuit of recreation. Fatally, the issue of motorcycle access was neither evaluated nor dismissed from consideration in the DEIS.

**Response:** The NPS has noted several issues involved with motorcycles on Seashore beaches. The deep sand conditions have resulted in motorcycles getting stuck and the operators having to walk them through the deep sand to access areas of compacted sand. The proposed reduction of beach speed limits would exacerbate this. The NPS also has concerns about resource impacts of allowing noisier, more mobile vehicles (dirt bikes, etc.) in beach nesting habitat. For these reasons, alternative F prohibits the off-road use of motorcycles. Available case law clearly supports the conclusion that motorcycles may be regulated differently, or even prohibited, as long as the regulation has a rational basis. As stated above, the NPS based the decision to prohibit motorcycles off-road on the potential for impacts to visitor experience (soundscapes), visitor safety, and natural resources. Many units of the National Park Service prohibit off-road use of motorcycles.

The rationale for continuing the long standing ATV prohibition and revising alternative F to also prohibit utility vehicles (UTVs) is similar to the rationale for motorcycles as explained above. Also, scientific studies have shown that ATVs generate more noise than street-legal vehicles and cause more disturbance to beach nesting birds. McGowan and Simons (2006) conducted American Oystercatcher monitoring surveys using stationary video cameras on Cape Hatteras National Seashore and Cape Lookout National Seashore in 2002 and 2003. They recorded 539 instances in which incubating birds departed their nests. Of those instances, ATVs were filmed within 3 minutes of nest departure on 136 occasions (25%) and ORVs were filmed 92 times (17%) within 3 minutes of nest departure. They recorded a total of 284 ATVs, 62% of which passed by a nest within less than 3 minutes of a bird departing its nest. They observed 1,466 ORVs pass by filmed nests, but only 11% passed by within 3 minutes of a bird leaving its nest. Groups or individual pedestrians (traveling by foot) were filmed 19 times (4%) within 10 minutes of nest departures (McGowan and Simons 2006).

Regression models show that there was little or no association between ORV traffic and the rate at which incubating oystercatchers made trips to and from their nests, or the amount of time they spent incubating. Likewise, pedestrian foot traffic was not associated with a significant reduction in the percent time incubating, or birds making more trips

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to and from their nests per hour. Increased ATV traffic, however, was associated with a reduction in the percent time spent incubating, and an increase in the rate of trips to and from the nest.

McGowan and Simons suggest that birds appear to have habituated to the presence of ORVs (Whittaker and Knight 1998), but they view ATVs (and to a lesser extent, pedestrians) as threats. They propose that ATVs are louder and move faster than ORVs and pedestrians, which might explain why the birds are affected more by ATV traffic (Burger 1981, Burger and Gochfeld 1998). ORVs and pedestrians also tend to stay closer to the firm sand along the water's edge, which means they generally travel farther from nesting birds.

The following language (DEIS p. 84) specifically explains the reason for the prohibition of ATV use at the Seashore:

“The NPS only allows street-legal vehicles on the beach under the North Carolina Motor Vehicle Code, which does not include ATVs. Alternatives in this plan/EIS do not include changing the requirement for street-legal vehicles. The Seashore considers ATV use at the Seashore to be incompatible with visitor use and resource protection goals and objectives due to the damage they could cause. Further, street-legal vehicles are used for transportation, but the majority of ATVs are used primarily for recreational purposes, although they may secondarily serve a transportation function.”

This language has been revised in Chapter 2 of the FEIS to explain and include the prohibition of UTVs at the Seashore.

**Concern ID: 24103**

**Concern Statement:** Commenters suggested vehicle requirements such as no leaking oil and proper display of permits and licenses.

**Representative Quotes:**

**Corr. ID:** 81

**Organization:** humans

**Comment ID:** 129746

**Organization Type:** Unaffiliated Individual

**Representative Quote:** One thing not mentioned is that any vehicle driving on the beach MUST be ABSOLUTELY OIL-LEAK FREE. It is imperative that cars be routinely inspected for oil leaks. Or, perhaps the only vehicles allowed should be electric.

**Corr. ID:** 3398

**Organization:** *Not Specified*

**Comment ID:** 135331

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Many vehicles do not display vehicle license plates as prescribed by state law because of coolers, rod racks, or other possessions blocking view of the license plate. There are plenty of other plates displayed, those advertising fishing, automotive, or political organizations are often seen, but the vehicle license plate is hidden from view contrary to motor vehicle laws. If a beach driving permit is initiated, this law should be addressed for public safety and officer safety concerns.

**Corr. ID:** 14149

**Organization:** *Not Specified*

**Comment ID:** 137604

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I would suggest that the vehicles being allowed on MUST be in good repair and not leaking fluids. If a vehicle is found to be leaking or contaminating the beach, there should be heavy fines by Law Enforcement.

**Response:** The Seashore does not have the capability to efficiently inspect each vehicle that enters the beach to determine if it is leaking oil. Individual vehicle inspections for leaking fluids could cause substantial traffic backups which would adversely affect visitor experience and safety. However, all vehicles operated in the Seashore must comply with state inspection requirements, which include regulations on leaking fluids. If the NPS were to observe a vehicle leaking oil, it would be removed from the beach and could potentially be cited under existing NPS regulations. The NPS is not proposing to allow only electric vehicles in the Seashore due to the limited availability of these vehicles to the general public.

Obstruction of the rear license plate is a violation of North Carolina law, which is enforced by NPS law enforcement staff under 36 CFR 4.2(b). It would be considered a violation of Seashore regulations and in developing the details of the ORV permit program the Seashore would consider whether this violation would be a basis for permit revocation.

**Concern ID: 24625**

**Concern Statement:** One commenter questioned the vehicle requirements with respect to allowable vehicle length and number of axles.

**Representative Quotes:**

**Corr. ID:** 14588

**Organization:** *Not Specified*

**Comment ID:** 142350

**Organization Type:** Unaffiliated Individual

**Representative Quote:** It is unlikely that a 30' long 3-axle vehicle pulling a trailer of unspecified length will get very far on a beach that is 20 meter wide. The beach would have to be at a minimum of 30 meters and very flat with hard packed sand for a vehicle of these characteristics.

**Response:** Alternative F has been revised to indicate that vehicles must have no more than two axles; towed boat trailers must have no more than two axles; and travel trailers (i.e., camping trailers) are prohibited on designated ORV routes.

**AL1135 - Alternative Elements: Accessibility for visitors with disabilities**

**Concern ID: 24106**

**Concern Statement:** Commenters expressed concern regarding accessibility at the Seashore. Issues noted were the use of beach wheel chairs including where they are available and how practical they are to use as well as a lack of handicap accessible ramps to the Seashore. Some commenters stated that these deficiencies create non compliance with the Americans with Disabilities Act. Commenters also stated that special use permits to transport visitors with disabilities were impractical because they did not allow for a quick response in case of emergency or changing weather, as well as created unnecessary risks and hardships on these visitors. They also noted this does not address visitors with disabilities who come to the Seashore by themselves .

**Representative Quotes:**

**Corr. ID:** 3288

**Organization:** MS Society

**Comment ID:** 132175

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The accommodations for the handicapped as described on page 58 are woefully inadequate, and certainly not in compliance with the existing Americans with Disabilities Act. That act provides that ALL public facilities should be accessible to those disabled. Three ramps out of ? doesn't comply. If the "special use permitting" is implemented, how are the handicapped going to "call" their transportation back. How about bathroom facilities since it seems it will take an hour or more to get transportation back

**Corr. ID:** 7057

**Organization:** *Not Specified*

**Comment ID:** 133321

**Organization Type:** Unaffiliated Individual

**Representative Quote:** In reference to the NPS DEIS, I strongly disagree with both page 7 part 1 and chapter 2-alternative: accessibility for the disabled. It suggest with a special permit for areas in front of the villages that an ORV be allowed to transport disabled persons to the beach but must return the vehicle to the street. I do not understand this concept which would make for more beach driving rather than leave the vehicle with the party at the beach. Also about the boardwalks, this is of no use to someone who cannot walk distances nor ride in wheel chairs. My husband has disabilities that restrict him of either of these options.

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**Corr. ID:** 8742                   **Organization:** *Not Specified*  
**Comment ID:** 133225       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** P. 1 ORVs providing primary and practical access for visitors -pedestrian only access are in opposition to ADA, small children, elderly, folks who need recreational equipment.

**Corr. ID:** 13018               **Organization:** *Not Specified*  
**Comment ID:** 140296       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The national seashore was created with a series of ramps to allow 4wd access to the beach while preserving the dune line. As a result there are very few parking spaces. Dare County reports there are 749 spaces; 25 of these are handicapped. Of those, 10 are at Coquina Beach which is not even on Hatteras Island. Of the 15 on Hatteras Island I challenge you to show me one that allows wheelchair access.

**Corr. ID:** 13193               **Organization:** *Not Specified*  
**Comment ID:** 140175       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I also find the concept of loaning out beach wheelchairs on a first-come, first-serve basis is totally silly. Who is going to push them? Once again, the independence of the disabled in the Cape Hatteras National Seashore Recreational Area is just not addressed.

**Corr. ID:** 13854               **Organization:** Disability Rights North Carolina  
**Comment ID:** 140735       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Page viii: Beach access would be provided through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.

While DRNC appreciates NPS's effort to accommodate visitors with disabilities via these special use permits, the scheme as proposed does not accommodate visitors with disabilities who are visiting the Seashore alone. The Plan proposes that the special use permit be used "to transport [individuals with mobility impairments] to join their family or friends on an open beach that is otherwise closed to ORV." (Page 540) This necessarily excludes individuals with mobility impairments who are able to operate their own vehicle and choose to visit the Seashore without friends or family.

**Corr. ID:** 13863               **Organization:** National Multiple Sclerosis Society  
**Comment ID:** 138250       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Several aspects of the plan/EIS are troubling and would present significant obstacles for people living with MS. For instance, special use permits would be required to transport people with disabilities to the beach and then the vehicle must be returned to the street. If a person living with MS is fortunate to be traveling with a companion or caretaker, this requirement could still prove problematic if the individual must remain alone for any period of time and the individual's symptoms are severe and for instance, include loss of balance, paralysis, blurred vision, or blindness. People living with MS traveling to Cape Hatteras alone may also encounter extreme difficulty if they are forced to park far away from ADA accessible access points and his or her symptoms are severe in nature. Having to travel even a short distance when experiencing intense fatigue, tremors, loss of balance, vision problems, or memory issues can be an enormous burden which runs counter to Cape Hatteras's purpose of a place of enjoyment for all.

**Corr. ID:** 13863               **Organization:** National Multiple Sclerosis Society  
**Comment ID:** 138251       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The plan/EIS indicates that four ADA compliant beach access points will be provided for persons living with disabilities. Cape Hatteras consists of more than 30,000 acres distributed along approximately 68 miles of shoreline, making a mere four ADA-compliant access points a fairly significant barrier for people living with MS attempting to fully participate in recreation and/or enjoyment of Cape Hatteras's offerings.

**Corr. ID:** 15063               **Organization:** Rodanthe-Waves-Salvo Civic Association  
**Comment ID:** 138979       **Organization Type:** Civic Groups  
**Representative Quote:** The draft statement calls for beach wheelchairs to be available in each seashore district. On Hatteras Island that means Buxton, a 50-mile round trip for those seeking the equipment. The board requests that the



seashore make beach wheelchairs available in Rodanthe, Waves and Salvo by establishing a partnership with Chicamacomico Banks Fire and Water Rescue Department.

**Corr. ID:** 15063                   **Organization:** Rodanthe-Waves-Salvo Civic Association

**Comment ID:** 138978           **Organization Type:** Civic Groups

**Representative Quote:** The association's board supports the addition of Ramps at mile 24 and 26 as indicated in the draft statement. Adding ramps at 24 and 26 has the possibility of providing close-by vehicle access for residents as well as visitors in Hatteras Island's northern villages when Ramp 23 is inevitably closed.

The board notes, however, that the draft statement calls for beach access points and boardwalks compliant with the Americans with Disabilities Act in only one location on Hatteras Island, in Frisco, many miles south of the northern villages.

The civic association has previously submitted a request to the Cape Hatteras National Seashore for a boardwalk and expanded parking at Ramp 23. The board renews that request. The board requests that, as new Ramps at 24 and 26 are constructed, the National Park Service install boardwalks and access points compliant with the Americans with Disabilities Act.

**Corr. ID:** 10                       **Organization:** *Not Specified*

**Comment ID:** 126150           **Organization Type:** Unaffiliated Individual

**Representative Quote:** The lack of access to the beach for handicap or disabled people is illegal. A small number of park and walk areas, plus oceanfront houses makes most of the park impossible for people to get to without ORV access. If there was more ramps and a road connecting them, it would allow more access and still protect nesting areas.

**Corr. ID:** 32                       **Organization:** NCBBA

**Comment ID:** 126085           **Organization Type:** Unaffiliated Individual

**Representative Quote:** Some of these people are disabled and can't maneuver themselves over walkways or around dunes. Many are Veteran's young and old who are disabled. And what about the folks whose spouses or care providers who cannot maneuver those in their care due to their own disabilities? I don't believe the report considered or inquired with these folks!

**Response:** The NPS recognizes that visitors to the Seashore have different needs, and therefore provides a variety of uses, including both ORV and vehicle-free areas. For those visitors that feel that they may require a vehicle to be readily available due to a medical condition or disability or need to have a family member with them at all times, opportunities are provided in the Seashore where ORVs are allowed, and these needs can be met. The NPS recognizes that this would mean that these visitors would not be able to take advantage of the special use permit under the preferred alternative, but would be able to have an experience in the Seashore. For those mobility impaired visitors who wish to join their party on the beach in a vehicle free area, the special use permit (SUP) option is provided. The SUP language has been clarified as follows: The superintendent may issue special use permits to allow beach access through the issuance of special use permits for areas in front of the villages to allow ORVs to transport visitors with disabilities to the beach and then return the vehicle back to the street.

This is in line with the applicable requirements and NPS policies. Under the Rehabilitation Act, 29 U.S.C. § 791 *et seq.*, which applies to federal agencies in lieu of the ADA, the NPS is required to provide reasonable access to programs and services at the Seashore. "Reasonable" does not necessarily mean "total" and must be viewed in the light of the entire program or activity, including its purpose (i.e., providing the visitor with a variety of experiences).

Likewise, for visitors with disabilities who come to the Seashore by themselves, opportunities are provided throughout alternative F for transportation to areas of the Seashore in an ORV.

**Amount of Accessible Boardwalk:** As called for on page 63 of the DEIS, the NPS will retrofit existing boardwalks with accessible ramps to allow for more opportunities for visitors with disabilities to view and access the beach. In addition to retrofitting of existing boardwalks, additional boardwalks would be considered in future planning efforts,

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subject to available funding.

Number of Handicap Accessible Parking Spots on Hatteras Island. Access on Hatteras Island is as follows:

- Salvo Day Use Area – 1 space with boardwalk access to soundside beach.
- Ramp 27 Parking Lot - 2 spaces, with boardwalk to beach.
- Old Lighthouse Site Parking, Buxton - 3 spaces, beach wheel chair available at the Lighthouse V.C., easy wheel chair access to beach.
- Buxton Lifeguarded Beach Parking, Buxton - 4 spaces, same as Old Lighthouse Parking above.
- Cape Hatteras Lighthouse Parking - 5 spaces (no beach access) Buxton Woods Trail/Picnic Area - 2 spaces (no beach access) Frisco Bathhouse Parking - 3 spaces, with access to bathhouse and deck overlooking beach.
- Graveyard of the Atlantic Museum - 5 spaces (no easy access to beach)

-Total: 25 NPS Handicap Parking spaces on Hatteras Island, 10 of which access the beach. When new parking areas are developed, additional handicap parking spaces would be included, as appropriate.

The Seashore currently works closely with Chicamacomico Banks Fire and Rescue for wildland fire and water rescue response and would explore the possibility of expanding that partnership to include providing additional access to beach wheel chairs, as suggested. It is anticipated that with Dare County's proposed beach access area in Rodanthe, that Dare County would also be providing additional beach wheel chairs. Beach wheel chairs are also available for rent from a variety of providers throughout the Outer Banks, including Kitty Hawk Kites and Ocean Atlantic Rentals, both with locations in the Tri-Villages. These rental companies also deliver the wheel chairs to the renter.

**Concern ID: 24107**

**Concern Statement:** Commenters stated that the creation of pedestrian only areas discriminates against visitors with disabilities or visitors with limited mobility.

**Representative Quotes:**

**Corr. ID:** 814                      **Organization:** regular park vacationer

**Comment ID:** 132696           **Organization Type:** Unaffiliated Individual

**Representative Quote:** To limit ORV access would discriminate against individuals with limited mobility due to age or physical impairments, families with children, senior citizens and those wishing to engage in activities requiring recreational equipment such as Fishing, surfing, birding, swimming and family gatherings.

**Corr. ID:** 14719                      **Organization:** *Not Specified*

**Comment ID:** 133642           **Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 1: I agree with your statement "ORVs have traditionally served as a primary form of access for many portions of the beach in the seashore, and continue to be the most practical means of access and parking for many visitors." However, pedestrian-only areas discriminate against individuals (such as myself) with limited mobility due to age or physical impairments, families with small children, and those wishing to engage in activities requiring recreational equipment (boogie boards, beach umbrellas, beach chairs, coolers, fishing rods and tackle, etc.) Pea Island National Wildlife Refuge, 12 miles of pristine beach lying within CAHA, more than fulfills the needs of those who desire a walking beach free of ORVs.

**Response:** Alternative F provides for ORV access in numerous areas along the length of the Seashore. Alternative F also provides for vehicle-free areas as a means of providing a more natural visitor experience for park users. In addition, the NPS would allow temporary use of ORVs to transport mobility-impaired individuals to join their family or friends on village beaches that would otherwise be closed to ORVs.

Please refer to the response to Concern ID 24106 for information on how the NPS has addressed providing additional access for mobility-impaired visitors.

**Concern ID: 24108**

Concern Statement: Commenters suggested additional steps the NPS could take to increase accessibility including catwalks to the beach, allowing seniors (over 65) to have special vehicles to access the beach, ensuring beach shuttles if utilized can accommodate visitors with disabilities, and the required use of noise suppressors for vehicles that are transporting visitors to the beach.

**Representative Quotes:****Corr. ID:** 3079**Organization:** *Not Specified***Comment ID:** 134857**Organization Type:** Unaffiliated Individual

**Representative Quote:** I would like to suggest that there be some provision for permitting of special vehicles for seniors over age 65. With the popularity of electric carts, utvs, and atvs, those with limited mobility can access areas without the use of heavy ORV's. Older individuals can and will handle lighter equipment, but not heavier vehicles. While you have made provisions for persons covered by ADA, please do not forget those seniors that are healthy, but do not own or no longer have the stamina to handle large trucks and other ORV's. I think this age group will give you very little enforcement problems, especially if there is a specific permit process.

**Corr. ID:** 5431**Organization:** Defenders of Wildlife**Comment ID:** 131072**Organization Type:** Unaffiliated Individual

**Representative Quote:** . Va Beach has taken another step to make the beach accessible for people with disabilities and yet not harmed the wildlife. They have put wooden catwalks from the boardwalk almost to the ocean where handicapped people can ride wheelchairs down to the waters edge and enjoy it from sideareas off the catwalks. These catwalks have harmed no wildlife and do not interfere with non-handicapped persons from enjoying and accessing beach areas.

**Corr. ID:** 14242**Organization:** ENVISCI3330 Land Use Management**Comment ID:** 140395**Organization Type:** Unaffiliated Individual

**Representative Quote:** Might I suggest that with ORV utilization as transportation to grant access to those who otherwise could not access these areas that special noise reducing devices be required.

**Corr. ID:** 15059**Organization:** Disability Rights North Carolina**Comment ID:** 138938**Organization Type:** Non-Governmental

**Representative Quote:** Several of the Plan's alternatives note the potential for a beach shuttle service. (See, e.g., page 540)NPS should ensure any such shuttle service can accommodate riders with disabilities.

**Response:** As noted on page 84 of the DEIS, the Seashore operates using the North Carolina Vehicle Code, which allows only street-legal vehicles on the beach, and therefore allowing other types of vehicles as suggested (ATV, UTV, electric carts, etc.) would not be within keeping of this law and outside the legal framework of this plan. The street-legal requirement for all ORVs would also address concerns regarding noise.

As indicated on page 63 of the DEIS, the NPS will retrofit some existing boardwalks with accessible ramps, to the extent that funding allows, to allow for more opportunities for visitors with disabilities to view and access the beach. In addition to retrofitting of existing boardwalks, additional boardwalks would be considered in future planning efforts, subject to available funding. As future improvements are made, such as boardwalks and other access described under the preferred alternative or potential beach shuttles, accessibility issues and all applicable regulations would be considered. Please refer to the response to Concern ID 24106 for information on how the NPS has addressed providing additional access for mobility-impaired visitors.

**Concern ID: 24110**

Concern Statement: Commenters noted that "pets" are needed in some instances to assist visitors with disabilities and should be allowed.

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**Representative Quotes:****Corr. ID:** 13863**Organization:** National Multiple Sclerosis Society**Comment ID:** 138252**Organization Type:** Unaffiliated Individual

**Representative Quote:** The National MS Society also finds distinctly troubling the considerable restrictions placed on "pets" by each of the alternatives, whether prohibited in certain areas or during certain seasons. The current policy for Cape Hatteras is that "[g]uide dogs for the visually impaired are permitted to remain with their owners at all times." People living with MS or other disabilities may very well rely on assistance animals not only for specific guide purposes, but also for providing balance support, pulling wheelchairs, alerting to sounds, or responding to changes in the physiological, mental, or emotional state of their human partners. People living with MS and other disabilities needing help from assistance animals simply must not be denied their presence, guidance, and comfort at any location in Cape Hatteras or during any time of year.

**Corr. ID:** 15059**Organization:** Disability Rights North Carolina**Comment ID:** 138937**Organization Type:** Non-Governmental

**Representative Quote:** 4. In various places, the Plan mentions restricting "pets" at certain times of the year, and in fact Alternatives D, E and F prohibit "pets" in species management areas year-round. (See, e.g., page 546) DRNC would like to highlight for NPS that Seashore visitors with disabilities may be accompanied by a trained service animal necessary for the visitor's use and enjoyment of the Seashore. A working service animal should not be considered a pet and therefore should be exempt from any such restrictions. NPS should train Seashore personnel on the use of and inquiry into the use of service animals, including training about the various uses of service animals. Service animals include not just guide dogs for people with visual impairments, but also include animals trained to assist individuals with mobility and balance impairments, seizure disorders, and hearing impairments, among others. NPS may also wish to devise a policy for granting requested reasonable accommodations to this "no pets" prohibition for individuals with disabilities who use service animals. A trained service animal of course poses little risk to the wildlife the Plan seeks to protect.

**Response:** The NPS relies on the Department of Justice's definition of service animals, which are defined in 28 CFR 36.104 as, "any guide dog, signal dog, or other animal individually trained to do work or perform tasks for the benefit of an individual with a disability, including, but not limited to, guiding individuals with impaired vision, alerting individuals with impaired hearing to intruders or sounds, providing minimal protection or rescue work, pulling a wheelchair, or fetching dropped items."

The NPS does not consider service animals to be pets and, in general, when accompanying a person with a disability (as defined by Federal law and regulation), service animals must be allowed wherever visitors or employees are allowed. Superintendents have discretion under 36 CFR 1.5/1.7 to close an area to the use of service animals if it is determined that the service animal poses a direct threat to the health or safety of people or wildlife. In summary, the pet regulations contained in the plan/EIS would not apply to service animals.

**Concern ID: 24111**

**Concern Statement:** One commenter requested that the document use "person first" language in the document. For example, use "visitors with disabilities" rather than "disabled visitors" or "the disabled."

**Representative Quotes:****Corr. ID:** 15059**Organization:** Disability Rights North Carolina**Comment ID:** 138933**Organization Type:** Non-Governmental

**Representative Quote:** Throughout the Plan, the terms "disabled visitors" and "the disabled" are used. DRNC urges NPS to use "person first" language (e.g., "visitors with disabilities") in its publications.

**Response:** The NPS agrees with the suggestion provided by this commenter. The recommended changes in language on page 63 of the DEIS regarding visitors with disabilities have been made in and FEIS and will now read:

"Access for Visitors with Disabilities: Some existing boardwalks would be retrofitted with accessible ramps to the extent that funding allows to provide for more opportunities for visitors with disabilities to access or view the beach. When new parking areas are developed, additional handicap parking spaces would be included, as appropriate."

This correction was made in the FEIS in all instances in the DEIS where the term “disabled” occurred.

***AL1140 - Alternative Elements: Education and outreach***

**Concern ID: 24112**

Concern Statement: Commenters suggested various way of increasing education at the Seashore such as videos for visitors, classes, and provide educational materials on the ferry to Ocracoke.

***Representative Quotes:***

**Corr. ID:** 15                   **Organization:** *Not Specified*

**Comment ID:** 126134       **Organization Type:** Unaffiliated Individual

**Representative Quote:** THE FERRY SERVICES SHOULD HAVE EDUCATIONAL VIDEOS PLAYING ON THE TELEVISIONS EXPLAINING PRESERVATION MEASURES AND FINES FOR NOT FOLLOWING GUIDELINES.

FLYERS SHOULD BE DISTRIBUTED TO EACH VEHICLE ENTERING THE FERRY WITH EXPLANATION OF PUNITIVE FINES AS WELL AS EDUCATION ON PROTECTING THE BEACHES AND WILDLIFE.

FERRY WORKERS AND PARK RANGERS SHOULD TALK WITH GUESTS, PROVIDE PROGRAMMING, AND CREATE AN OVERALL CAMPAIGN TOWARDS RESPONSIBILITY

**Corr. ID:** 87                   **Organization:** ESA

**Comment ID:** 129789       **Organization Type:** Unaffiliated Individual

**Representative Quote:** Education is first and most important. If someone would like to drive on the beach there should be a short (15-30 min) instructional course to explain the hazards.

**Corr. ID:** 3398               **Organization:** *Not Specified*

**Comment ID:** 135333       **Organization Type:** Unaffiliated Individual

**Representative Quote:** The NPS should do more to educate visitors. Increase funding for interpretive programs that provide interesting, relevant programs which promote awareness of the Seashore's attributes and the NPS mission.

**Corr. ID:** 14642             **Organization:** *Not Specified*

**Comment ID:** 139160       **Organization Type:** Unaffiliated Individual

**Representative Quote:** It may be helpful to discuss the topic of "Take" and note that once an area has met its Endangered Species numbers there is the possibility of relaxing preservation actions and "permitting Take" as has been the case in Massachusetts.

**Corr. ID:** 14837             **Organization:** *Not Specified*

**Comment ID:** 138931       **Organization Type:** Unaffiliated Individual

**Representative Quote:** Find a way to highlight that only the most experienced in beach habitat wildlife have even a chance to spot a plover or nest before driving or stepping on one. Describe the plovers methods of evading detection such as walking, halting and slightly changing profile so the human eyes continue moving after the plover has stopped and when the eyes move back to find the bird it has frozen in a different profile making it hard to see even if only 20 feet or less away.

**Response:** The NPS is actively working to expand resource management and interpretive staff throughout the Seashore. Within Chapter 4: Park Operations and Management, page 629 of the DEIS, under Interpretation, language has been revised to read “Included in the additional Interpretive division staff would be a Resource Education Ranger to develop education material, program, and signs throughout the Seashore to educate all visitors on the state and federally-listed threatened and endangered species within the Seashore. These programs would provide visitors more information on the species within the Seashore, what protection measures the Seashore has in place, and why these species are important to the coastal ecosystem.” The nature of specific educational programs would be developed after an alternative has been selected and implemented and these suggestions would be taken

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into consideration at that time. Additional educational opportunities include watching a short educational video during the permitting process, as suggested by commenters during the DEIS comment period. Please see response to Concern ID 24113 for an expanded response on future educational opportunities within the Seashore.

**Concern ID: 24113**

**Concern Statement:** Commenters stated that education and outreach should be focused toward pedestrian users, as many of the recorded violations involve this user group including signage at pedestrian walkovers. One commenter suggested charging a fee at a gate, where this type of education could also be administered.

**Representative Quotes:**

**Corr. ID:** 4747                      **Organization:** NC Beach Buggy Assn

**Comment ID:** 138452            **Organization Type:** Unaffiliated Individual

**Representative Quote:** I would also suggest some type of education program for pedestrians in respect to walking over vegetation and the dunes. I see walkers on the beach abusing the dunes a lot. There should be more effort put forth by the park service to educate pedestrians in respect to vegetation and dunes.

**Corr. ID:** 10869                    **Organization:** High Country Audubon Society

**Comment ID:** 136133            **Organization Type:** Unaffiliated Individual

**Representative Quote:** We recognize that not all resource impacts are caused by ORV users. Alternative F requires "There would be a new voluntary resource education program targeted toward non-ORV beach users." We recommend that this be extended to other alternatives.

**Corr. ID:** 13400                    **Organization:** *Not Specified*

**Comment ID:** 141300            **Organization Type:** Unaffiliated Individual

**Representative Quote:** -Put a gate on CAHA and charge an admittance fee for all visitors and exempt residents who reside within the boundaries of CAHA. At time of admittance this is where the educational component can be administered. As pedestrians are the biggest resource violators, this component could be very valuable in the compliance of closures and the cost recovery could be shouldered by the entirety of the user groups instead of just ORV permit holders.

**Corr. ID:** 14980                    **Organization:** *Not Specified*

**Comment ID:** 137549            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Pedestrians are the largest "access group" and there is very little outreach and training to enable this group to follow the rules made for species management. Pedestrians violate more rules and laws as seen in NPS reports again in 2010. There are no signs at pedestrian access points and walkovers. How do you expect to get the outreach message to this group?

**Corr. ID:** 15166                    **Organization:** *Not Specified*

**Comment ID:** 138794            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Under page 58 of the DEIS, "Education and Outreach. Post signs regarding applicable ORV regulations and ORV access ramp, beach routes and sound side areas. Information on beach closures and sound seashore resources is readily available and presented in a clear manner to the public." That's not quite true. Nowhere does it say, "pedestrians." There are no rules for pedestrians. Pedestrians in the first three weeks of Cyndy Holda's reports, say, "17 pedestrians violated resource closures. One ORV did."

**Response:** The Seashore agrees that resource stewardship and resource education is important for all visitors, including pedestrians. The proposed education and outreach program included in all alternatives is intended to reach all park visitors and user groups. It is also recognized that many users span both groups, since ORV passengers become pedestrian users once they reach a destination and venture further into the park. For an explanation on why the NPS is not proposing to place gates at entrances and charge all visitors fees, please see the response to Concern ID 24098. However, additional educational materials can be distributed at the visitor centers and at key locations in the Seashore, with emphasis on compliance and species protection directed at all users. The park proposes to develop a sustainable, highly visible, and effective education program for all beach users that will encourage visitors to "share the beach" with wildlife.

**Concern ID: 24114**

Concern Statement: Commenters suggested improving education and outreach through improved signage. They stated that current signs are hard to read and that compliance would improve with better signage.

**Representative Quotes:****Corr. ID:** 27**Organization:** *Not Specified***Comment ID:** 126104**Organization Type:** Unaffiliated Individual

**Representative Quote:** I was there last year and could not believe the chaos of just trying to get on the beach to fish in a LEGAL area. The postings are very unclear and moved around daily!!! Seems to me that if a whole species (PIPING PLOVER) is to be protected then why not have an educated person manufacture CLEAR, CONCISE, signage that leaves nothing to ponder!

**Corr. ID:** 2673**Organization:** *Not Specified***Comment ID:** 132161**Organization Type:** Unaffiliated Individual

**Representative Quote:** We do support information from the Park Service regarding use of the beaches - (currently the information is located on the access road to the beach - it is very hard to read this information when you are driving on the sand and cannot stop to read this important information). The regulations should be posted in a location that is accessible to the driver before driving on the sand.

**Corr. ID:** 14734**Organization:** *Not Specified***Comment ID:** 140725**Organization Type:** Unaffiliated Individual

**Representative Quote:** There is not enough information for visitors at the ramps , parking areas, or walkovers. Visitors do not understand the penalty process or how it takes away more beach area. There should be bigger signs, better rope and more information distributed to visitors. The current signs and lettering are too small and look unimportant.

**Corr. ID:** 14954**Organization:** *Not Specified***Comment ID:** 138025**Organization Type:** Unaffiliated Individual

**Representative Quote:** YOU COULD ALSO PUT A LITTLE EDUCATION ABOUT THE SPECIES ON THE SIGNS. THIS WOULD LET THE CREATURES SPEAK FOR THEMSELVES. RIGHT NOW WE HAVE A GROUP REPRESENTING THE WILDLIFES BEST INTERESTS.

**Response:** The NPS agrees that improved and more legible signage is needed, and has a goal to improve signage as well as to reduce the amount of signage needed as the plan becomes more known and accepted. ORV operators will be provided with a copy of the rules as part of the permitting process. The NPS will add more educational signage where appropriate, along with increased education and outreach, as the plan is implemented. However, the wording on signs indicating closures or restrictions must remain regulatory in nature to provide the basis for enforcement.

**Concern ID: 24115**

Concern Statement: Commenters suggested incorporating a volunteer program into the education and outreach for the Seashore. Some commenters noted that this program would need to be carefully carried out so that it does not impact the resources.

**Representative Quotes:****Corr. ID:** 2006**Organization:** *Not Specified***Comment ID:** 132344**Organization Type:** Unaffiliated Individual

**Representative Quote:** How about working with the OBPA and NCBBA to adopt nesting areas? Empowering members to actively monitor sites while reducing buffer zones.

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**Corr. ID:** 14686      **Organization:** *Not Specified*  
**Comment ID:** 133987      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Nesting areas can be protected through organized volunteer groups patrolling the beach responsibly. The best protection against any terrorism is for responsible citizens to be involved in identifying and deterring possible problems.

**Corr. ID:** 14795      **Organization:** *Not Specified*  
**Comment ID:** 138849      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I would suggest a pro-active turtle nest watch program that could get young people involved and keep the beaches open for the rest to enjoy as well. I would also like to suggest setting up a volunteer community beach watch program for anyone fishing at night to report any violations they see on the beach to law enforcement.

**Corr. ID:** 15045      **Organization:** United Four Wheel Drive Associations, Inc.  
**Comment ID:** 137900      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The agency's cries of management poverty partly, if not significantly, reflect the agency's questionable decisions or management strategy. The DEIS states, " ... the escort system would be extremely labor intensive to initiate, and providing the staffing levels necessary to adequately implement an escort program would likely not be feasible". DEIS at 85. However, the availability of funding is directly correlated to management effort and outreach to funding sources and the affected user community. Where they have been able to, UFWDA and other recreational groups have contributed volunteer assistance including monetary contributions. Typical volunteer activities have included user education brochures, motorist assistance to beach ORV users, turtle sitting, escort services at ramps and other areas where needed from time to time, and other contributions of volunteer time and money.

**Corr. ID:** 15074      **Organization:** Southern Environmental Law Center  
**Comment ID:** 137783      **Organization Type:** Conservation/Preservation  
**Representative Quote:** Regarding volunteers, we are supportive of the use of volunteers for certain tasks - such as the nighttime turtle nest watch, or collection of winter cold-stunned turtles. However, given the current very emotional feelings over the issue of beach driving management, and the pressure that is placed on those who support resource protection, we strongly oppose the use of volunteers to conduct turtle patrols. The turtle patrol is a critical component of evaluating ORV impacts to turtle nests. By finding and protecting the nests before ORVs are allowed on the beach, the turtle patrol can mitigate harm caused by ORVs. If this process were not properly carried out, it would devastate the protection measures, and significantly increase the adverse impacts of beach driving, including a risk of direct take of nests and hatchlings. There is far too much risk that if a nest were located at a popular ORV ramp or between a ramp and a popular fishing area such as Cape Point, a volunteer who supports ORV use, or one who is pressured by those who do, might not report the turtle nest to the Seashore. Volunteers should not be put in a position to face that kind of decision. We would be extremely concerned if the FEIS allowed the use of volunteers for turtle patrol, due to the high risk that the integrity of the patrol process could be compromised.

**Response:** The NPS recognizes the importance of encouraging stewardship through volunteer opportunities. At this time, NPS believes that the best use of volunteers would be in a trained volunteer program for watching sea turtle nests that have reached their hatch windows in order to monitor hatching emergence success and success reaching the water, and to provide for the minimization of negative impacts from artificial lighting, predation and human disturbance. This program should enhance protection and encourage ownership/stewardship of resources among the public. However, at this time, the NPS believes that it would be more appropriate to use staff to conduct morning turtle patrols, although volunteers may be allowed to ride along with NPS turtle patrol staff. Given the strong opinions of the various groups that use the Seashore, the NPS would also not want to place its volunteers in situations that might put them in conflict with the public.



**AL1145 - Alternative Elements: Parking Areas****Concern ID: 24116**

Concern Statement: Commenters stated that parking areas should be expanded, with some adding that boardwalks should be installed. They further stated this would provide for visitors to access areas, and reduce some of the need for long walks to the beach, while better protecting the resources. One commenter requested that the old road north of Rodanthe not be used for parking, as it is currently used for surfing parking. One commenter stated that parking should not be expanded because the impacts to wetlands and the cost would be too great. Another commenter further stated that the funding for access improvements is uncertain, and its inclusion in the plan could raise issues with the Antideficiency Act.

**Representative Quotes:****Corr. ID:** 106**Organization:** *Not Specified***Comment ID:** 129408**Organization Type:** Unaffiliated Individual

**Representative Quote:** However, I would like to see more public street parking and beach access where former ORV use is restricted.

**Corr. ID:** 3852**Organization:** *Not Specified***Comment ID:** 131379**Organization Type:** Unaffiliated Individual

**Representative Quote:** (Possible additional parking lots for beach access)

1) I disagree, would be costly, (construction & main.) would require harsh impact to wetlands & or beach. Much worse than ORV contact.

**Corr. ID:** 3874**Organization:** Outer Banks Chamber of Commerce**Comment ID:** 139375**Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 56. "This alternative would involve the construction of a pedestrian access trail and improvements and additions to the interdunal road system."

Page 80. "...by improving interdunal road and ORV ramp access. Pedestrian access would be enhanced by providing increased parking capacity at various points of access to vehicle-free areas..."

Page 81. "would include the construction of a short ORV route to access a new pedestrian trail to the sound on Ocracoke Island..."

Page 593. "...additional pedestrian and ORV access would be facilitated by construction and relocation of access ramps, and the designation of ORV access corridors at Cape Point and South Point."

Page 598. "The extra efforts to increase ORV access and pedestrian access should increase the probability that the impacts are on the low rather than high end of the range."

The inclusion of these forward-looking statements is troublesome. There is no appropriation in the NPS budget through 2011 for these plans so they should not be used to imply that they will minimize economic impact.

Furthermore, given the inherent unpredictability of each future budgetary cycle after FY 2011, it would be difficult or impossible to quantify any economic impact of these improvements given the likelihood they will be implemented over an unknown term and are likely subject to additional modification dependent on future budgetary constraints.

Leaving these statements in the DEIS or using them as a basis to determine/predict/minimize economic impact could raise questions about compliance with the Antideficiency Act described on Page 40.

**Corr. ID:** 13368**Organization:** *Not Specified***Comment ID:** 137990**Organization Type:** Unaffiliated Individual

**Representative Quote:** Also not take away the old road north of Rodanthe at the S turns for parking as it is needed for surfing parking. It will be increasingly dangerous situation especially in summertime.

**Corr. ID:** 13773**Organization:** *Not Specified***Comment ID:** 140116**Organization Type:** Unaffiliated Individual

**Representative Quote:** The best protection for wetland resources would be to replace routes with parking lots and maintaining foot trails to the water's edge. Additional interdunal roads would be built through fresh water wetlands

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under Plan F. Based on past experience, it would be difficult to keep users from going off trail to avoid passing through standing water or to allow oncoming traffic to pass (even if periodic turnouts are provided). Building the road high to keep dry and wide enough to accommodate traffic would mean the building of a large culvert trail through the wetlands.

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137707

**Organization Type:** Conservation/Preservation

**Representative Quote:** NPS should increase pedestrian parking on Bodie, Hatteras, and Ocracoke islands, either by expanding existing parking at lots that are often full (such as the Ocracoke Day Use Area), or constructing new parking facilities in appropriate locations.

- The NPS should construct new dune walkovers for pedestrians, Such an approach would allow lower impact pedestrian access to more easily occur at the Seashore, and remove pedestrians from ORV travel areas, reducing the chance of conflicts or safety problems.

- The NPS should provide one or more pedestrian trails from the new interdune road between ramp 45 and 49 to allow pedestrians to walk from the ORV trail to beach locations.

**Response:** Within modified alternative F, there would be additional parking lots built with pedestrian access throughout the Seashore, including 0.5 mile south of Coquina Beach; near Ramp 4; 1.0 mile south of Ramp 23; 1.5 miles south of Ramp 23; adjacent to soundside ramps 48, 52, 59 and 60; site of former Buxton Coast Guard Station; Loran Road; along the interdunal road between ramps 45 and 49; and on Ocracoke Island near Barrow Pit Road. All new construction of parking or walkovers would use environmentally appropriate design standards to minimize stormwater runoff and other resource impacts, including avoiding impacts to wetlands. Therefore, the Seashore's preferred alternative provides a wider range of vehicle-free and pedestrian parking areas with access to both the oceanside and soundside to accommodate a variety of desired visitor uses. For an in-depth response to total number of vehicle-free miles included under a revised alternative F, please see the NPS response to Concern ID 24037. Page 40 of the DEIS indicates that, pursuant to the Antideficiency Act, the plan must be able to be implemented through expected funding sources. NPS has included the access improvements as an integral part of each of the action alternatives and not as an optional mitigation that may or may not occur. Therefore, the economic impact analysis in Chapter 4 of the DEIS is correct.

The DEIS did not include a quantitative analysis on how planned construction projects would be accommodated in the annual budget because they would be completed from a separate funding source, as discussed under Concern ID 24253. NPS expects that it would be able to implement the preferred alternative including funds for construction.

**Concern ID: 24117**

**Concern Statement:** One commenter requested that night parking be provided at the end of access ramps on the beach side of the dunes, as well as in certain areas along the sand road that is behind the dunes at Cape Point and the spits.

**Representative Quotes:**

**Corr. ID:** 14226

**Organization:** Outer Banks Anglers Club

**Comment ID:** 137859

**Organization Type:** Unaffiliated Individual

**Representative Quote:** During the periods when night time driving on the beach is prohibited, the DEIS should include provisions for night time parking near the beach at the end of the access ramps on the beach side of the dunes. Night time parking should also be allowed in certain areas along the sand roads that run behind the dunes at Cape Point and at the spits. Parking near the beach at the end of the access ramps has no negative impact on resource protection, but would greatly enhance user experience and reduce a burdensome walking requirement.

**Response:** Night parking and pedestrian beach access will be allowed at the roadside parking areas identified on the maps for modified alternative F. Allowing vehicles to park overnight on interdunal roads or ORV ramps immediately adjacent to resource sensitive locations would be difficult to patrol and enforce, and could place an unrealistic expectation on visitors in such locations to strictly comply with the applicable resource protection restrictions. The NPS does not have the resources to patrol the entire park at night to enforce compliance, and placing more park vehicles on ORV routes adjacent to the beach at night would potentially result in additional compliance problems that would cause the same adverse impacts as other non-essential ORVs.

***AL1155 - Alternative Elements: Ramps and Interdunal Roads*****Concern ID: 24120**

Concern Statement: Commenters requested an increase in interdunal roads, ramps, and access points at the Seashore. They specifically requested that any new ramps be at least two lanes wide to allow sufficient room to prevent vehicles from getting stuck and that new ramp construction occur before beach closures to allow access around them. Specific suggestions were offered for soundside access ramps at Bodie Island, as well as new ramps between Ramps 23-34 and Ramps 45-49. Commenters also expressed concerns with information in the DEIS related to adding new ramps at the Seashore. Among these were the cost of the projects, the impact to shorebird habitat with the construction of new ramps, opening up or including ramps that have previously been noted as unsafe or currently not user friendly, the closure of Ramp 1 (which commenters felt should be open to Coquina Beach), and how Ramp 4 should be relocated, if necessary.

Commenters questioned the location of proposed interdunal roads. One commenter noted opposition to the proposed interdunal road at North Ocracoke as it would not leave one inlet spit in a wilderness setting, while another stated that the interdunal road on Hatteras Inlet was too long for pedestrians to walk.

Commenters expressed concern about plans to close Ramp 23 to ORVs year round. Commenters felt that the distance to walk from this ramp to the ocean was too great, and that this closure, in combination of the proposed "floating" zone during non-breeding season could effectively close this area off.

***Representative Quotes:*****Corr. ID:** 3868**Organization:** *Not Specified***Comment ID:** 131361**Organization Type:** Unaffiliated Individual

**Representative Quote:** 9) Ramp 1 is closed. It should be opened to Coquina Beach 10) New inter-dunal road to the Bait Pond on Bodie Island. Should be open to ORV's.

**Corr. ID:** 11621**Organization:** *Not Specified***Comment ID:** 135622**Organization Type:** Unaffiliated Individual

**Representative Quote:** In Part I of the Executive summary, ramps are discussed. Adding ramps to increase access around closures is an excellent idea but there must be a time frame that guarantees these be built BEFORE so many of these closures go into effect. Otherwise we will have no way to access the parts of the beach that are open. This has happened in the past. It is unfair to count beaches as open if access to these areas is blocked to Orv's and pedestrians on both sides.

**Corr. ID:** 12002**Organization:** *Not Specified***Comment ID:** 134205**Organization Type:** Unaffiliated Individual

**Representative Quote:** Map 5 of 7, page 179 of the DEIS shows that for Alternative F you have proposed an intradune road to Hatteras Inlet. It is not clear how accurate the mapping is, but the distance to the Inlet from the Parking area scales as 1 mile. This is an unacceptably long distance for Pedestrians, especially children, to walk in hot weather when carrying fishing gear. Any alternatives that show a parking area and pedestrian access to the beaches should minimize walking distance. For ORV's the pedestrian access can be very close, unlike those for paved areas.

**Corr. ID:** 12672**Organization:** *Not Specified***Comment ID:** 140392**Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 61. - Disagree with the relocation of Ramp 2 to 0.5 miles south of Coquina Beach as financially irresponsible. The money can be better spent to enlarge the parking lot and provide pedestrian and handicapped accessible ramps to the beach at Ramp 1 since it will be closed to ORV use to increase the "Pedestrian Only" area.

**Corr. ID:** 13030**Organization:** *Not Specified***Comment ID:** 140459**Organization Type:** Unaffiliated Individual

**Representative Quote:** Another point involving the ramps- the existing ramps should also be upgraded and/or improved for the sake of visitor safety. Each ramp should be two lanes and have should also have a separate corridor

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for pedestrian access. At some of the ramp pedestrians walking on the ORV are difficult to spot. Ramp 38 comes to mind, it is steep and you must carry forward momentum in order to avoid getting stuck. It is difficult to spot pedestrians or other trucks until you crest the top of the ramp. Improving safety at the access points should be an essential mandate for the NPS going forward.

**Corr. ID:** 13030      **Organization:** *Not Specified*

**Comment ID:** 140457      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Which ever plan the NPS chooses to implement, I would recommend that the addition of new ramps be made a priority. I would recommend several new ramps between Ramps 23-34 and Ramps 45-49. Adding ramps would help keep more of the beach open especially as many ramps have been closed due to nesting activity in close proximity to the ramp. There may be miles of open beach beyond the ramp that would be accessible if more ramps were installed.

**Corr. ID:** 13400      **Organization:** *Not Specified*

**Comment ID:** 141301      **Organization Type:** Unaffiliated Individual

**Representative Quote:** -Increase the amount of interdunal access points and roads.  
-Increase the amount of access ramps so the areas that are closed for resource protection can be bypassed.  
-Increase/create bypass routes behind the dunes for safety closures and resource closures especially in proposed SMA.

**Corr. ID:** 13546      **Organization:** *Not Specified*

**Comment ID:** 139092      **Organization Type:** Unaffiliated Individual

**Representative Quote:** One of the changes I found in the plan that didn't seem to make sense was the development of the Ramp 23 parking facilities and walk-over access to the shoreline. The distance from the highway to the water's edge is far too great for most people to walk on hot summer days yet alone tote their family and all their belongings. We feel that a development like this could make more sense and as well be more economical to make a better impact if it were located at a new or existing ramp that was closer to the water. A good example of a distance that works would be the allover day use area to the water's edge. If you are to develop a facility such as the one outlined in the plan, we feel the cost would be justified if you position it further south of Ramp 23, where the parking lot would be more close to the water and more people would use the facility.

**Corr. ID:** 14588      **Organization:** *Not Specified*

**Comment ID:** 139225      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I strongly oppose creating new interdunal roads to access North Ocracoke Spit. There is more to pedestrian access than just vehicle free areas. During the reg/neg the committee discussed extensively on a way to keep one inlet spit of the three NPS inlet spits in a wilderness setting. North Ocracoke was the spit that would be easiest to keep in a primitive wilderness manner. The idea was to make North Ocracoke Spit a primitive Wilderness area that would only be accessible by foot. Adding a new interdunal road would defeat that purpose. Ramp 59 would be the logical place to stop ORV traffic. Visitors could walk from there to the inlet or a pedestrian trail could be established from a parking lot at the ferry terminal on North Ocracoke and gain access to the inlet by that route. There are not many places in the Seashore to accomplish this and North Ocracoke was agreed during meetings by park managers as the best place to have a primitive wilderness inlet spit if that experience were desirable in the Park. It would be better to let visitors use vehicles to get to either Hatteras Spit or North Ocracoke spit and makes the other Spit a wilderness area than to create interdunal roads where none existed so visitors can drive to some of the last areas in the Park that could be a wilderness area. Creating interdunal roads where none existed so visitors can drive to some of the last areas in the Park that could be a wilderness area violates the No-impairment standard of the Organic Act. With new access roads to both Hatteras and North Ocracoke spits very little walking will be involved to fish these spits, vehicles will be in close proximity to the fishing areas this would result in negligible to minor impacts to ORV users.

**Corr. ID:** 14888      **Organization:** NCBBA

**Comment ID:** 136464      **Organization Type:** Recreational Groups

**Representative Quote:** Ramp #4 if relocated (table 7) due to the construction of the new Oregon Inlet Bridge should be moved minimally in a northerly direction. Those familiar with the past dynamics of this oceanfront can assist NPS in there choice of locations. This location is critical since a move that is too far to the North will in affect

close all beaches south of the campground. Dune configuration coupled with typical winter erosion in this area often closes the accessibility of the beach between Ramp #2 and Ramp #4.

Ramp #23 thru # 34 including new Ramp #32.5 should be ORV accessible year round with the possible exception of a 1.5 mile floating non-ORV area for breeding shorebirds that may be closed if the birds chose to use this area.

Ramp #43 thru Frisco east village line should be ORV accessible year round. There shall be a 1.5 mile floating, non-ORV area for breeding shorebirds that may be closed if the birds chose to use this area. Should any of this area be closed for nesting birds or turtle nests, every effort shall be made to provide pass thrus and corridors for the safe passage of visitors, both ORV and pedestrian.

Frisco & Hatteras Village Beaches shall be ORV routes Sept 16 to May 14 and non-ORV areas May 15 to Sept 15. These dates are the same as those recommended by NPS for the villages of Avon, Rodanthe, Waves and Salvo. These dates that we recommend are consistent with historical closure dates and all villages need to be the same as Avon and the tri-villages. Visitors deserve consistency and closure dates should not be controlled by a minority of property owners in the Frisco/Hatteras area.

Ramp #55 to the soundside of Hatteras Inlet should be an ORV area open year round except for safety closures and/or necessary closures as dictated by ESA. Interdunal roads and crossovers should remain in place and be maintained.

**Corr. ID:** 15063                   **Organization:** Rodanthe-Waves-Salvo Civic Association

**Comment ID:** 138971           **Organization Type:** Civic Groups

**Representative Quote:** Ramp 23 under Alternative F

Under Alternative F, the National Park Service's preferred alternative, seashore beaches accessed at Ramp 23 could be closed year-round to drivers and limited for walkers. For the villages of Rodanthe, Waves and Salvo, such closures would be an economic hardship and deprive villagers of traditional access. During the years the beach management plan is in effect, Ramp 23 will at one time or another be closed for nesting colonial waterbirds.

Under Alternative F, a "floating" 1.5 miles of ocean shoreline between Ramps 23 and 34 (Avon) is to be set aside during non-breeding season, July through May. If established at Ramp 23, that floating zone could effectively close access to the beach in this area of the seashore year-round. Such a scenario is unacceptable.

**Corr. ID:** 15064                   **Organization:** *Not Specified*

**Comment ID:** 140520           **Organization Type:** Unaffiliated Individual

**Representative Quote:** Why does Alternative F continue to ignore the longstanding need for a soundside access ramp on Bodie Island? (p. 263)

**Corr. ID:** 15073                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137706           **Organization Type:** Conservation/Preservation

**Representative Quote:** While we support the relocation of Ramp 2 south of Coquina Beach, we object to the construction of new ORV ramps at 32.5, 62, and 64. The establishment of new ramps will create extremely high disturbance areas, increased off-road vehicle impacts and increased human disturbance impacts resulting from off-road vehicle use at sites where habitats are suitable and where shorebirds and waterbirds can and have nested in previous years. The new ramps will only further reduce the habitat available for shorebirds and waterbirds, and further jeopardize these species. We strongly oppose the establishment of new off-road vehicle ramps as they will have localized major adverse impacts to protected species and habitats. In addition, given the vandalism problems that have occurred between Avon and Salvo, we are concerned that additional ramps could increase the chance of illegal activity.

Rather than building new ramps for ORV use, we support measures that would increase pedestrian access. First, the NPS should clarify the issue of whether there will be increased parking spaces under alternative D, and support increased parking spaces to facilitate pedestrian access to the Seashore. The summary notes that "[n]o new or expanding parking areas would be provided under alternative D." DEIS at 77. However, in Table 8, the DEIS states that under alternative D, parking areas for non-ORV access would be the "same" as alternative C, and then

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references Table 7. DEIS at III. In turn, Table 7 provides for new parking, but it is mainly in alternative E or F, not C. DEIS at 97-101. Thus, it is still unclear, even after looking at Tables 7 and 8, what increased parking will be provided.

**Corr. ID:** 15169

**Organization:** *Not Specified*

**Comment ID:** 139756

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Also, new ramps – from installing the new ramps, page 100. Ramps 62 to 64, are open to ORVs. This area has been a safety closure my entire life. Now, we're closing down areas that are safe to open up areas that have been considered unsafe for the past 30 years or more. Yes, we do need these other areas open, if they're going to close them down, but why should we close down safe areas and open up unsafe areas?

**Response:** As presented in Table 8, page 107 of the DEIS, all new ramps would be two lanes wide with separate pedestrian walkovers provided so that pedestrians do not need to utilize the same access points as ORVs. After review of public comment, alternative F has been modified to change the location of some ramps to change where designated routes and vehicle free areas are located. From north to south the following changes were made: ramps 1 and 2 on Bodie Island would no longer be considered "ORV ramps" as this area would be vehicle-free year round, with a new ramp added at mile 2.5 to allow access to the ORV route that would be south of the ramp. Concerns about the walking distance at ramp 23 have been addressed as the area north of the ramp, in front of Salvo and Waves, would be changed to a seasonal (November 1 to March 31) ORV route. The area 1.5 miles south of Ramp 23 would be vehicle free year round with a new pedestrian parking area and a new ORV ramp at the south end of that area. News ramp would still be added at ramp 32.5 and 47.5, while the ramp at 45 would be vehicle free and used as a foot trail to the beach and parking would be allowed in pullouts along the interdunal road between ramps 45 and 49. This would allow for access to the portions of Cape Point and South Beach that are vehicle-free year round by providing parking areas that are a walkable distance to the beach. Ramp 59 would be relocated to mile 59.5. A new ramp would be added at mile 63, rather than at 64, as this area would be vehicle-free year-round. The addition to new ramps was made in areas that are year-round or seasonally open to ORV use to allow more access points and also to allow ORV users to navigate around resources closures, when present. Although no timeframe would have been set for construction, when the projects are funded construction would likely occur before the next breeding season as requested because such activities could not be conducted during breeding season to minimize impacts to the species. Additional soundside access points were not added as the NPS feels these are adequate representations of the existing soundside access throughout the Seashore.

The construction of new ramps would not result in major adverse impacts to protected species and habitats, as construction activities would be short-term and would not occur during critical periods of reproduction nor would it result in direct mortality or loss of habitat. Safety closures would continue to be implemented when an event exhibits a threat of significant bodily injury to death or ORV users.

How funding would be obtained for construction projects is further described under the response to Concern ID 24253. Ramp 4 would be relocated, if needed, as part of the NCDOT Bonner Bridge project. The interdunal road in North Ocracoke and floating closures throughout the Seashore have been eliminated from the revised alternative F, which is further discussed under the response to Concern ID 24197. For a discussion on compliance with the Organic Act, please see the responses to Concern ID 24281 and 24167.

### ***AL1165 - Alternative Elements: Camping (SCV, Park and Stay included)***

#### **Concern ID: 24124**

**Concern Statement:** Commenters stated that limitations on beach fires were overly restrictive, and would have the effect of limiting beach fires to the areas in front of certain homes. They were also concerned that details regarding the availability of for beach fire permits were not provided. Commenters suggested alterations to beach fire regulations under the preferred alternative including adopting the beach fire restriction under alternative A, while others requested the beach fire restrictions under alternative C.

**Representative Quotes:****Corr. ID:** 13118**Organization:** *Not Specified***Comment ID:** 140362**Organization Type:** Unaffiliated Individual

**Representative Quote:** However, under Alternative F, campfires would be allowed during the turtle nesting season from May 1 - Nov. 15 ONLY in front of the Hatteras Island villages, Coquina Beach, and the Ocracoke Day Use Area. A non-fee education permit would be required year-round for a beach fire.

This restriction has the practical effect of limiting beach fires to only those who rent the first row of expensive oceanfront homes on Hatteras Island.

At Coquina Beach and at the Ocracoke Day Use Area, I guess you could carry all your firewood over the dunes and down to the beach. But on Hatteras Island, if you could build fires only in the villages, the Park Service would be putting them off limits to all but oceanfront owners or renters. There are few, if any, areas for people to park and even carry their wood to the beach in the villages.

**Corr. ID:** 15051**Organization:** *Not Specified***Comment ID:** 138200**Organization Type:** Unaffiliated Individual

**Representative Quote:** Beach fires are a concern. While I believe it might be best to simply ban them, if they are allowed, the permit is good. Again there is an important education element that is introduced with the permit. However, I would suggest that alternative D be changed to be the "same as C" rather than "same as A. "

**Corr. ID:** 15063**Organization:** Rodanthe-Waves-Salvo Civic Association**Comment ID:** 138996**Organization Type:** Civic Groups

**Representative Quote:** Under Alternative F, only those with strong backs to haul wood and with oceanfront access will be able to enjoy a nighttime beach fire. Nighttime beach fires are further limited by the statement's call for a free permit for every event. Permit availability is not spelled out.

**Response:** After considering public comments received regarding beach fires, the NPS has modified alternative F to allow for beach fires throughout the Seashore from November 16 through April 30, until 10 pm. This would allow users to have beach fires anywhere in the Seashore, outside of the turtle nesting season. As noted under alternative F, a free permit, essentially an informational brochure, would be required for this use. From May 1 to November 15 (turtle nesting season), beach fires would not be allowed from 10:00 pm to 6:00 am, and would be limited to within the village beaches and developed day use areas (Coquina Beach, Rodanthe, Waves, Salvo, Avon, Buxton, Lighthouse Beach, Frisco, Frisco Day Use Area, Hatteras Village, and Ocracoke Day Use Area) so as not to disturb turtle nesting activities at other locations. From May 1 to November 15, the limitation of fires to certain developed areas of the Seashore would limit and reduce the potential disturbance of nesting turtles and emerging hatchlings.

**Concern ID: 24125**

**Concern Statement:** Commenters requested that some type of accommodations for overnight camping on the beach be included in the preferred alternative, including a park-and-stay option. One commenter expressed concerns that existing camping areas did not have enough non-ORV areas adjacent to them.

**Representative Quotes:****Corr. ID:** 10**Organization:** *Not Specified***Comment ID:** 126152**Organization Type:** Unaffiliated Individual

**Representative Quote:** If there is no way to allow night traffic, then camping overnight at the popular fishing spots should be permitted.

**Corr. ID:** 13279**Organization:** *Not Specified***Comment ID:** 140635**Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 112: IN option F why is camping in the campgrounds limited to SCV?

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**Corr. ID:** 13400      **Organization:** *Not Specified*  
**Comment ID:** 139932      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The park and stay option is another idea that could be implemented at CAHA. This would allow night time use, while mitigating potential impacts.

**Corr. ID:** 13400      **Organization:** *Not Specified*  
**Comment ID:** 139940      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Referring to the points and spits, the high value of recreational usage should remain open to nighttime ORV use as a pass thru or a park and stay option with no lantern use, mandating red tape over the headlights, and a suggestion to use as little light as possible.

**Response:** Under 36 CFR 2.10, camping is permitted only in campgrounds designated by the Superintendent. The Superintendent's Compendium prohibits camping on park beaches. During the time of the year when night driving on seashore beaches is not prohibited, parking along designated ORV routes is permitted at night when all occupants of the vehicle are actively engaged in fishing or passive recreation such as stargazing. For an in-depth response to suggestions or concerns surrounding night driving restrictions, please see the response to Concern ID 24089. In order to provide the appropriate level of resource protection during the turtle nesting season, ORVs would not be permitted on the Seashore beaches during nighttime hours, even if ORVs were to remain in place with lights off in a park and stay capacity, as human disturbance may impact nesting sea turtles. Although this concept was proposed in the DEIS under alternative E, the potential impacts and operational and compliance concerns were determined to be too great to include in the preferred alternative. Allowing vehicles to remain parked on the beach during the breeding season in resource sensitive locations for the duration of the night would be difficult to patrol and enforce, and could place an unrealistic expectation on visitors parked in such locations to strictly comply with the night driving restrictions. The NPS does not have the resources to patrol the entire park at night to enforce compliance, and placing more park vehicles on the beach at night would potentially result in additional compliance problems that would cause the same adverse impacts as other non-essential ORVs.

***AL1170 - Alternative Elements: Adaptive Management/Periodic Review***

**Concern ID: 24126**

**Concern Statement:** Commenters stated that five years was too long to wait between periodic reviews because of the dynamic nature of the Seashore. Commenters suggested that periodic reviews occur every one, two, or three years.

***Representative Quotes:***

**Corr. ID:** 10625      **Organization:** *Not Specified*  
**Comment ID:** 136524      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Any final plan must allow a review period with provisions for flexibly adjusting access and closure sizes every two years. This review period is due to the dynamically changing nature of CAHA. As the beach structure changes, areas that were once closed should be promptly re-opened.

**Corr. ID:** 13352      **Organization:** NCBBA, OBPA, CHAC  
**Comment ID:** 135553      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The 5 year periodic review is inadequate. The shore of Cape Hatteras changes far too quickly for breeding areas and ORV routes to be reviewed only once every five years. An annual review would be the minimum time for review of the plan.

**Corr. ID:** 13777      **Organization:** American Sportfishing Association  
**Comment ID:** 139846      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Opportunities to implement less restrictive closures as a result of the above initiatives should be considered more frequently than the 5-year periodic review process identified in the DEIS.



**Corr. ID:** 14223      **Organization:** *Not Specified*

**Comment ID:** 137911      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I further argue that the NPS should aggressively pursue the Adaptive Management Initiative identified on p. 124 of DEIS to improve both resource management and visitor access. The success of these adaptive management initiatives should be evaluated more frequently than the 5 year periodic review process identified in the DEIS to allow for less restricted access if resource protection improves, i.e. evaluated yearly (alt F). The proposed NPS closure policies will have little impact on chick survival.

**Corr. ID:** 14408      **Organization:** *Not Specified*

**Comment ID:** 140837      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Due to the dynamic nature of the seashore this is too long to go between reviews. For example in the last 2 years Hatteras Inlet has suffered extensive erosion to the benefit of Ocracoke. The NPS should evaluate the conditions of the final plan every 3 years at a minimum.

**Response:** Determination of species population trends at the Seashore requires collecting and analyzing data over several seasons under a consistent management strategy. NPS believes that five years is an appropriate time for data collection and analysis before considering changes to protected species and access management.

**Concern ID: 24127**

**Concern Statement:** Commenters asked specific questions on how the period review process would work.

Suggestions for new language in the section were offered. Questions included:

- What constitutes a "major hurricane"?
- Language should be clarified that protection measures could both be increased and decreased.
- Would the periodic review process include public review?
- How will carrying capacity be addressed in periodic review?
- At what point during review are efforts determined to be a success?
- When "more flexible management of recreational use" would be implemented and a specific definition?

Commenters also stated that buffer distances should not be decreased until defined desired future conditions have been met.

**Representative Quotes:**

**Corr. ID:** 15074      **Organization:** Southern Environmental Law Center

**Comment ID:** 137787      **Organization Type:** Conservation/Preservation

**Representative Quote:** Second, the DEIS fails to disclose what "more flexible management" means in terms of specific management changes that will be implemented, nor does the DEIS provide an analysis of the direct and indirect impacts and cumulative effects of such management changes. For example, one proposal that is popular with some local ORV interests is ORV corridors, even if unfledged chicks are present. Such a management measure, however, is inconsistent with the piping plover revised recovery plan and would pose a high risk of take of a threatened species (Hecht, 2009). Under NEPA, there should be a full disclosure of the NPS proposed action, and what the effects of this provision would be.

Third, we are very concerned that the NPS has selected short or long-term targets that are too low for shorebirds and colonial waterbirds. As a result, these low targets could allow a premature weakening of management measures before there has been species recovery at the Seashore.

**Corr. ID:** 15074      **Organization:** Southern Environmental Law Center

**Comment ID:** 137786      **Organization Type:** Conservation/Preservation

**Representative Quote:** We agree with the general concept of having a desired future conditions analysis, as it provides a standard against which management efforts can be reviewed. However, we have serious concerns about the adequacy of specific provisions of the desired future conditions analysis in the DEIS.

First, it is unclear how the short-term and long-term goals interact and how these goals relate to modification of management measures. The DEIS notes that when desired future conditions for resources "are met or exceeded, it may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively

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managed and wildlife populations remain stable." DEIS at 7. Will "more flexible management" be implemented after the short-term goal is met, or only after the long-term goal is met? If flexible management is implemented after the short-term goal is met, it would conflict with meeting the long-term goal, because as noted in the DEIS, such flexibility is allowed provided the wildlife populations "remain stable."

**Corr. ID:** 867                      **Organization:** Fishing Fleet  
**Comment ID:** 132552            **Organization Type:** Unaffiliated Individual

**Representative Quote:** At what point (number of birds) do or would you say that your efforts could be called a success? Then what amendments would you add to open or loosen the restrictions of regulation to a successful co-habitation.

**Corr. ID:** 13068                    **Organization:** *Not Specified*  
**Comment ID:** 132414            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Pg. 108: Regarding carrying capacity requirements and periodic review. Will the density of cars (number per mile) only be reviewed, or will the method of figuring carrying capacity by density (as opposed to imposing an actual limit on total vehicles) be reviewed? And what will be the endpoints of the review (i.e., disturbance, population trends, habitat characteristics)?

**Corr. ID:** 14968                    **Organization:** *Not Specified*  
**Comment ID:** 137329            **Organization Type:** Unaffiliated Individual

**Representative Quote:** "Periodic Review Alternative F  
Every 5 years NPS would conduct a systematic review of the ORV management measures that are identified in this plan as being subject to Periodic Review. This could result in changes to those management actions in order to improve effectiveness.-

The above does not describe the process by which changes would be made . Would changes be made by the superintendent alone or thru a public process where the public could participate?

**Corr. ID:** 15074                    **Organization:** Southern Environmental Law Center  
**Comment ID:** 137789            **Organization Type:** Conservation/Preservation

**Representative Quote:** The DEIS provides for a process to periodically review and revise management measures. We support this concept, as the NPS would be able to more accurately tailor management measures to dynamic habitat conditions. However, to more effectively implement the review process, the NPS should modify the language as follows (additions underlined, deletions struck out):

"A systematic review of data, annual reports, and other information would be conducted by NPS every 5 years, after a ~~major~~ hurricane, tropical storms, or extra-tropical storms that significantly modify habitat quality or quantity ,or if necessitated by a significant change in protected species status (e.g., listing or de-listing), in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives and desired future conditions (see chapter 1 of this document). Periodic review could result in changes to the management actions in order to improve effectiveness. When the long term desired future conditions for resources are met or exceeded, periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remain stable. Where progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may provide for additional management including increased appropriate ~~appropriate~~ restrictions on recreational use. Components subject to periodic review vary among the action alternatives."

**Corr. ID:** 15074                    **Organization:** Southern Environmental Law Center  
**Comment ID:** 137765            **Organization Type:** Conservation/Preservation

**Representative Quote:** Once adequately defined desired future condition targets have been met, so that breeding shorebird and colonial waterbird populations have recovered, at that time, we would be open to considering more flexibility regarding pedestrian buffer distances. However, until populations have recovered at the Seashore, we strongly oppose decreasing protective buffer distances, due to the known adverse impacts discussed in this letter and in the DEIS.

**Corr. ID:** 15074      **Organization:** Southern Environmental Law Center

**Comment ID:** 137790      **Organization Type:** Conservation/Preservation

**Representative Quote:** DEIS at 74. The reasons for these changes are as follows. First, "major hurricane" is not defined in the glossary, so it is unclear what this term means. Moreover, storm events other than a major hurricane - such as a slow moving category 1 hurricane, a stalled tropical storm that stayed a short distance off the coast for a period of time - or an extra-tropical storm ("nor'easter") could result in extensive habitat modifications that should trigger a re-examination of SMAs.

Second, we are not opposed to "more flexible" management of recreational activity if the properly defined desired future conditions are met. However, the desired future condition numbers are set at an inaccurate, low number, resulting in a premature weakening of protection before recovery has been achieved. In addition, reduction of protective management measures should be allowed only after the long term goal has been met; allowing reduced protection prior to the long term goal being met could result in only the short term goal being achieved, or delayed efforts to achieve the long term goal. Finally, as the DEIS makes clear that management can be reduced, the language also should be clear that management protections can be increased if existing measures are not successful.

**Response:** The "Desired Future Conditions" for protected species (p. 7 DEIS) represent the condition of these species once management goals have been achieved. When desired future conditions for resources are met or exceeded, it may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remain stable. Details of any proposed changes to recreational access would depend on analysis of the data and a study of the particular management elements that resulted in the achievement of the desired condition.

More flexible management of recreational use would be considered after the long term goals are met. If they are met more quickly than the time projected, then more flexibility would be considered then (i.e. if 20 years are projected for the long term goal, but the goal is met in 10 years, then more flexibility would be considered after 10 years).

Management actions that could be considered as more flexible management would be defined for each species depending on information available at that time.

Specific details of the periodic review process have not yet been formulated. The NPS will outline a process to conduct periodic review once this planning process has been completed and an alternative has been selected for implementation. For clarification purposes, the language on p. 74, and p. 126 of the DEIS has been revised in the FEIS as follows:

A systematic review of data, annual reports, and other information would be conducted by NPS every 5 years, after storms or events that Seashore management determines to be a major modification of habitat quantity or quality, or if necessitated by a significant change in protected species status (e.g., listing or de-listing), in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives. Periodic review could result in changes to the management actions in order to improve effectiveness. When desired future conditions for resources are met or exceeded, periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remain stable. Where progress is not being made towards goals, periodic review and adaptive management may provide for increased restrictions on recreational use.

All references to "major hurricane" or what storm events would trigger periodic review have been updated to reflect this revision.

Where progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may provide for additional management including increased restrictions on recreational use.

**Concern ID: 24128**

**Concern Statement:** Commenters suggested that adaptive management be a prime component of the plan, specifically calling for use of a species-habitat model and buffer-size studies.

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**Representative Quotes:****Corr. ID:** 12142**Organization:** Audubon**Comment ID:** 131968**Organization Type:** Unaffiliated Individual

**Representative Quote:** I want decreased OVR use and OVR FREE zones with a plan for recovery of wildlife and birds as well as zones for breeding, wintering and migrating wildlife with increased buffer zones for protection. Also include follow-up studies to increase the buffer areas as necessary to protect the wildlife recovery and establishment.

**Corr. ID:** 14002**Organization:** U.S. Fish and Wildlife Service**Comment ID:** 139449**Organization Type:** Federal Government

**Representative Quote:** Our March 27, 2009, recommendations also emphasized the importance of modeling to the effective application of adaptive management. While the DEIS describes a number of research questions that the NPS would like to pursue as the ORV Management Plan is implemented, it does not articulate a desire on the part of NPS to develop and use species-habitat models as tools to inform management. As we have previously stated, models are important tools and essential components of an adaptive management framework. They would enable you to make better predictions about the effects of management actions relative to your desired future conditions, and would help focus research and monitoring efforts for maximum effectiveness. We continue to encourage the NPS to commit resources to the development of models for priority species, and we continue to offer our assistance toward that end.

**Corr. ID:** 14674**Organization:** *Not Specified***Comment ID:** 134012**Organization Type:** Unaffiliated Individual

**Representative Quote:** Whatever plan you put into place, there also has to be room for adaptive management, meaning if, in time, the plan is determined to insufficiently protect the natural resources, it must be amended accordingly. If you fail to protect these resources appropriately, you will only be opening yourself up to lawsuits by environmental groups, who would likely have the law on their side.

**Response:** The NPS has identified specific components of an adaptive management strategy in the Species Management Strategies tables in the EIS. These include scientific studies on improving protected species habitat; analyzing resource protection buffers; and evaluating predator management actions. As part of implementation of the plan, NPS would seek staff to develop, coordinate, implement, and manage an ongoing research, species habitat modeling, and adaptive management program related to protected species that use beach and beach-related habitat.

***AL1175 - Alternative Elements: Routes and Areas*****Concern ID: 24222**

**Concern Statement:** Commenters disagreed with differing seasonal closure dates in front of southern villages. They questioned why, with similar visitation levels, Frisco, Hatteras, and Ocracoke villages would be closed longer than the traditional May 15 to September 15 under the preferred alternative.

**Representative Quotes:****Corr. ID:** 3490**Organization:** *Not Specified***Comment ID:** 141196**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the statement made by NPS: Shorter Off-Season ORV access on South-facing Villages (p. xix) I agree that the question needs to be asked: Why are Frisco, Hatteras and Ocracoke Villages closures to ORV access longer than the traditional May 15 to September 15 period, even though seasonal visitor statistics are similar for all villages? (p. 23)

**Corr. ID:** 14976**Organization:** Outer Banks Group**Comment ID:** 137181**Organization Type:** Civic Groups

**Representative Quote:** These comments are specifically directed at pages xiii thru xvii of the DEIS on the topic of different dates for village closures to ORV use on the east facing beaches as opposed to the villages located on the south facing beaches. It also addresses the ORV closure north of Ramp 43.

It is our position that the beaches in front of all villages except Buxton should be the same and the dates closed to ORV use should be May 15 to September 15 as has been the case for many years. Our slide show on the attached CD shows the lack of public use on the village beaches in front of Frisco and east of Ramp 55 in front of Hatteras Village. Some have said these beaches are extensively used in early May and from September 16 to November 30 but the pictures, taken at random times and days, show otherwise.

**Corr. ID:** 15056      **Organization:** *Not Specified*  
**Comment ID:** 138878      **Organization Type:** Unaffiliated Individual

**Representative Quote:** NPS has misrepresented the data supporting shorter ORV season on the south facing beaches on Hatteras Island, at Frisco and Hatteras villages on page 23. The closure to ORV's driving in the front all the villages have traditionally been from May 15 to Sept 15. The statistics are similar at all villages' locations. Ultimately using different dates confuses the public and significantly raises the possibility of a court challenge. Consider all locations in front of the villages from May 15 to September 15 to be ORV free, as have been established for the last 40 years.

**Response:** The NPS revised alternative F to have more consistency in the management of beaches in front of villages, while recognizing that some village beaches may be too narrow to safely accommodate an ORV corridor. Therefore, under modified alternative F, Rodanthe north of the pier and Buxton would be vehicle free year-round, as these are chronically narrow beaches where there is little or no NPS land ownership above the high tide line and therefore no room for an ORV corridor. Seasonal ORV routes would be designated for Rodanthe south of the pier, Waves, Salvo, Avon, Frisco, and Hatteras beaches. These would all be treated similarly and would be open to ORVs from November 1 to March 31, with a minimum beach width criteria that would prompt a safety closure of portions of village beaches not meeting the criteria. This approach would keep ORVs off village beaches during the busiest tourist seasons as well as the prime nesting season for turtles, while allowing off season ORV access for fishing and other beach recreation. If these village beach locations become too narrow in the future, the beach width criteria would be used to guide decisions on beach closures.

**Concern ID: 24223**

**Concern Statement:** Commenters requested that not all high values areas be designated for ORV use and provided criteria and suggestions where they felt pedestrian use areas should be located when designating routes and areas. Some commenters suggested an alternative that designates at least half of the Seashore as "ORV-Free." Other commenters requested that prohibitions on pedestrian access to eight areas of the Seashore (page 121) from March 15 to July 31 be revised to be open to pedestrian use. One commenter suggested that these areas be called "Vehicle-Free" areas.

Commenters stated that certain areas of the Seashore should be open to ORV use as a route or area. These areas include:

Between Ramp 27 and 30 at Hatteras Inlet  
 Ocracoke Inlet  
 1.2 miles northeast of Ramp 70 to 0.5 mile northeast of Ramp 70  
 0.5 mile southwest of Ramp 68 to 1.2 mile northeast of Ramp 70

**Representative Quotes:**

**Corr. ID:** 803      **Organization:** *Not Specified*  
**Comment ID:** 141028      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** C. OCRACOKE ISLAND

Hatteras Inlet (North End of Ocracoke) to Ramp 59

- Pedestrians access only
- Relocate Ramp 59 to MP 64
- Establish 2 hiking trails from enhanced parking area at NC Ferry docks and relocated Ramp 59

Relocated Ramp 59 to North End Turnout

- ORV access

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## North End Turnout Ramp to Ramp 70

- Pedestrians access only
- Move Ramp 70 to Ocracoke Day use area
- Establish Parking areas and handicapped accessible, pedestrian boardwalk and bath room facilities at North End Turnout and at Ramp 70
- Improve parking lot and handicapped accessible, pedestrian boardwalk and tail at old Ramp 67 site

## Ocracoke Day use Area (relocated ramp 70) to southern most point of South Point (Ocracoke Inlet)

- ORV access

## Ocracoke Island, Soundside

- Status quo
- Establish minimum widths on sound side ORV routes and cul-de-sac with sufficient turning width that vegetation is unimpaired

**Corr. ID:** 803**Organization:** *Not Specified***Comment ID:** 141024**Organization Type:** Unaffiliated Individual

**Representative Quote:** It should not be taken as a given that all of the high value areas in CHNS will be ORV routes. Management Policies 2006 outlines rational and attributes for NPS Values. The Organic Act places a high value on the no-impairment standard and includes identified NPS values subject to the no impairment standard as well as resource issues. The Cape Hatteras Enabling Legislation intended this park to be managed for a diverse set of recreational activities as long as those activities do not impair resources or NPS values. ("no development of the project or plan for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing in this area")(2) Physiographic conditions are an identified NPS value. ("physical processes that created the park and continue to act upon it" 1.4.6 Management Policies 2006)(3)

**Corr. ID:** 803**Organization:** *Not Specified***Comment ID:** 141026**Organization Type:** Unaffiliated Individual**Representative Quote:** B. Hatteras Island (suggested pedestrian areas)

Rodanthe, Waves, and Salvo to Ramp 23

- Seasonal pedestrians access only
- Seasonal ORV access
- Dates to be determined by Villages Subcommittee or NPS
- Construct handicapped accessible, pedestrian boardwalk just north of Ramp #23
- Add a new ramp 2 miles south of Ramp 23

## Ramp 23 to new Ramp (2 miles south of Ramp 23)

- Pedestrians access only
  - Construct handicapped accessible, pedestrian boardwalk just south of Ramp 23
- New Ramp (2 miles south of Ramp 23) to Relocated Ramp 34
- (Ramp 34 to be relocated 2 miles north of Avon village line.
  - Construct handicapped accessible, pedestrian boardwalk just south of Ramp 34
  - ORV access

## Relocated Ramp 34 to Avon Village Line

- Pedestrians access only
- Construct handicapped accessible, pedestrian boardwalk at Relocated Ramp 34

## Avon Village north boundary to Avon Village south boundary

- Seasonal pedestrians access only
- Seasonal ORV access
- Dates to be determined by Villages Subcommittee or NPS

Soundside, South end of Salvo to North end of Avon

- Status quo
- Establish minimum widths on sound side ORV routes and cul-de-sac with sufficient turning width that vegetation is unimpaired

Relocated Ramp 38 to New Ramp (located 2 miles south of relocated Ramp 38)

- Relocate ramp 38 to 1 mile north of the Haulover
- Establish new Ramp 2 miles south of Ramp 38
- Pedestrian access only
- Construct handicapped accessible, pedestrian boardwalk at both ramps

New Ramp (2 miles south of relocated Ramp 38) to Buxton north boundary

- ORV access

**Corr. ID:** 803

**Organization:** *Not Specified*

**Comment ID:** 141027

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Suggested pedestrian areas can't

Buxton Village north boundary to Buxton Village south boundary

- Seasonal pedestrians access only
- Buxton Village south boundary starts at north groin at Old Coast Guard Base
- Seasonal ORV access
- Dates to be determined by Villages Subcommittee or NPS
- Establish emergency Ramp at Buxton Village north boundary

South Buxton boundary To Ramp 43

- Pedestrians access only

Ramp 43 to New Ramp 49

- Open to ORVs
- Move Ramp 49 to 500 m east of eastern boundary of NPS Frisco Campground
- Construct a new interdunal road to connect relocated ramp 49 with campground entrance road

Ramp 49 to Ramp 55

- Pedestrians access only
- Construct a parking lot and handicapped accessible pedestrian boardwalk board walks at old ramp 49 site.
- Expand existing parking lot at Ramp #55

Ramp 55 to Hatteras Inlet

- ORV access

Frisco Soundside

- Status quo
- Establish minimum widths on sound side ORV routes and cul-de-sac with sufficient turning width that vegetation is unimpaired

Hatteras Inlet soundside

- Status quo
- Establish minimum widths on sound side ORV routes and cul-de-sac with sufficient turning width that vegetation is unimpaired

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**Corr. ID:** 803                    **Organization:** *Not Specified*  
**Comment ID:** 141025        **Organization Type:** Unaffiliated Individual  
**Representative Quote:** A. Bodie Island

CAHA northern boundary to 2 miles south first NPS ORV ramp designated as Ramp 2  
 - Pedestrians access only  
 - Ramp 1 for emergency ramp only

Ramp 2 south to approximately 200 m north of Oregon inlet campground  
 - ORV access

200 m north of Oregon Inlet campground to 200 m south of Oregon Inlet campground  
 - Seasonally ORV access (Date to coincide with opening and closing of Oregon Inlet campground)  
 - Seasonal pedestrian access only  
 - Construct new Ramp 200 m south of Oregon Inlet campground

New Ramp south of OI campground to southern most point of Bodie Island  
 - ORV access

Soundside Bodie Island  
 -Status Quo  
 - Establish minimum widths on sound side ORV routes and cul-de-sac with sufficient turning width that vegetation is unimpaired

**Corr. ID:** 3880                    **Organization:** *Not Specified*  
**Comment ID:** 133205        **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Cape Hatteras Business Allies recommends that the Park Service reconsider its permanent closure of Hatteras Inlet. We recommend changing the designation to one that will allow access to this area on at least a seasonal basis. The interior used for foraging can be permanently closed for shorebird use. But the soundside & "Rip" areas along the shoreline need to be opened to the public. This should include ORV use, as many visitors & residents cannot walk long distances with a load of fishing/recreating equipment. This usage of Hatteras Inlet has been ongoing for many decades & has not resulted in any major disturbance of wildlife use in the area. In fact, PPL usage of the this area has been non-existent since 2006 (Table 20, pg.199 DEIS)

**Corr. ID:** 6972                    **Organization:** *Not Specified*  
**Comment ID:** 131351        **Organization Type:** Unaffiliated Individual  
**Representative Quote:** - New ramps 32.5 to ramp 38 do NOT AGREE NO CLOSURES NEEDED.  
 - Cape Point DO NOT AGREE to March 15th to September 15th closure. ANY BIRDS NESTING WOULD MOVE TO BETTER PROTECTED AREAS.  
 - 0.2 mile South Ramp 4 to Oregon Inlet Pond. DO NOT AGREE ON CLOSING March 15th to July 31st. Nesting birds will find and nest in inland waters where better protected.

**Corr. ID:** 10625                **Organization:** *Not Specified*  
**Comment ID:** 136503        **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Section 3.1: Lack of ORV Access to Hatteras Inlet spit from Ramp 55 Pole Road. ORV access must be maintained to Hatteras Inlet spit from Ramp 55. ORVs do not damage this area due to it's dynamic tidal nature. Tracks left in the morning are gone during the next tidal cycle. this area and ORV access is essential to maintain the visitor experience on this stretch of beach. Also, prohibiting access to the spit stops recreational fishing access to one of the best fishing spots on the island.

**Corr. ID:** 13197                **Organization:** OBPA  
**Comment ID:** 140509        **Organization Type:** Unaffiliated Individual  
**Representative Quote:** 6) Year Round Closures: Hatteras Inlet, North End Ocracoke Island, Ramp 27-Ramp 30 (Salvo) are set to be closed year round to ORV, I am most familiar with the Hatteras inlet area and this area does not have the characteristics of prime habitat for the plover and the other supposed reason for the closure was the need



for a pedestrian only area. It would not be economically or environmentally feasible to pave "pole road" and create parking lots in a beautiful and natural setting at the Hatteras Inlet. The need for pedestrian only areas is addressed in adjacent 15 miles of beach on Pea Island, which never gets included in the amount of beach for pedestrian only and is also a wildlife refuge.

**Corr. ID:** 14246

**Organization:** *Not Specified*

**Comment ID:** 140347

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Pages 97- 101. I strongly disagree with proposals in this section saying that ORVs will be prohibited year round between ramps 27 and 30, at Hatteras Inlet (Hatteras Spit), Ocracoke Inlet (North Ocracoke Spit) and various other locations. Not allowing ORV access is paramount to denying the public access to these beaches. They are located miles from the nearest parking or paved road area and too far to access on foot. As a matter of course, there has been no breeding of piping plover or other endangered species at the Hatteras Island Inlet (spit) area in the past 6 years.

**Corr. ID:** 14433

**Organization:** *Not Specified*

**Comment ID:** 136734

**Organization Type:** Unaffiliated Individual

**Representative Quote:** ORV access areas should be clearly demarcated, and any areas not clearly set aside for this use should be considered off limits to ORV access. The superintendent should not have discretionary power to increase access beyond this point, nor should these areas change seasonally. Current routes that bisect wetlands should be closed and replaced with footpaths to reduce the damaging effects that unnatural culverts have on the complex hydrodynamics inherent to these environments. Furthermore, the reduction in areas open to ORV traffic should be accompanied with the construction of new gravel parking lots to allow for continued public access (albeit via pedestrian routes). The total length of beach containing ORV access areas also needs to be reduced.

**Corr. ID:** 14483

**Organization:** *Not Specified*

**Comment ID:** 135731

**Organization Type:** Unaffiliated Individual

**Representative Quote:** In my analysis of the NPS preferred plan (Alternative F), the use and experience of non-ORV visitors to the year-round non-ORV areas will not be regarded as beneficial because they include some of the least attractive and cramped areas of beach in the entire seashore. These areas compare most unfavorably to the grand vistas of the expansive stretches that are open to ORV use.

**Corr. ID:** 14588

**Organization:** *Not Specified*

**Comment ID:** 139221

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Many of the proposed pedestrian access beaches are situated very close to highway 12. Vehicle noise from highway 12 can clearly be heard on these beaches. On ORV access beach music from vehicle sound system can impact the soundscape and was not considered in the study. Loud music constitutes a recreational conflict for many visitors. The park's analysis on soundscapes is incomplete.

ORV beaches are inadequate for pedestrian access. A 20-meter wide beach is of insufficient width in front and adjacent to village beaches. These beaches should be a minimum of 35 meters from the toe of the dune to the high tide line. The top half of the beach starting 5 meters from the toe of the dune out to 20 meters should be designated as the ORV route and from 20 meters to the mean high tide (15 meters) should be the pedestrian/recreation corridor of the beach. Most recreation occurs in the section of beach close to the tideline and it would be the most logical place to insure the safety and reduce recreational conflicts between pedestrian and ORVs (On beaches wider than 35 meters it would be better to start the ORV route 10 meters from the toe of the dune and then divide the rest of the beaches with an ORV corridor next to the dune and the recreation corridor next to the tideline. Having a beach closed to ORV access because park managers see congestion as a pedestrian safety issue is problematic as pedestrians and ORV users visit the beach at unscheduled times and it would be difficult to predict when to close the beach because of congestion. Plan F does not sufficiently identify natural physiographic conditions in the Park and or set standards to protect them.

**Corr. ID:** 14588

**Organization:** *Not Specified*

**Comment ID:** 139200

**Organization Type:** Unaffiliated Individual

**Representative Quote:** There should be pedestrian only access areas in locations of low pedestrian use. Assigning ORV routes into areas of low pedestrian use with vehicle capacity set at 1 vehicle for every 20 feet of shoreline will

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severely impact "primitive wilderness". Managing the Park for "primitive wilderness" is an important component of the enabling legislation. If areas of lower visitor use are identified as an attribute of ORV assessable beaches and not pedestrian only access beaches then visitors seeking lower visitor use areas without the presence of vehicle will be denied that experience. The opportunity for maintaining primitive wilderness will be lost. The set carrying capacity of ORV beaches negates primitive wilderness.

**Corr. ID:** 14588      **Organization:** *Not Specified*  
**Comment ID:** 139214      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Visitor use conflict issues do exist. The NPS has received complaints of conflicts involving both safety issues and recreational conflicts dealing specifically with soundscapes, and viewscapes being negatively impacted by ORV routes.

Alternative F has not provided for a diversity of visitors experience. The majority of pedestrian access areas are placed in areas where national park values are lacking. Specifically these areas are in sections of the beach where highway noise is noticeable, the beaches are eroded to the dunes, and village infrastructure is adjacent. There is less area of pedestrian access now than there was in 2002

One would not expect to find incidents of pedestrian being struck by vehicles because there is little pedestrian traffic on ORV beaches. Most pedestrian find high use ORV beaches lacking the aesthetics they should expect in a National Park, feel unsafe or in conflict with vehicle traffic. It is extremely uninviting for visitors to access the beach on foot because:

1. There is no designated ORV or pedestrian corridor on these beaches
2. The beaches could be as narrow as 20 meters, or less in some plans (See photo #5)
3. Vehicles leave some beaches highly rutted making walking difficult (See photo # 5)

**Corr. ID:** 14642      **Organization:** *Not Specified*  
**Comment ID:** 139136      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Call all areas that exclude ORVs" Vehicle-Free Areas" (VFAs). This in part, takes away much of the emotional terror of "closing our beaches", etc.

**Corr. ID:** 14648      **Organization:** *Not Specified*  
**Comment ID:** 141099      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** - I disagree with the prohibition of pedestrian access (as proposed in Alternative "F" p. 121) at the 8 different park locations from March 15 to July 31 each year. These locations have traditionally been available for all to enjoy. The removal of such large tracks of the park limits the overall positive experience that the park has to offer and significantly reduces ones desire to return to the seashore.

**Corr. ID:** 15025      **Organization:** *Not Specified*  
**Comment ID:** 137264      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I respectfully suggest that more than half of the park be reserved for families to enjoy the flora, fauna and marine life safely and without the noise associated with motorized vehicles.

**Corr. ID:** 15058      **Organization:** *Not Specified*  
**Comment ID:** 138164      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I would like to see a positive, full time access route to Cape Point. I appreciate being allowed to spend the night on the point especially during the spring and fall drum runs. The number of vehicles should be 75 vehicles. The benefits to fishing and night sky viewing are immeasurable

**Corr. ID:** 15063      **Organization:** Rodanthe-Waves-Salvo Civic Association  
**Comment ID:** 138984      **Organization Type:** Civic Groups  
**Representative Quote:** In charts ES 2, page xiii, and Table 7, page 97, and a map on page 176, Alternative F describes and shows seasonal closure to beach driving from May 15 to September 15 of the beach between the southern boundary of Salvo to the northern boundary of Rodanthe. The board supports this seasonal closure. The board does not support the seasonal closure of the approximately three tenths of a mile between the southern boundary of Salvo and Ramp 23, as also shown on the above-referenced pages.

**Corr. ID:** 15169

**Organization:** *Not Specified*

**Comment ID:** 139760

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Also, on page 100, a half a mile southwest of ramp 68 to 1.2 miles northeast of ramp 70, has dates of closures from November 1 to -- ORV route from November 1 to March 14. These dates need to be changed. Having these dates totally blocks out our spring and fall fishing seasons. No access in March, or half of March, all of April, May, and September, and October, we're losing when people like to come to the beach to go fishing.

**Response:** The NPS received many specific comments regarding designation of routes and areas along the Seashore, with suggestions from those desiring more vehicle-free areas to support a more natural visitor experience and to provide protection for wildlife and wilderness values, and from those desiring to maintain or expand ORV routes and areas to preserve vehicular access for fishing and beach recreational opportunities. A few commenters stressed achieving a balance or 'fair' distribution, combined with a suggestion for more walkways and better access facilities, to provide balanced access for all visitors. The NPS considered all these views as well as the management plan objectives, the impact analysis, and the purpose and significance of the park, and reexamined alternative F, which had been developed using many of the ideas that came from the same diverse public during the regulatory negotiation process. For the FEIS NPS revised proposed route designations under alternative F to provide a more equitable balance of areas/routes that are year-round vehicle-free areas and year-round ORV routes, with some seasonally accessible areas that are vehicle free 6-7 months of the year and open to ORVs during the remainder of the year. The revised alternative F also simplifies the management approach (fewer seasonal areas, more consistency among the villages, and eliminating changing/floating closures and SMAs), reduces the overall amount of new construction while maintaining adequate beach access, protects sensitive species during non breeding seasons as well as breeding seasons, and accommodates access to the beach for all user groups. The changes made to alternative F are depicted in the FEIS on alternative F maps 1 – 7 and summarized in table 7-1. In general, the main decisions made and the reasoning behind the proposed actions in the revised alternative F are as follows:

Points and spits – North Ocracoke spit, and the southern shoreline portion of Hatteras Inlet spit and North Ocracoke spit were maintained as year-round vehicle free areas to minimize impacts to both breeding and non-breeding shorebirds and to provide vehicle free visitor experience opportunities. Year round ORV access was designated at the east side of Cape Point and South Ocracoke Inlet, but these are subject to resource closures and would not likely be open to ORVs during various times throughout the shorebird breeding season. Bodie Island Spit is designated as a seasonal ORV route that is open to ORV use along the ocean shoreline from September 15 through March 14. See response to Concern ID 24210 for a summary of point and spit designations and the reasoning behind the decisions made in these areas.

Balance between ORV access and vehicle-free mileage- Alternative F as revised in the FEIS proposes more miles of year-round vehicle-free areas –26.4 miles would be vehicle free year-round, 27.9 miles would be designated as year-round ORV routes , and 12.7 miles would be seasonally open to ORVs five to six months of the year. This compares to approximately 16 miles of vehicle-free areas, 23 miles of seasonal ORV routes, and 29 miles of year-round ORV routes under the DEIS alternative F. Additional year-round vehicle-free areas under revised alternative F include the inlet and sound shoreline at Bodie Island Spit, the area between Ramp 23 and MP 24.5, the area between (new) Ramp 32.5 and Ramp 34, the area from just west of Cape Point to MP 47 on South Beach, and Ramp 68 to just south of the Ocracoke Day Use Area. New year-round ORV access was added between new ramp 59.5 and new ramp 63. In addition to balancing the mileage and providing more nonbreeding bird protection and opportunities for pedestrian only experience, this designation eliminates much of the uncertainty and makes the plan more understandable and simpler.

Pedestrian accessibility –Alternative F as modified enhances pedestrian access in several areas, including at Ramp 23 south of Salvo, at MP 26, and along the interdunal road at Cape Point. Numerous small parking areas and associated pedestrian access are proposed to provide access to more places along the beach without having to take a vehicle on the beach to reach desired locations.

Village beaches – Under modified alternative F, Rodanthe north of the pier and Buxton would be vehicle-free year round, while the other village beaches would be managed as seasonal ORV routes that are open to ORV use from

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November 1 to March 31 (5 months), and vehicle free from April 1 to October 31 (7 months) See response to Concern 24222 for a discussion of village beach management under the revised alternative F.

**Reduction in number of new ramps** – Based on concerns to minimize new construction through the dunes, the revised alternative F consolidates several of the previously proposed ramps. Between ramps 23 and 27, there would be a new pedestrian parking area and one new ramp 25.5 with parking area, rather than two new ramps; previously proposed ramp 39 was eliminated since there would be sufficient access at ramp 38 for the stretch of beach open to ORV in that area; previously proposed ramps 47 and 48 along the new interdunal road between ramps 45 and 49 would be replaced with just one ramp between these locations at Cape Point; and on Ocracoke Island ramp 59 would be relocated to just south of the MP 59.5 parking lot and previously proposed ramps 62 and 64 would be replaced with just one ramp closer to MP 63.

**Concern ID: 24226**

**Concern Statement:** Commenters recommended maintaining or improving soundside ORV routes to reduce damage to adjacent wetlands.

**Representative Quotes:**

**Corr. ID:** 732

**Organization:** Coastal Conservation Association

**Comment ID:** 133158

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Trail maintenance would also help to alleviate one of the major concerns of ORV users leaving designated roads to avoid standing water. The majority of standing water problems I have witnessed are the result of ruts and large depressions (sometimes filled over 1 foot deep with water) caused by a lack of trail maintenance. Users simply cannot risk getting stuck in these remote areas of beach trail. The areas I have specifically witnessed are the trails that access Hatteras inlet, and sound-side trails on Ocracoke. I have also seen several ramps, including the popular one leading out to Cape Point, become virtually impassable either due to ruts or soft sand conditions that could have been controlled by NPS if they had a trail maintenance budget.

**Corr. ID:** 15111

**Organization:** NC Division of Water Quality

**Comment ID:** 138020

**Organization Type:** State Government

**Representative Quote:** It was noted that wetland impacts are occurring on the sound side from drivers deviating from designated drive paths. It is recommended that access roads on the sound side should be improved enough to allow reasonable access during high water to help reduce wetland impacts from off road traffic and/or closed until vegetation can reestablish.

**Response:** The preferred alternative, alternative F, provides that protective signage would be installed at all soundside access points to reduce the potential for resource damage from ORV use. Any decision to re-engineer access routes or ramps to change natural drainage must conform with NPS management policies, pertinent environmental regulations, and Seashore access, safety, and environmental concerns. All these are factored into any decisions to change drainage on access routes or ramps. Such factors are routinely documented and made available to pertinent government entities and the public before a decision is made to take action. With respect to soundside access via trails and the soundside land-water interface, NPS must balance, and avoid, minimize, and/or mitigate the potential for adversely affecting the environment and safety concerns before a specific action is taken. When it is determined that access is a public safety concern, access is prohibited until conditions change or improvements can be made.

**Concern ID: 24229**

**Concern Statement:** One commenter suggested that ORV routes be located behind the dunes and away from pedestrian corridors.

**Representative Quotes:**

**Corr. ID:** 3455

**Organization:** *Not Specified*

**Comment ID:** 135102

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the concept that vehicle transport corridors are not always behind dunes. They should be as well as being separated from pedestrian corridors. Corridors from near the Cape Hatteras Lighthouse southwest to Frisco and where there is room, in the False Point area near Hatteras Inlet should suffice.

Corridors such as these make sense because they can be moved inland until there is no more room as sea levels rise.\* \*See USGS Fact Sheet FS-076-00 June, 2000, variable #6.

\*Personal communication from Dr. E. Robert Thieler of the US geological Survey, Woods Hole, MA, regarding the particular vulnerability of sink sedimentary material making up the Albermarle Embayment. April 4, 2010.

**Response:** Routes behind the dunes would be more damaging to the environment because the land behind dunes is not hard, bare beach sand but is instead loose sand with vegetation and other wildlife. Additionally, interdunal roads would not allow access along the length of the coast for the recreational activities that visitors use ORVs to get to. Under alternative F, as modified, certain ORV ramps, such as ramps 2 and 59, would be relocated or replaced with new ramps further down the coast to remove them from vehicle-free areas and provide more ramp access to year-round ORV areas to retain access to the beach in the event of a resource buffer/closure.

**Concern ID: 24230**

**Concern Statement:** One commenter suggested that beaches that are not safe to drive on not be included in the total miles open to ORV use.

**Representative Quotes:**

**Corr. ID:** 2588

**Organization:** CCA NC

**Comment ID:** 132015

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Am also concerned that the maps I view showing beach open to driving are beaches where no one can truly drive. Like most of the beach north of Buxton to Avon. No way anyone could drive on that bad beach. It should be listed as inaccessible by nature and not counted as open beach

**Response:** The NPS took public comments into consideration and modified alternative F to recognize that many of the beaches that traditionally have been safety closures based on beach conditions may not be accessible to ORV use. The revised alternative F designates these areas as vehicle-free year-round, including the very narrow stretch just north of Buxton to MP 39, and between Frisco and Hatteras Village, as well as Rodanthe north of the pier and Buxton village beaches. The area from about MP 59 on Ocracoke to new ramp 63 is proposed to be open to ORV year-round under the revised alternative F. The Seashore staff have noted that there may be times of overwash from storms that render parts of this route inaccessible; however, it is expected that this route would be accessible most of the time, particularly during the summer when beaches tend to widen, and is a reasonable year-round ORV route.

**AL1190 - Alternative Elements: User/Carrying Capacity**

**Concern ID: 24129**

**Concern Statement:** Commenters expressed disagreement with implementing a carrying capacity, stating that it would be difficult to enforce, would create overcrowding in other areas, and that the proposed vehicle limits are arbitrary. Commenters also questioned the methodology of determining carrying capacity for areas of the Seashore. Of concern was why carrying capacity was different for Bodie Island, Ocracoke Island, and Cape Point and why carrying capacity limits are in effect outside of breeding season.

Commenters suggested extending carrying capacity limits to all areas of the Seashore, allowing vehicles to stack more than one deep, implementing limits on pedestrian use, and increasing or decreasing the proposed vehicle limits.

**Representative Quotes:**

**Corr. ID:** 732

**Organization:** Coastal Conservation Association

**Comment ID:** 133157

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I believe that the carrying capacity restrictions are extremely unrealistic, however, especially when it comes to enforcement issues. There are simply too many beach access points, and it would require too many NPS personnel to monitor beach usage. The only place I have seen this work is at the Assateague N.S., but they have only one beach access point.

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- Corr. ID:** 3376      **Organization:** *Not Specified*  
**Comment ID:** 137027      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The carrying capacity limits listed in the table are arbitrary and unnecessary. Carrying capacity would be difficult and expensive to enforce at Cape Hatteras National Seashore. Carrying capacity is actually self regulating in the real world. If users perceive an area to be too crowded, they will move to a less crowded area or they will return during a less crowded time. I recommend that carrying capacity limits not be included in the ORV plan.
- Corr. ID:** 3455      **Organization:** *Not Specified*  
**Comment ID:** 135104      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I disagree with stacking limits one vehicle deep since this does not address carrying capacity relative to weight as this relates to the sinking sedimentary material of the Albemarle Embayment comprising Hatteras beaches with the possible exception of soapstone deposits off Salvo.
- Corr. ID:** 3490      **Organization:** *Not Specified*  
**Comment ID:** 141198      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Why is capacity more restrictive on Bodie Island and Ocracoke than at Cape Point? (p. xxiv). (Bodie Island & Ocracoke -260 vehicles per mile and Cape Point -400 vehicles per mile). This seems to be in conflict with the earlier assessment made by NPS regarding "Carrying Capacity".
- Corr. ID:** 13303      **Organization:** *Not Specified*  
**Comment ID:** 136199      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I question the statement of as per the DEIS: "Carrying capacity would be a 'peak use limit' determined for all areas based on the linear feet of beachfront?" If you close off huge sections of the beach, you force more people into smaller areas, potentially resulting in more resource impairment and diminished visitor experience.
- Corr. ID:** 13807      **Organization:** American Bird Conservancy, Center For Biological Diversity, et al  
**Comment ID:** 137421      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** In administering permits, the Park Service should also sharply reduce its recommended ORV carrying capacity of 260 vehicles/mile allowed in alternative F, which would result in over 13,500 ORVs being able to use the Seashore beaches at certain times of the year, to a level that will better protect resources and reduce pedestrian/ORV conflicts.
- Corr. ID:** 14408      **Organization:** *Not Specified*  
**Comment ID:** 140883      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Based on past breeding history and the closures required by this alternative Bodie Island Spit, Cape Point and South Point would all be closed to access during major summer holidays. Why is it necessary to have carry limits outside of the breeding season.
- Corr. ID:** 14831      **Organization:** *Not Specified*  
**Comment ID:** 137132      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The DEIS presents weak information for determining the carrying capacity of any of the designated ORV use areas. The proposed 20-foot space between vehicles on the ocean beach is a space about as wide as two parking spaces in a paved shopping mall parking lot. The DEIS makes no case for this distance. Allow parking lots at the surf's edge to be real parking lots. If drivers find this too crowded, human nature will take its course. - Reduce the distance between parked vehicles to 10 feet.
- Corr. ID:** 15043      **Organization:** Southern Environmental Law Center  
**Comment ID:** 137453      **Organization Type:** Conservation/Preservation  
**Representative Quote:** The final ORV management plan should reduce the carrying capacity of 260 vehicles/mile allowed in the preferred alternative, which could result in 13,500 ORVs on Seashore beaches, to a level that will better protect natural resources and reduce pedestrian/ORV conflicts.

**Corr. ID:** 15045      **Organization:** United Four Wheel Drive Associations, Inc.

**Comment ID:** 137941      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Alternatives C, E, and F propose the establishment of carrying capacity limits as a "peak use limit" determined for all areas based on the linear feet of beachfront with specified physical space requirements for certain districts within the unit. DEIS at 108. Peak use periods would trigger carrying capacity limitations for vehicles but not for people. However, the Univ. of Idaho study indicated a percentage of respondents felt crowded, though not specifically by vehicle use. Such crowding was presumably felt in non-ORV areas by pedestrian overcrowding, particularly at high-use pedestrian areas. Though this document purports to be an Off-Road Vehicle Management Plan, since the NPS included other types of recreational considerations within the scope of the analysis carrying capacity limits should be analyzed for every area of the sea shore. Furthermore, analysis should be undertaken for the consideration of prohibiting pedestrian use in some ORV areas to minimize conflicts, particularly at ORV access ramps and other travel corridors known to be widely used for traversing from one desirable recreation spot to another.

**Response:** Different Carrying Capacity for Ocracoke Island - Alternative F has been revised to implement a consistent carrying capacity limitation of 260 vehicles per mile for the entire Seashore. Because it would apply to all locations of the Seashore, carrying capacity limits would prevent an excessive number of vehicles in small areas.

Enforcement Issues - The NPS realizes that enforcing carrying capacity year-round at all Seashore locations could be burdensome. However, based on experience, NPS anticipates that carrying capacity limits would only be reached during holiday weekends or on particularly busy summer weekends in the more popular areas. Law enforcement staff currently monitor vehicle use at the Seashore and enforce temporary emergency ORV closures if ORV traffic at ramps or parked on the beach threatens to impede traffic flow. Carrying capacity limits would be enforced in a similar manner, which is already familiar to law enforcement staff

Establishment of ORV Limits - The 260 vehicle per mile limit is based on a physical space requirement of 20-feet per vehicle, which would allow enough space for vehicles to be parked side by side with their doors open without touching each other and with room for a person to pass between them safely. This would improve visitor experience and visitor safety during busy weekends. Carrying capacity limits were not developed as a natural resource management tool and thus adjusting the number of vehicles allowed per mile would not be used to manage natural resource impacts. The NPS already has the authority to install temporary closures if resource damage would occur from visitor use impacts. However, if warranted by an increase in visitor use conflicts, the NPS would consider reducing the carrying capacity limit to fewer than 260 vehicles per mile as part of the periodic review process.

Pedestrian Limitations - The NPS established carrying capacity limitations primarily as a visitor safety mechanism to reduce the potential for vehicle-vehicle and pedestrian-vehicle conflicts that can occur in areas where vehicles and pedestrians coexist. Because the potential for these conflicts does not exist in vehicle-free areas, pedestrian carrying capacity limitations were not necessary for this plan and were not included in the EIS. In addition, pedestrian safety requirements are included in alternative F to address any potential vehicle-pedestrian conflicts at ramps and in ORV corridors. Alternative F (DEIS p. 106) provides that pedestrians should not block ramps and should use pedestrian ramps/boardwalks where available. If a pedestrian walkover is not available, pedestrians should walk to the side of ORV ramps, not in the tire tracks. The NPS acknowledges the need for additional pedestrian boardwalks, which may be included in the proposed access infrastructure (new parking areas, ramps, and interdunal roads) mentioned in alternative F.

Vehicle Parking Requirements - Alternative F has been revised to include the one-deep vehicle requirement as described under alternative D. This was done as a safety measure to ensure that two-way traffic would not be impeded during times of high ORV use. Although vehicle stacking (parking multiple rows deep) may seem desirable to some visitors, law enforcement staff have documented that it has resulted in parking configurations that block vehicle travel lanes, impede safe traffic flow, foster disorderly behavior, or result in a potentially dangerous situation in the event of an emergency.

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***AL1200 - Alternative Elements: Law enforcement/fines*****Concern ID: 24132**

**Concern Statement:** Commenters stated that law enforcement on the Seashore should be increased, and there should be heavy fines/penalties for violations.

***Representative Quotes:***

**Corr. ID:** 48      **Organization:** *Not Specified*

**Comment ID:** 128842      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I say go back to the old way and if someone violates the protected areas, then ban them from driving on the beach.

**Corr. ID:** 610      **Organization:** *Not Specified*

**Comment ID:** 134134      **Organization Type:** Unaffiliated Individual

**Representative Quote:** The only way those rules would have any effect is if they were strictly enforced with stiff penalties imposed on the first infraction. This requires additional staff at a time when budgets cuts and staff shortages are the norm.

**Corr. ID:** 9961      **Organization:** *Not Specified*

**Comment ID:** 133862      **Organization Type:** Unaffiliated Individual

**Representative Quote:** YOU SHOULD NOT ALLOW ORV USAGE WITHOUT PROVIDING FUNDING FOR A LARGE ENFORCEMENT STAFF. Enforcement should include large fines, not just warnings. Serious issues should be punishable by CONFISCATION OF THE ORV.

**Response:** As indicated on page 108 of the DEIS, an ORV permit may be revoked for violation of applicable park regulations or terms and conditions of the permit, which would include a violation of resource protection closures.

Most of the violations observed at the Seashore have been considered petty offenses (Class B Misdemeanors) in the federal court system, which carry a maximum fine of \$5,000.00 and/or six months in prison. The monetary amount of fines is governed by the Collateral Forfeiture Schedule (CFS), which must be approved by the Chief Judge of the Eastern District of North Carolina. The last update to the CFS was approved by the court in 2004. The NPS would update the CFS in the next year or two and may request higher fines for ORV related offenses.

Note: Please refer to response to Concern ID 24253 for information on funding for additional NPS staff at the Seashore.

**Concern ID: 24133**

**Concern Statement:** Commenters expressed concern that alternatives that expand buffers for resource violations could result in deliberate violations which could lead to abuse of this provision.

***Representative Quotes:***

**Corr. ID:** 10505      **Organization:** *Not Specified*

**Comment ID:** 131773      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I could not find vandalism buffer extensions in other than option A and B, if they are in there they should not be. Vandalism extensions motivate activists to game the system and vandalize to increase protection and prevent human use of the beaches. A zealous NPS employee could declare a windblown sign or a child's transgression a deliberate act of vandalism and deny thousands access to their country's resources. Punishing all for vandalism has other adverse impacts. Citizens will be less likely to help maintain the park such as fallen signs protecting turtle egg sites if reporting the problem results in a beach closure due to "vandalism". Another issue with vandalism extensions is the incredible injustice it imparts on society. Imagine if every public park was closed off for the season when vandalism occurred. Pretty soon children would have no access to public parks. Establish laws and prosecute violators but do not punish innocent people for the transgressions of others.



**Corr. ID:** 14954      **Organization:** *Not Specified*  
**Comment ID:** 138021      **Organization Type:** Unaffiliated Individual

**Representative Quote:** The way it is policed now, it is too easy for pro closure groups to violate their own area to increase enclosures and make the ORV crowd look responsible. On top of this, the fact is that most of the violations come from pedestrians. I will not get into the details of the different closure proposals as it all makes very little sense unless we want a massive policing operation. The way these things usually go are when stipulations are put in place, policing is attempted and more regulation will come

**Response:** Alternatives A, C, D, E, and F do not contain requirements for buffer expansions when deliberate violations occur. See response to Concern ID 24073 for a discussion on why buffer expansion requirements were not considered in the action alternatives and Concern ID 24132 for what enforcement and penalties have been included for closure violations.

### ***AL1260 - Alternative Elements: Predator Removal***

#### **Concern ID: 24135**

**Concern Statement:** Commenters question predator removal practices of the NPS and asked if the impacts of this removal, including cumulative impacts to the ecosystem, have been considered. They further suggested that various recreational uses at the Seashore could have beneficial impacts to reduce predators and felt that predator management techniques should be looked at now, instead of the future, and that the current approach to predator management is in violation of the law and the NPS Organic Act and also encourages certain predators like ghost crabs.

#### ***Representative Quotes:***

**Corr. ID:** 57      **Organization:** US Taxpayer  
**Comment ID:** 128873      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Another policy that I strongly oppose is predator control for the plovers. My interpretation of the Organic Act is that predator control in national parks is permissible to rid the park of animals which are detrimental to the park's purpose. Since the seashore was created as a recreational area and is not a bird refuge, how can the park service justify killing fox, otter, mink, raccoon and other native mammals to protect piping plovers? Personally, I prefer otters to plovers, so what gives the federal government the right to affect the balance of nature and choose which species lives or dies? Furthermore, since these animals do not pose any danger to humans, there is no justification for killing them.

**Corr. ID:** 811      **Organization:** *Not Specified*  
**Comment ID:** 132720      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Studies do show, that without foot traffic and ORV traffic, certain predators (one the USPS cannot target with their Predator Removal Program (i.e. Ghost Crabs) will in fact have dramatically easier access to shorebird and turtle eggs. Simply put, the data collected so far, even using USPS studies, does not show an adverse negative impact on local shorebird and turtle populations. So why is this access being reduced/eliminated?

**Corr. ID:** 1013      **Organization:** *Not Specified*  
**Comment ID:** 132238      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I am opposed to the way the NPS does predator control. The wanton killing of hundreds of indigenous mammals each year for the benefit of other wildlife is wrong. Has the NPS addressed the effects of the removal of the mammals on the rest of the ecosystem?

**Corr. ID:** 3883      **Organization:** *Not Specified*  
**Comment ID:** 133201      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 482 of DEIS states the NPS Organic Act directs national parks to conserve wildlife for future generations and to protect native animal life as part of the park unit's natural ecosystem. Does trapping and killing native mammals protect them?

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**Corr. ID:** 7036                   **Organization:** OBPA  
**Comment ID:** 136996       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Over 1,200 various predator species, have been "removed" from the CHNSRA habitat since the inception of the Consent Decree, that majority being "native" species. Not only has this huge expenditure in both life and resources shown no appreciable positive impacts toward protected species, it has also led to less biodiversity within the CHNSRA animal kingdom. It is also a travesty to remove predator species from their habitat during their own breeding seasons, leaving behind countless litters of offspring to simply die of starvation. The early species management policies in CHNSRA also included mammalian creatures under the umbrella of protection. What has changed since that time? There can truly never be a predator-free ecosystem on these barrier islands, and it is misguided to attempt to make it such.

**Corr. ID:** 11709               **Organization:** *Not Specified*  
**Comment ID:** 135267       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** I disagree Predator management techniques may be reviewed in the future (pg 124). Why not make this a priority and do it now. (54% of the problem)

**Corr. ID:** 15000               **Organization:** *Not Specified*  
**Comment ID:** 140223       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Predator control was not included in the DEIS. This is a substantial public issue with much opposition. NPS has decided to promulgate predator control as a separate plan. The animals currently exterminated were protected under the enabling legislation. This is another example of NPS in conflict with the law.

**Corr. ID:** 15000               **Organization:** *Not Specified*  
**Comment ID:** 140261       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** While on the topic of predators, consider the ghost crab which is a prime predator of eggs, young birds, and turtle hatchlings. On pages 28-29, a recent study at CHNSRA has cited that the ghost crab is extolled as an important indicator species of ecosystem health. The study claims that ghost crab populations are destroyed by ORV's operating on the beaches. Under the Organic Act (page 482), through the 2006 Management Policies, the NPS is to protect the ecosystems from harm by human activities. Ghost crabs as crustaceans are on the long list of plants and animals to be protected. That list also contains insects, worms, and microscopic plants and animals. All such organisms can be impacted by motor vehicle operation. It is obvious that NPS is trying to substantiate the removal of human use of the beaches. By enlarging the turtle closures, the NPS restores the ghost crab/turtle ecosystem balance thus fulfilling the Organic Act mandate. This is unfortunate for the logger head species recovery, but after all, those humans must be brought under control. It is odd that predator crabs are protected but predator mammals are killed by the NPS. This serves as an example of the gross distortion perpetrated by the NPS on the CHNSRA enabling legislation and the undue influence of bird activists.

**Corr. ID:** 15000               **Organization:** *Not Specified*  
**Comment ID:** 140260       **Organization Type:** Unaffiliated Individual  
**Representative Quote:** On page 220 is the statement, "Foxes were first seen at the Seashore in 1999 and on Hatteras Island in the winter of 2001-2002." There is inadequate data to indicate exactly when and where various predators took up habitation nor does there need to be such information. There is also no information as to what constitutes the natural population of predators. Since these islands first emerged as barren spits of sand 1200 years ago, every organism now present was initially invasive. The 1938 NPS Prospectus contained a list of animals present in the Seashore which were to be protected in the primitive wilderness as it existed when the enabling legislation was drafted. That list includes raccoon, opossum, foxes (plural), mink, and otter. All these protected species are targeted for death by the revisionists NPS. Most other park managers believe that predators make up part of their ecosystem which should not be altered because of the constrictions of "unintended consequences". They prefer to protect their species of concern by use of predator excluded devices. This is another example of CAHA being in violation of the founding law. The villages that were embedded within CHNSRA carried with them a population of woodland opossum, raccoon, and cats both feral and domestic. This is a natural condition of small village life and is expected to continue as a steady source of such animals.

**Corr. ID:** 15064      **Organization:** *Not Specified*  
**Comment ID:** 140552      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Predator Management

- Coalition: NPS should more aggressively consider experiences at other East Coast locations in the development of an overall, integrated predator management policy.
- WHY -Is it ok to tamper with nature in some cases but not others?
  - o The adaptive management decisions reflected in the DEIS show a clear bias to implement actions that will adversely affect the visitor experience but to avoid actions that would benefit both natural resources and visitors.
- NPS: OK to replace South Point wetlands with parking area because beach will be closed to ORVs.
- NPS: OK to relocate Turtle Nests when storms are imminent, but not before (coincidentally the high risk nests are in prime ORV corridors).
- NPS: OK to set aside areas of beach to replant the "extirpated" seabeach amaranth, but not OK to clear vegetation at Cape Point ponds to create more favorable piping plover habitat (outside of the prime ORV corridor).
- NPS: OK to kill predators (greatest risk to birds and turtles), not OK to drive on the beach at night (deterrent to predators, low risk to turtles and birds).

**Response:** The NPS recognized the potential for impacts of predator removal efforts as separate cumulative impacts associated with ongoing predator management at the Seashore (DEIS table 49). Therefore, impacts to federally listed threatened or endangered species, state-listed or special status species, wildlife and wildlife habitat, visitor use and experience, and Seashore management and operations as a result of predator management activities were analyzed in the cumulative impacts sections in Chapter 4 for the specific impact topics mentioned above. Any impacts associated with a possible increase of mammalian predators due to increased human activity were also discussed as indirect impacts to wildlife species in chapter 4 of the DEIS.

Specific predator removal practices at the Seashore will be addressed in a separate planning document currently being prepared, which is the Seashore's Predator Control Program for Protected Species Management / Environmental Assessment. Comments related to specific predator management practices are not within the scope of this EIS and should be submitted during the public comment period for that EA.

**AL1270 - Alternative Elements: Pets**

**Concern ID: 24139**

**Concern Statement:** Commenters expressed concern about the elements of the preferred alternative that prohibit pets from certain areas of the Seashore from March 15 to July 31. They felt that pets should be allowed, on a 6-foot leash as is currently permitted stating that following these regulations, pets would not impact Seashore wildlife. They also expressed concern that these restrictions may impact visitation to the Seashore if visitors cannot bring their pets or horses.

**Representative Quotes:**

**Corr. ID:** 3912      **Organization:** *Not Specified*  
**Comment ID:** 131273      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Current NPS regulations require pets with pedestrians to be on leashes no longer than six feet. This requirement is more than adequate to prevent pets from damaging protected species. Pets on leashes do not damage protected species. Statements in the DEIS that reference reports citing damage to protected species from pets are not accurate reflections of conditions where pets are required to be on leashes. Prohibiting pets completely from beach areas, particularly in front of villages, will significantly disrupt vacationer experiences and cause vacationers to seek other more pet friendly beach areas such as in Currituck County. Implementing the NPS proposed actions regarding pets would significantly affect demand for rental properties on Hatteras Island, a hardship that is not accurately reflected in the DEIS.

**Corr. ID:** 12002      **Organization:** *Not Specified*  
**Comment ID:** 134201      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 211. The DEIS states, "For example, a study conducted on Cape Cod, Massachusetts, found that the average distance at which piping plovers were disturbed by pets was 46 meters (151 feet), compared with 23 meters (75 feet) for pedestrians." 46 meters is well below the buffers listed for Plover. It would appear that

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even with a reasonable safety factor, pets should pose little problem as long as leash rules are followed. It is likely that FWS guidelines included pets as a consideration when setting recommendations for Buffers. Again, I am opposed to restricting pets as proposed in Alternatives C, D, & F - it is not supported by reasonable interpretation of the science.

**Corr. ID:** 12011      **Organization:** *Not Specified*  
**Comment ID:** 134044      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I strongly disagree with the restriction of access of pets on the beach anytime for dogs and horses. The dogs should be kept on a 6' leash and the horses should be properly supervised by their owners or handlers. There is no documentation that I know of that relates to horseback riding on the beach creating any adverse effect on nesting birds or turtles. There should be daytime law enforcement patrol to better monitor any violations regarding the lack of properly supervised pets.

**Corr. ID:** 13461      **Organization:** Park user  
**Comment ID:** 138628      **Organization Type:** Unaffiliated Individual

**Representative Quote:** 2c. The rationale for the pet restrictions is totally lacking in scientific evidence and logical rigor. Firstly, it appears to have been pulled out of the air with no scientific basis. None of the studies cited in Appendix A identified leashed pets as even a minor factor in destruction of shorebird nests. Over and over, study after study, and I will use as just one example Patterson 1991 on page A-5, found that 90% of losses were due to predation by wild species.

Secondly, the ban lacks any logical basis. Nowhere in the DEIS is it explained how a leashed pet poses a risk to a shorebird nest. To the contrary, if you stationed a leashed pet every 100 yards along the beach, it is more likely that they would deter and scare away the mammalian predators that are the main cause of nesting failures.

**Corr. ID:** 15265      **Organization:** *Not Specified*  
**Comment ID:** 141328      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Additional restrictions and those from previous regulations also require factual data and logic. For example, if you require that pets be banned from certain areas you must realize that "no pets means no people". The simple, logical fact is that those people that have pets consider them, for the most part, family members and will not readily leave those pets for a weekend or more to visit the Outer Banks. They will take their family to other locations and the loss of revenue will be felt by the businesses of the area, not by the rule-makers.

**Response:** After reviewing public comments, the NPS has revised the proposed pet restrictions under alternative F. Under revised alternative F, pets will continue to be required to be on a 6-foot leash at all times. Pet restriction language and regulations would be clearly stated in the ORV permit education process and provided to pedestrians throughout the Seashore. Pets would be allowed in all areas of the Seashore where ORVs and pedestrians are allowed, except for pedestrian shoreline access seaward of pre-nesting areas during the breeding season, so as not to disturb breeding and nesting activities. Similar to ORVs and pedestrians, pets would not be allowed in resource closures. Language from Table 8 (page 113) and throughout the DEIS under alternative F has been revised in the FEIS to read "Pets are permitted subject to the 6-foot leash requirement and prohibited where posted. Pets would be prohibited in pedestrian shoreline access areas in front of (i.e., seaward of) bird pre-nesting areas." This change will also be made in Table 55 of the FEIS, under American Oystercatcher – ORV and Other Recreational Use, Alternative F, to replace information that was incorrect regarding pet regulations as published in the DEIS. As is currently occurring, law enforcement will continue to patrol during the daytime and enforce this regulation. Alternative F was also revised to increase the number of areas where visitors on horses can access the beach. Under revised alternative F, the current regulations for the use of horses would continue (see DEIS p. 113) plus:

- Horse use would be allowed in some vehicle free areas and on a limited number of trails to be designated in the Superintendent's Compendium after ORV routes are determined.
- Horse use would be allowed on village beaches from Sep 16 to May 14.
- Horses are prohibited in resource closures and in pedestrian shoreline access areas in front of (i.e., seaward of) bird pre-nesting areas.

Although the areas where horses would be permitted would increase, some restrictions would still apply because, as noted on page 210 of the DEIS, human activity, which would include horseback riding, is a known risk factor for piping plover.

***AL1300 - Alternative Elements: Desired Future Conditions***

**Concern ID: 24218**

Concern Statement: Commenters stated that the Seashore should establish management targets for migrating, wintering, and breeding species in the DEIS. Some commenters stated that the species recovery goals in the DEIS desired future conditions are too low, and that the Seashore can support a higher number than what is stated. Further, one commenter suggested that the Seashore expand its desired future conditions beyond species management. Commenters suggested that data from previous colonial waterbird surveys be taken into account. Some commenters suggested that the long-term piping plover target of 30 breeding pairs is based on outdated data and is thus unrealistic.

***Representative Quotes:***

**Corr. ID:** 5751                   **Organization:** Defenders of Wildlife  
**Comment ID:** 140795       **Organization Type:** Unaffiliated Individual

**Representative Quote:** A plan must include clear goals and milestones for wildlife recovery. Where there are management targets in the DEIS, they need more thorough vetting based on the potential of the Seashore to support wildlife rather than on its recent degraded abilities. Where birds, turtles and plants are not coming back as planned, based on annual reviews, additional protective measures should be implemented until recovery goals are met. These goals, and adequate management to realize them, should be for migrating and wintering species as well as breeding ones.

**Corr. ID:** 13438               **Organization:** National Parks Conservation Association  
**Comment ID:** 140924       **Organization Type:** Unaffiliated Individual

**Representative Quote:** We request that NPS expand the "desired future conditions" section beyond species management and include goals from the management policies on least impacting vehicles and motorized equipment (Management Policies 2006, 8.2.3; 8.2.3.1; 6.4.3.3), noise (Management Policies 2006, 4.9), appropriate uses (Management Policies 2006, 8.1.1), and wilderness (Management Policies 2006, Ch. 6). These policies are essential guideposts for determining whether a recreational use is appropriate and causing unacceptable impacts in National Park System units. In addition, we believe they are critical for determining whether or not the agency is upholding its management duties under the Organic Act. We would urge the agency to develop a set of desired future conditions for 1) motorized equipment 2) noise 3) appropriate use and 4) wilderness.

**Corr. ID:** 13438               **Organization:** National Parks Conservation Association  
**Comment ID:** 140915       **Organization Type:** Unaffiliated Individual

**Representative Quote:** First, with regard to desired future conditions (species recovery goals) we believe that NPS is choosing long-term targets, and possibly short-term targets that are too low. For piping plover (DEIS, p. 8), the long term target is 30 breeding pairs. However, the footnote indicates that CAHA could potentially support 30-60 pairs, and actual population growth at other sites has exceeded the projections. Consequently, if CAHA could potentially support more than 60 breeding pairs, the long term target should be at least 60 breeding pairs.

**Corr. ID:** 13438               **Organization:** National Parks Conservation Association  
**Comment ID:** 140918       **Organization Type:** Unaffiliated Individual

**Representative Quote:** Second, in the section on "Issues and Impact Topics" (DEIS, p. 29), it states that "Nesting sea turtles at the Seashore include the loggerhead, green, and leatherback turtles." However, when desired future conditions are discussed (DEIS, p. 8), loggerheads are the only species for which short-term and long-term targets are stated. Again, the long-term loggerhead target is set low at 115 nests, when the footnote states the 50 year projection as being 201 nests. If there is a scientifically based 50 year projection, then why is a lower number being chosen for a long-term target? What is the basis for this choice?

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**Corr. ID:** 14002                   **Organization:** U.S. Fish and Wildlife Service

**Comment ID:** 139447           **Organization Type:** Federal Government

**Representative Quote:** While we support the desired population growth rates for colonial waterbirds, we note that the baseline population levels for these species were drawn from a period during which populations of these species at CAHA were historically low. As such, the 10 and 20 year population targets described in the desired future conditions are likely lower than what could be supported at CAHA with sustained management. We anticipate that with continued implementation of management actions such as those described in Alternative F, populations of these species could easily exceed the desired future conditions as currently defined. We encourage the NPS to take another look at the historic data set to determine a more appropriate baseline, or prepare to re-calibrate the desired future conditions for these species at the first 5-year review period to reflect population levels that more closely reflect the likely ability of CAHA to support these species.

**Corr. ID:** 15043                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137451           **Organization Type:** Conservation/Preservation

**Representative Quote:** The final management plan should replace artificially low desired future conditions for threatened, state listed, and special status species on the Seashore with higher targets that are consistent with the carrying capacity of the Seashore and appropriate species management.

**Corr. ID:** 15074                   **Organization:** Southern Environmental Law Center

**Comment ID:** 137788           **Organization Type:** Conservation/Preservation

**Representative Quote:** We are particularly concerned about the failure of the NPS to include North Carolina Wildlife Resources Commission data in determining the targets. The DEIS states that the "targets did not take into account data from any surveys conducted prior to 2007 due to the uncertainty associated with survey methods, survey timing, data management, and data compiled for each survey year." DEIS at 10. However, in the State Listed and Special Status Species section of the DEIS, Table 30 at 241, the NPS does list the colonial waterbird data from surveys prior to 2007. If the data are reliable enough to use in the section that discusses the status of species, they also are reliable enough to be used to set targets. The data are used to determine the status of waterbird populations in North Carolina (including consideration of endangered, threatened, and special concern status), regional waterbird populations in the southeastern United States and national waterbird populations. We also note the early colonial waterbird surveys were conducted by Dr. James Parnell, who is now an emeritus professor from the University of North Carolina at Wilmington, and a nationally noted expert on colonial waterbirds. The colonial waterbird surveys were conducted by personnel who are experienced with detecting and counting colonial waterbird nests, and certainly such data are better than having no data at all for the entire period. As the DEIS notes in discussing the colonial waterbird data, "[a]lthough different survey protocols have been used at the Seashore between 1977 and 2009, recent estimates of colonial waterbird nests at the Seashore are clearly much lower than they were 30 years ago (see table 30). DEIS at 240. Using data from 2007 and later allows the NPS to mask the very large decline in colonial waterbird numbers that has occurred at the Seashore. Furthermore, it uses data from the time at which waterbird populations were the lowest ever recorded on the Seashore.

**Corr. ID:** 12002                   **Organization:** *Not Specified*

**Comment ID:** 134151           **Organization Type:** Unaffiliated Individual

**Representative Quote:** Table 1, page 8. The goal of 1.5 chicks per pair for Piping Plover productivity seems too optimistic.

To establish a goal for Plover productivity one could look at Cape Lookout National Seashore. The Barrier islands of the Cape Lookout National seashore are not inhabited and there is only limited vehicle usage so it should represent the high end of productivity for Piping Plover in North Carolina. Heat-stress and weather are the primary factors for low fledge rates noted at Cape Lookout in their Annual Piping Plover Report. These conditions would certainly also apply to Cape Hatteras. The highest fledgling success rate ever recorded at Cape Lookout Seashore was 0.92 (chicks fledged per pair) in 2004.

Yet, the DEIS simply uses FWS information and sets a 5-yr average goal of 1.5 chicks per pair as a long term goal. That's more than 50% higher than an uninhabited area that has almost no ORV. Since the goals established for Cape Hatteras under the DEIS appear unreasonably high, it appears that NPS is currently assessing unreasonably high impacts associated with ORV use in Cape Hatteras Seashore.

Further, the study titled "GIS-based analysis of human disturbance on piping plover abundance, distribution and productivity on the barrier islands of Long Island, New York" by SK Thomsen, May 2006 found productivity of 1 for areas completely restricted from ORV use; in cooler climates where productivity would be high; with large Plover populations (in the hundreds); and over a three year period that averaged out variability of productivity. This best case scenario only resulted in productivity rates of 1.0, therefore, the DEIS goal of 1.5 is not reasonable.

These high goals also seem to imply that the impacts of ORV are being overstated in the DEIS. More reasonable goals should be established.

**Corr. ID:** 13279

**Organization:** *Not Specified*

**Comment ID:** 140629

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 8: Long term Piping Plover target of 30 breeding pairs from 1996 study of USFWS. Comment: Since the available data of 1992 there have never been more than 21 nests. This is a 14 year old study. Setting a long term goal on a 14 year old study is not fair. Too much has changed and it set unrealistic goals that can never be met. This is only laying the ground for more restrictions on activities to achieve an unreachable goal.

**Corr. ID:** 14408

**Organization:** *Not Specified*

**Comment ID:** 140847

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Historically the park has supported few if any Piping Plovers. Breeding pairs of plovers spend a small part of their life in the park. Is it realistic to expect in the short term to meet the maximum number of breeding pairs and in the long term to double the number experienced in the last 110 years?

**Response:** Multiple factors may contribute to the current low productivity rates of piping plovers at Cape Hatteras and Cape Lookout National Seashores, and they may differ between the two Seashores.

Desired future conditions are based on targets identified in the FWS Piping Plover Recovery Plans. NPS believes these targets are reasonable based on this literature as well as consultation with the USFWS. The short-term target (10 years from now) for piping plovers is to match the number of breeding pairs observed at the Seashore in 1989. The long-term target (20 years from now) for piping plovers is to achieve the number of breeding pairs that the FWS Piping Plover Recovery Plan determined is possible for the Seashore. If the FWS updates the species recovery plan prior to that time, the Seashore will adjust the targets accordingly.

NPS also notes that with increased protection from disturbance in effect under alternative B for the last 3 breeding seasons the number of breeding pairs (11 in 2008, 9 in 2009, 12 in 2010) has increased from the low of 2 in 2002 and 2003.

Goals for federally listed species are based on U.S. Fish and Wildlife Service (FWS) Recovery Plans for those species. The long-term target for the number of piping plover breeding pairs of 30 is taken from the FWS's Piping Plover Recovery Plan. Sixty pairs far exceeds any documented numbers at the Seashore, and is not supported by the Recovery Plan or the amount of potential habitat at the Seashore. Therefore, NPS has not changed this long-term target.

NPS has considered the additional information provided by commenter about the pre-2007 colonial waterbird surveys and agrees that it is reasonable to consider this data for the purpose of setting targets. NPS has re-examined the historic data set for colonial nesting waterbirds and revised targets in the DEIS (Table 5, p. 10) in the FEIS (Chapter 1, Desired Future Conditions for Threatened, Endangered, State-listed, and Special Status Species, Table 5) to take into account higher historic numbers of nests at the Seashore as a factor in the determination of desired future conditions for colonial waterbirds as follows:

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## Desired Future Conditions for Colonial Waterbirds at Cape Hatteras National Seashore

Variable	Short-term <sup>a</sup> target	Long-term <sup>b</sup> target	Source
Annual peak number of least tern nests	5-year average of 462 nests	5-year average of 577 nests	Long-term target equals 2009 peak count. Short-term target is mid-point between recent average (2007-2010) and the long-term target.
Annual peak number of common tern nests	5-year average of 292 nests	5-year average of 533 nests	Long-term target equals the average number of nests that occurred in 1977-2004. Short-term target is the mid-point between recent average (2007-2010) and the long-term target.
Annual peak number of gull-billed tern nests	5-year average of 21 nests	5-year average of 40 nests	Long-term target equals the average number of nests that occurred in 1977-2004. Short-term target is the mid-point between recent average (2007-2010) and the long-term target.
Annual peak number of black skimmer nests	5-year average of 132 nests	5-year average of 244 nests	Long-term target equals the average number of nests that occurred in 1977-2004. Short-term target is the mid-point between recent average (2007-2010) and the long-term target.

<sup>a</sup>Short-term target is to achieve the midway point between the long-term target and the average of the data points from the Seashore's 2007 - 2010 counts.

<sup>b</sup>Except for least terns, the long-term target is to achieve the 1977-2004 level of nesting at the Seashore. Least terns are currently nesting in greater numbers than the 1977-2004 average; therefore, the long-term target is to maintain a 5-year average count equal to the 2009 peak count.

Commenters differ on the targets for American oystercatcher. NPS has considered the comments and determined that it agrees with the FWS opinion that that the future conditions for this species appear reasonable. The targets represent an increase above current conditions and are consistent with the recommendations in the American Oystercatcher Conservation Action Plan (Schulte et al. 2007).

NPS has not developed desired conditions for migrating and wintering species because we did not feel we had sufficient historic data upon which to base targets.

The periodic review process described in the DEIS (p. 74) and in Table 10 has been revised in the FEIS in Table 10-1 and in Chapter 1 to provide a process for modifying management when recovery goals are not met. The following text revision has been added to the FEIS Chapter 1: Desired Future Conditions: "Where progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may result in increased restrictions on recreational use."

Desired future conditions have not been developed for green and leatherback turtles because they nest in such low numbers in this part of their range that they do not provide a good basis for the adaptive management process. The long-term desired future conditions for loggerheads is a 20-year projection that places the Seashore on the trajectory towards the 50-year target identified in the Recovery Plan.

Developing desired conditions for motorized equipment, noise, appropriate use, and wilderness is outside the scope of this plan but may be considered during the planning process for the General Management Plan which is scheduled to begin in 2012. NPS plans to prepare a wilderness suitability study jointly with the General Management Plan.



***AL4000 - Alternatives: New Alternatives Or Elements*****Concern ID: 24231**

Concern Statement: Commenters requested that the NPS adopt the alternative developed by the Coalition for Beach Access in their position statement.

**Representative Quotes:****Corr. ID:** 4441**Organization:** NCBBA**Comment ID:** 140568**Organization Type:** Unaffiliated Individual

**Representative Quote:** I strongly urge the NPS to carefully consider the Coalition for Beach Access Cape Hatteras National Seashore Recreational Area ORV Access Environmental Impact Position Statement The positions stated in that document and its attachments represent a common sense, reasonable approach to address two of the most significant responsibilities the National Park Service must fulfill within the ORV Management Plan.

**Corr. ID:** 14887**Organization:** NC Marine Fisheries Commission**Comment ID:** 137646**Organization Type:** State Government

**Representative Quote:** Our commission, along with the Division of Marine Fisheries, had representatives on the Negotiated Rulemaking Advisory Committee which ended without consensus. We find that many of the statements and positions of the Coalition for Beach Access are consistent with the work of the Negotiated Rulemaking Advisory Committee; therefore, we endorse and support the following portions of the position statement of the Coalition for Beach Access relative to the Draft ORV Management Plan/EIS (DEIS) for the Cape Hatteras National Seashore:

- 3.0 Importance of Public Beach Access
- 3.1 Traditional and Cultural Values
- 3.2.3 Fishing
- 3.2.8 High Recreational Value Ocean Beaches
- 3.2.9 High Recreational Value Sound Side Locations
- 3.3 Commercial Values
- 5.0 Selected Legislation and Management Policies Relevant to an ORV Plan
- 6.1 ORV Ocean Side Ramps
- 7.0 Conclusion

**Response:** The NPS has examined the recommendations in the Coalition for Beach Access's Environmental Impact Position Statement. In the revised alternative F, specific areas where the NPS has revised routes to be more in line with the Coalition's recommendations include year round ORV access between 1.5 miles south of Ramp 23 and Ramp 27. In other cases, such as the vehicle free area from Ramp 1 to ½ mile south of Coquina Beach, the NPS has elected to keep those beaches vehicle-free under alternative F to provide a large pedestrian and day use area for Seashore visitors. Additionally, ML1 species management measures have been eliminated from the revised alternative F. Instead, standard buffers with increased monitoring, equivalent to the ML2 measures in the DEIS, will be used at all locations, when bird breeding and nesting activity is observed, to appropriately protect species while providing more predictable access for ORV and pedestrian visitors. For complete responses to other specific suggestions recommended by the Coalition, please see Concern Statements 24192 (use of corridors), 24194 (buffer distances), 24150 (protection of non-federally listed species), 24143 (turtle relocation), 24263 (ecosystem methodology), 24281 (use of Pea Island for visitor use areas), 24146 (habitat creation), 24135 (predator management), 24087 (false crawls), 24089 (night driving), 24193 (turtle closures), 24087 (nest lost due to human activity), 24096 (fees for permits), and 24160 (cultural analysis). Although some suggestions from the Coalition for Beach Access have been adopted, Alternative F has been modified to also include additional vehicle-free areas to ensure a wide range of visitor use and activities.

**Concern ID: 24233**

Concern Statement: Commenters recommended that the Seashore adopt the turtle management policies contained in Larry Hardham and Robert Davis' position paper.

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**Representative Quotes:****Corr. ID:** 14248**Organization:** *Not Specified***Comment ID:** 141021**Organization Type:** Unaffiliated Individual

**Representative Quote:** Furthermore, I recommend that NPS turtle management policy be amended to reflect local knowledge and experience. This requirement can easily be met at the Seashore by adopting the proposed policies recommended by Larry Hardham and Robert Davis as these individuals have more collective knowledge of sea turtle nesting at CHNSRA than probably any employee of the Service or NCWRC. Their approach is adaptive and sound. Similar approach has been shown to be highly successful. It must be remembered, its not the number of nests that ultimately count but the number of hatchlings that make it to the sea. Their work can be found at: <http://www.obpa-nc.org/turtles/TurtleMgmtProgram.pdf>

**Response:** Under revised alternative F sea turtle management procedures at the Seashore are based on the latest scientific research and are consistent with the latest U.S. Fish and Wildlife Service Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle (2008) and NCWRC guidelines which have both been developed by scientific experts in the field of loggerhead sea turtle biology and conservation.

For additional information regarding why the NPS is not considering relocating more turtle nests, using hatcheries and/or corrals, and an analysis of the “the number of hatchlings that make it to the sea,” as a factor in management, etc., see the NPS response to Concern ID 24143. For more information regarding the trained volunteer program for sea turtles see the NPS response to Concern ID 24115.

**Concern ID: 24236**

**Concern Statement:** Commenters stated that, while there is an environmentally preferred and an NPS preferred alternative, there should also be a user preferred alternative.

**Representative Quotes:****Corr. ID:** 10917**Organization:** *Not Specified***Comment ID:** 131929**Organization Type:** Unaffiliated Individual

**Representative Quote:** The residents and property owners of the area should be allowed to vote on any changes to beach use policies, rather than said policy changes being made as a result of legal action or other directives from parties that are not actively using the island.

**Corr. ID:** 15167**Organization:** Coastal Conservation Association**Comment ID:** 139597**Organization Type:** Conservation/Preservation

**Representative Quote:** But what's very disturbing is that there's no -- there is a Environmental Preferred Option, an NPS Preferred Option. There is no User Preferred Option. There is no option in here that describes what the predominant users of the park would like to have in their option, for access to the beach. To suggest that a recreation area as this Park was established, should have closures with no human activity on the surf zone is absolutely absurd.

**Corr. ID:** 15236**Organization:** *Not Specified***Comment ID:** 138844**Organization Type:** Unaffiliated Individual

**Representative Quote:** Point number two, of the six plans outlined, which one is advantageous for fishermen, surfers, and other beach users? It is clearly identified which is the environmental plan, Option D. And, also, the PNPS prefers Option F, but one major important option is missing; that is the one for the people who want to access their beach. Sadly, I did not find it in these 3 -- 800 pages.

**Response:** Identification of the environmentally preferable alternative and the agency preferred alternative are required by the Council on Environmental Quality NEPA regulations (40 CFR 1505.2(b), 40 CFR 1502.14(e)) and the NPS Director's Order #12 Handbook, Conservation Planning, Environmental Impact Analysis, and Decision Making (sections 4.5.E.9 and 4.5.E.8). There is no legal or policy requirement that a “user preferred option” be identified. In any case, various user groups and individuals expressed preferences for different alternatives in their comments on the DEIS.

**Concern ID: 24238**

Concern Statement: Commenters offered a variety of new elements to the alternatives, such as:

- designating a "backcountry" zone where pedestrians can walk
- establishing 2 marked travel paths on the beach, with a decreased speed limit
- constructing an "access trail" to be put in place that runs parallel to the Sound Side Beach with appropriate parking provided at different spots along the trail
- increase trail maintenance
- dividing the seashore by recreational uses
- contacting the management staff at Pismo Beach (CA) to see how they have accomplished their automobile traffic on the beach
- study the feasibility of implementing an environmentally sensitive mass transit system
- allow ORV corridors as a reward when species population numbers increase or as species are removed from the Endangered Species List
- the NPS should allow buffers where visitors could remain in their vehicles to observe bird life, as is done at Padre Island National Seashore, which would allow for closer observation.

**Representative Quotes:**

**Corr. ID:** 3851

**Organization:** *Not Specified*

**Comment ID:** 137493

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The Tern and Plover Conservation Partnership uses a voluntary, proactive approach to avoid and minimize bird-people conflicts and to reduce or eliminate the need for law enforcement personnel to be involved in tern and plover management. There were no conflicts or need for law enforcement recorded in 2009, as was the case in 2008.

Before terns and plovers returned to Nebraska and the field season began, TPCP met with the production managers of all area sand and gravel mines. At these meetings, we discussed the mining companies' production plans for the season, safety regulations, and site access. We paid particular attention to concerns mine personnel had regarding previous on-site activities of the TPCP and changes to MSHA (Mine Safety and Health Administration) policy as it applies to non-mine personnel. We also met with homeowners associations at the lakeshore housing developments. At these meetings, we discussed the construction plans for the area and site access. We paid particular attention to property owners' concerns regarding previous on-site activities of the TPCP. See Table 1 for a list of active and inactive sand and gravel mines and lakeshore housing developments in the Lower Platte River.

Based on our pre-nesting season conversations with mine production managers and homeowners' associations, we mapped out the areas where it would be best if the terns and plovers did not nest. These were the areas within the mine property that were going to be dredged during the nesting season or where heavy equipment was going to be operating. At the housing developments, these were the areas where buildings were to be constructed or utilities were to be installed.

A result of each of these meeting was site-specific management and monitoring plans; an equally valuable result was becoming acquainted with the people living and working at these sites. As the season progressed, this made our management efforts easier to implement. Throughout the season, we maintained close contact with these individuals so we could respond to any on-site changes that developed as the season progressed.

<http://fieldguide.mt.gov/detail/ABNNB03070.aspx>

**Corr. ID:** 5757

**Organization:** *Not Specified*

**Comment ID:** 133384

**Organization Type:** Unaffiliated Individual

**Representative Quote:** As at other Seashores, I would prefer to see a numerical limit placed on ORVs using certain access ramps. With no limit set, an unsustainable number of vehicles could accumulate and ruin both the recreational experience as well as degrade the environment.

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**Corr. ID:** 12656                    **Organization:** *Not Specified*

**Comment ID:** 140045            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Pismo Beach is a beautiful strand of light brown sand in California. It has had years of automobile traffic on the beach as well as dune buggies and other off road vehicles back in the dunes. Pismo Beach State Park manages the beach and Oceano Dunes State Vehicle Recreation Area manages the dunes.

There was an ongoing battle over the use of vehicles in this area, but it has been solved finally with a little give and take between the conflicting groups, mainly beach goers, vehicles, fishermen, and environmentalists.

Some areas of the beach are completely closed to all vehicles except state park ranger patrols. The off road dune area is strictly managed and limited to keep the sands from becoming free to shift and move, which had been resulting in the dunes encroaching on farmland. Wildlife--plants and animals--are protected.

I suggest and even recommend that you talk with the rangers at these two state parks in order to see how this has all been accomplished. You might ask how they could improve upon the situations if they could do it over.

**Corr. ID:** 13368                    **Organization:** *Not Specified*

**Comment ID:** 137991            **Organization Type:** Unaffiliated Individual

**Representative Quote:** I would suggest that we have 2 marked travel paths only on the beach with a speed limit of 6 mph.

**Corr. ID:** 13368                    **Organization:** *Not Specified*

**Comment ID:** 137998            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Also marked paths every 1/4 to 1/2 mile with a stairway over the dunes that could be retrieved on the ocean side in event of a storm washaway.

**Corr. ID:** 13388                    **Organization:** *Not Specified*

**Comment ID:** 138075            **Organization Type:** Unaffiliated Individual

**Representative Quote:** MAYBE THERE IS A WAY TO SEPARATE THE SURF FISHERMAN FROM THE RECREATIONAL BEACH GOING ORV'S. POSSIBLY SOME BEACHGOERS SHOULD HAVE ACCESS TO NORTHERN BEACHES AWAY FROM THE POINTS AND SURF FISHERMAN ACCESS TO MORE SOUTHERN RAMPS AND THE POINTS. THIS COULD SEPERATE THE MORE WILDLIFE CONCIOUS FISHERMAN FROM THE TOURIST AND BEACH GOERS. IF POSSIBLE MAYBE A SEASON COULD BE DESIGNATED FOR FISHING ACCESS TO THE POINTS.

**Corr. ID:** 13438                    **Organization:** National Parks Conservation Association

**Comment ID:** 140921            **Organization Type:** Unaffiliated Individual

**Representative Quote:** In 2005, the SAFETEA-LU legislation established a new program called the Alternative Transportation in Parks and Public Lands program, changed in 2008 to the Paul S. Sarbanes Transit in the Parks program. Administered by the Federal Transit Administration in partnership with the Department of the Interior and the Forest Service, the program funds capital and planning expenses for alternative transportation systems in national parks and public lands. The goals of the program are to conserve natural, historical, and cultural resources; reduce congestion and pollution; improve visitor mobility and accessibility; enhance visitor experience; and ensure access to all, including persons with disabilities.

Programs, resources, and expertise now exist that CAHA can access and could employ to answer the questions: Are there feasible alternatives to recreational ORV use in getting visitors on and off the beach including those with fishing equipment? Specifically, NPS should be contemplating whether some sort of environmentally sensitive mass transit system could accomplish the objective of getting people efficiently on and off the beach while reducing the number of vehicles and vehicle trips. If such a study is too complex for the FEIS, then the FEIS should assert and spell out that such a study is needed, will follow the FEIS, and that NPS will adaptively adjust its management in light of an alternative transportation study. Moreover, such a study should be complementary to the wilderness suitability study, previously discussed, to distinguish precisely between those areas where mass transport of visitors is suitable and those where it is not (i.e. wilderness).

**Corr. ID:** 13766      **Organization:** *Not Specified*  
**Comment ID:** 135548      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** An "access trail" needs to be put in place that runs parallel to the Sound Side Beach with appropriate parking provided at different spots along the trail. This will provide an off set when areas of the ocean front have to be closed. This would provide access as per the back side of Hatteras Island south of the Ferry Dock. In addition, a Sound Side Public Beach needs to be put in place that is comparable to the Ocean Side Public Beach on Ocracoke. This will provide an alternative for Park Users when the Ocean Front Beach is less than desirable as to weather conditions (wind) and parts of the Ocean Beach is closed for environmental/habitat reason.

**Corr. ID:** 14642      **Organization:** *Not Specified*  
**Comment ID:** 139147      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Corridors are fine for pedestrians but ORV corridors have a greater negative impact on T/E species attempting to breed, feed, germinate, etc. in this particular barrier island habitat. Save them as a reward when T/E species numbers are routinely up to those needed to take them off the Endangered Species Listing.

**Corr. ID:** 15000      **Organization:** *Not Specified*  
**Comment ID:** 140262      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** There is an important recommendation not found in the DEIS. If the NPS were interested in providing a quality visitor experience they would recommend that visitors remain in their vehicles to observe bird life. This recommendation has been used for many years at Padre Island National Seashore since they recognized that birds are not as easily disturbed by vehicles which allows for closer and more meaningful observation. NPS lacks such a balanced view in the DEIS. This wasn't much help for birds within closures since they will be too far away for any observation in a vehicle.

**Corr. ID:** 15038      **Organization:** *Not Specified*  
**Comment ID:** 137996      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Another element of the Assateague program should be used at Hatteras, namely the designation of a "backcountry" zone where visitors can walk a few miles, perhaps camp overnight away from motorized traffic, and enjoy the sights and sounds of the wild beach and the ocean. This is one of the great values of a national seashore.

**Response:** Backcountry Zone: Designation of a backcountry zone is not within the scope of this project. However, the Seashore will more appropriately address park management zones in the revision of the General Management Plan (GMP) for the Seashore.

Two Marked Travel Paths and 6 mph Speed Limit: While marking travel lanes in ORV routes along the length of the Seashore would not be possible nor desirable because of the visual impact, alternative F requires that two-way traffic remain unimpeded within ORV routes and provides the Seashore with the authority to close down a section of beach if two-way traffic is impeded. Alternative F reduces the speed limit from 25 mph to 15 mph year round. Reducing the speed limit to 6 mph Seashore-wide may be overly burdensome and could result in ORVs getting stuck in areas of deeper soft sand.

Build Access Trail to S. of Hatteras Ferry Dock : Over the past several years the Seashore has provided ORV access to the back side of Hatteras spit whenever it is not in conflict with safety, bird nesting or foraging, and it would not cause additional damage to the vegetation and general ecological attributes of the area. Some of the sound shoreline area is very narrow with a small strip of sand that is subject to flooding at high tide unless one drives on the vegetation, including wetland vegetation, that bounds it on the land side. Because it is problematic to access the Sound from Pole Road at other points, alternative F provides for ORV access to the Sound behind the Coast Guard Station, at Cable Crossing and at Spur Road.

Add Public Soundside Beach on Ocracoke: NPS believes that this suggestion has merit. However, it is outside the scope of the ORV plan/EIS. It would be an appropriate topic for the upcoming GMP process.

Divide the Seashore by Recreational Use: The purpose of the plan is to develop regulations and procedures that carefully manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural

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processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors (DEIS, p. 1). While it is recognized that individuals who use ORVs do so for a variety of purposes or to pursue different recreational interests, developing a nuanced approach to designating ORV areas based on the different individual interests would be extremely difficult and is beyond the scope of this plan. By offering a variety of designated ORV routes and vehicle free areas, visitors will have the opportunity to select the locations best suited for pursuing their respective interests, whether it be fishing, swimming, shell collecting, bird watching or other uses.

Learn from the Experiences of Pismo Beach: In developing the draft plan/EIS, NPS has considered information on management and experience at a number of other areas. However, management at the Seashore must be responsive to federal law and policy which differs from that governing state managed areas. For example, the Pismo Dunes State Vehicular Recreation Area (currently named “Oceano Dunes”) was established specifically for the recreational use of ORVs and allows modification of the natural environment to enhance the recreational experience (CAL. PRC. CODE § 5090.43). The Seashore has a much different purpose and significance. Therefore, regulatory requirements and management considerations are markedly different between these two areas.

Environmentally-sensitive mass transit system: Under alternative F (DEIS p. 111), the NPS would consider applications for commercial use authorization to offer beach and/or water shuttle services, which are types of mass transit, when not in conflict with resource protection measures. When considering permitting a beach shuttle system, the Seashore would continue to operate under the wise energy use guidelines and requirements stated in the NPS 2006 Management Policies, Executive Order 13123 (Greening the Government Through Effective Energy Management), Executive Order 13031 (Federal Alternative Fueled Vehicle Leadership), Executive Order 13149 (Greening the Government Through Federal Fleet and Transportation Efficiency), Executive Order 13514 (Federal Leadership in Environmental, Energy, and Economic Performance), and the 1993 NPS Guiding Principles of Sustainable Design. The NPS has developed and submitted proposals to seek funds that would conduct an alternative transportation feasibility study. This study would help determine the viability of a transportation system to move visitors within and destined to the points, spits, and key recreational areas within the Seashore. Based on the outcome of a feasibility study, additional funding options could be pursued to support the development and implementation of a transportation system.

Allow ORV-corridors when Species Numbers Increase: The DEIS establishes long-term goals (“desired future conditions”) for protected species affected by this plan/EIS (DEIS, pp. 7-10) and adaptive management and periodic review processes (p. 74) for evaluating progress toward achieving those goals. When desired future conditions for resources are met or exceeded, periodic review and adaptive management may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remain stable. When desired future conditions for resources are met or exceeded, it may allow for more flexible management of recreational use, provided adverse impacts of such use are effectively managed and wildlife populations remain stable. The populations of protected species that meet or exceed the goals set forth in this section would continue to be protected in accordance with applicable federal and state laws and regulations. See response to Concern ID: 24127

Visitors remain in ORVs when birding, like Padre Island: Padre Island National Seashore does not have a program that recommends visitors remain in their vehicle while observing birds or other wildlife.

**Concern ID: 24289**

**Concern Statement:** One commenter suggested that the NPS conduct a soil survey and look at low impact development alternatives.

**Representative Quotes:**

**Corr. ID:** 14242

**Organization:** ENVISCI3330 Land Use Management

**Comment ID:** 140406

**Organization Type:** Unaffiliated Individual

**Representative Quote:** One thing the NPS might want to ask itself is has all the alternatives been considered? Was there proper consideration of a soil survey and have all low impact development alternatives been considered.

**Response:** Soils and the possibility for disturbing sand, compacting sand, creating ruts, and changing the local topography, was dismissed under the “Geologic Resources” impact topic in Chapter 1 (pages 31 of the DEIS). While ORV use could result in increased erosion, the Seashore is a dynamic ecosystem and visual impacts from ORVs are quickly erased by tides, winds, rain, hurricanes, and other storm events. With the use of designated ramps, which are strictly enforced throughout the Seashore, ORV impacts to dunes are a rare occurrence. Alternative F includes the construction of new ramps and parking areas. As indicated in the impact analysis in chapter 4 of the EIS, ramps and parking areas would be designed and constructed with a semi-permeable clay/shell base, turf block, or some other porous material, using environmentally sensitive standards to minimize stormwater runoff. Given these conditions, it was determined that impacts to geologic resources, including soils, would be less than minor and therefore this was not carried forward for further analysis in the DEIS and a soil survey was not warranted. The FEIS, under “Issues Considered But Dismissed From Further Analysis – Geologic Resources” will include additional text stating that the impacts would be minor or less. It should also be noted that issues related to sand compaction are included in the DEIS in the discussion of how ORV use impact invertebrates at the Seashore (DIES starting on p. 484)

**Concern ID: 24640**

**Concern Statement:** One commenter suggested the DEIS should have a no action alternative that reflects the regulations being enforced in 2004 that were adopted from the 1978 draft plan with updates through superintendents' compendiums.

**Representative Quotes:**

**Corr. ID:** 14152

**Organization:** *Not Specified*

**Comment ID:** 140705

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The baseline socioeconomic analysis does not recognize the de facto plan that was in place in the years leading up to the "interim plan", unofficial only because of bureaucratic failures. The DEIS should have an No Action Alternative that reflects the regulations being enforced in 2004 that were adopted from the 1978 draft plan with updates through superintendents' compendiums. The cumulative impact of the NPS' Preferred Alternative F policies on the visitor experience and the regional economy should be assessed relative to their pre-interim plan baseline.

**Response:** Analysis of impacts for all impact topics, including socioeconomic analysis, is conducted on the no-action alternative as the baseline. NPS analyzed impacts under the two alternatives identified for the plan as the "no-action" alternatives: Alternative A (the interim protected species management strategy) and alternative B (the consent decree), which describe current management during the development of the Plan/EIS. Commenter's suggested "no action" alternative, comprising management in 2004 and earlier, predates the beginning of the planning process for the ORV Management Plan/EIS. Additionally, management in 2004 and earlier would not meet either of the purposes of a "no-action" alternative as described on p. 59 of the DEIS. It would not represent a viable alternative for meeting the agency's purpose and need to regulate ORVs in a manner that is consistent with applicable law, and appropriately addresses resource protection (including protected, threatened, and endangered species), potential conflicts among the various Seashore users, and visitor safety. It would not bring the Seashore into compliance with the criteria of Executive Orders 11644 and 11989 for designation of ORV routes. It also would not meet the second purpose of a "no-action" alternative to serve to set a baseline of existing impacts continued into the future against which to compare the impacts of action alternatives. The existing impacts are encompassed under Alternatives A and B.

***AL5000 - Alternatives Considered but Dismissed: Consider Pea Island Wildlife Refuge when Considering Use Areas***

**Concern ID: 24281**

**Concern Statement:** Commenters requested that the FEIS consider Pea Island when calculating the amount of space available to visitors, specifically available to pedestrian use. They also questioned why it was considered in previous planning efforts and is not being considered now.

**Representative Quotes:**

**Corr. ID:** 13261

**Organization:** *Not Specified*

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**Comment ID:** 140530      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Pea Island is a prime, ORV-free pedestrian area in close proximity Rodanthe-Waves-Salvo. This must be included in the calculations. Respectfully, exclusion of this area simply due to management by a different governmental entities is nonsensical and is non-inclusion of species of concern in areas in close proximity to the Seashore.

**Corr. ID:** 14956      **Organization:** *Not Specified*

**Comment ID:** 137338      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the DEIS complete dismissal of Pea Island National Wildlife Reserve as a resource that affects the visitor experience and therefore the ORV Plan / Environmental Impact Statement. I understand that the use of PINWR is managed by a different arm of the DOI, and that this area is not available for consideration for ORV use. However, the value of PINWR must be recognized when assessing the DEIS for the Seashore. The strategic location of PINWR provides ready access to 13 miles of pedestrian only beaches to visitors. The location is strategic because it is convenient to both the visitors staying outside the Seashore in the towns north of Oregon Inlet as well as to the visitors staying in the villages within the boundaries of the Seashore. It is irresponsible for the NPS to exclude these miles of beach from the analysis as if they did not exist. The resulting implication that fewer miles are available for the pedestrian only experience is false and misleading. I'm not suggesting these beaches should be open to ORV use, only that their value to the visitor experience be recognized in the overall assessment. The typical visitor to the seashore has limited, if any, awareness of the differences between PINWR and CAHA, other than the driving restrictions and certainly consider this area when considering their overall experience. The NPS continued refusal to recognize PINWR as an available resource used by the typical CAHA visitor seems to be based on an intention to manipulate its assessment of Seashore needs rather than an intention to recognize the reality of the visitor AND resource experience.

**Response:** As explained in the DEIS, the Pea Island National Wildlife Refuge (Refuge) is administered by the U.S. Fish and Wildlife Service (FWS) and therefore the NPS cannot direct the management of visitor use at the Refuge. The Seashore's 1978 draft interim ORV management plan affirmed that the Refuge Manager has management responsibility for posting closures on beaches within the Refuge as he or she may find necessary to implement the regulations of the FWS. (DEIS p. 23) In 2006 the FWS published the Pea Island National Wildlife Refuge Comprehensive Conservation Plan that describes how the Refuge will be managed over the next 15 years as mandated by the National Wildlife Refuge Improvement Act of 1997.

NPS recognizes that approximately 12.1 miles of beach within the Refuge has been closed to ORVs for a number of years and at present provides an opportunity for visitors to the north end of Hatteras Island to walk on the beach in the absence of vehicles. NPS also recognizes that there are times and locations on Nags Head and Cape Lookout National Seashore beaches, where ORVs may and may not be driven, providing additional opportunity for recreation with and without vehicles.

Under the Organic Act, the NPS is responsible for managing activities in the Seashore to conserve the natural resources unimpaired on NPS-managed lands within the Seashore, which includes protecting the wildlife and its habitat. Similarly, under the Seashore's enabling legislation, NPS is mandated to preserve the unique flora and fauna and physiographic conditions. The presence of a species outside the Seashore does not mitigate, eliminate, or affect the authority and responsibility of the NPS under both the Organic Act and the Seashore enabling legislation to preserve unimpaired the Seashore populations of wildlife.

In the FEIS, NPS has added a column for the Refuge beaches at the end of Table 7 (DEIS p. 101) and in Table 7-1 in the FEIS in response to the comment that the Refuge beach mileage should be disclosed so the public is aware of the total miles of beach that are designated as ORV routes or vehicle free from the northern to the southern boundary of the Seashore.

### ***AL5090 - Alternatives Considered but Dismissed: Relocate birds and turtles***

**Concern ID:** 24143

**Concern Statement:** Commenters requested that the relocation of turtle nests be considered in the range of alternatives and suggested references that indicate the benefits of turtle nest relocation. They further stated that this



management approach is used at Pea Island and should be used within the Seashore. Commenters also stated that hatcheries for turtles should have been considered in the DEIS, with some suggesting this could be done with additional educational programs.

**Representative Quotes:**

**Corr. ID:** 10559

**Organization:** *Not Specified*

**Comment ID:** 136560

**Organization Type:** Unaffiliated Individual

**Representative Quote:** 5. Turtle management and protection far exceeds requirements. North Carolina has only 1% of the nesting of turtles as compared to Florida with 91%. Yet Florida relocates nests and allows human use of the beach with turtle nests marked off by stakes. More devastating to turtles are weather related events. With 1% of the turtle nests, why should North Carolina have the most prohibitive restrictions? NPS should advocate nest relocation, captive rearing, or hatcheries as do other areas. Educate the public. Provide NPS sponsored "watch the hatchlings" supervised and managed events. Relocate nests in danger of weather related events. Marking the nests and educating the public will allow co-use of the beach by humans and wildlife - don't over-regulate by restricting overly large areas.

**Corr. ID:** 11206

**Organization:** *Not Specified*

**Comment ID:** 135458

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I support adopting more proactive techniques used at other east coast locations to encourage turtle nesting success but the NPS seems to ignore these "best practices". The NPS does not address environmental issues that have proven more detrimental to turtle recovery success than ORVs or pedestrians (p. 392-396). The DEIS states (p 87 and 219) that 38.5% of nests had no hatchlings due to weather events. The NC Wildlife Resource Commission relocation guidelines are inadequate based on the fact that 55% of the Recreational Area and 60% of the State Leatherback nests have been lost over the past 10 years. Other states use the "average high tide line" rather than "seaward of debris line marking spring high tide" to identify which nests need to be relocated. The NPS should review the success of practices used at Cape Lookout which show better hatch rates when nests are moved. Data from other states shows that there is 50% probability of a successful hatch when nests are moved and that rate has been shown to approach 90% if the move is accomplished in a scientific manner. It is interesting that the NPS position on nest relocation supports moving the nests when storms are imminent but not before. It is also an interesting coincidence that these high risk nests (based on weather) are located in prime ORV corridors. Moving the nests in a scientific manner would benefit both the turtles and the ORV users - a win-win situation.

**Corr. ID:** 14248

**Organization:** *Not Specified*

**Comment ID:** 140937

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Turtle management as proposed within Alt. (F) will, in all likelihood, result in a documented and stable, nearly 40% loss in viable nests. It is ironic that within PINWR, though still within the Seashore, an entirely different set of protocols are observed with a much higher nest success rate. Turtle management at CHNSRA needs be proactive. Our beaches change daily, though in some cases are seasonally predictable in form. When turtles nest in high risk areas, we as a community attempt to inform NPS that a given nest needs relocating. We have usually been ignored only to see the Service plow the nest into the sea because it was collectively deceased. The Service has a long history of ignoring local knowledge which is in conflict with its own policy. In spite of this rejection of local knowledge and in spite of years of night driving on the beaches of CHNSRA, the Seashore still presents a better false crawl ratio than that USFWS expects from a totally undisturbed beach.

**Corr. ID:** 14308

**Organization:** *Not Specified*

**Comment ID:** 140415

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Why will the Cape Hatteras National Seashore Recreational Area not take more proactive measures to increase the success of hatching sea turtles as is done in other turtle nesting areas throughout the world? Other areas throughout the world:

- a.) Dig the nests and relocate them to a secure area
- b.) Use incubators with great success to ensure optimal hatching rates
- c.) Release hatchlings into the water beyond the surf zone eliminating one of the most hazardous steps in the survival of young turtle hatchlings

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**Corr. ID:** 14760                      **Organization:** *Not Specified*  
**Comment ID:** 137011              **Organization Type:** Unaffiliated Individual

**Representative Quote:** In order to truly assist the turtle population, improved management should be employed . Since the female turtle, leaves the nests once laid. the nests should be moved (page 86) in order to truly protect it from storm activity and predators. It is understandable that the eggs should be allowed to hatch naturally due to the turtles behavior. However, it seems appropriate and prudent to help the survivability by something as simple as moving the nest, if in fact we are serious about helping the turtles.

It is common practice for the nests to be moved when there are expected storms. Unfortunately, it is often too late to attempt to move that many nests and many nests are lost Utilizing management techniques that allow vehicle and pedestrians to pass at night is a more balanced approach than simply shutting down the beach. Additionally, CHNSRA has a lower false crawl ratio than that of other areas that does not have the lighting that Cape Hatteras does. There is precedence of other turtle management techniques employed in other locations along the eastern seaboard as referenced on page 86-87.

The DEIS identifies the various risks of moving nests. These risks must be competently weighed against the benefits and contributing economic impact that an OSV management plan is and will certainly have on Cape Hatteras.

**Corr. ID:** 14765                      **Organization:** *Not Specified*  
**Comment ID:** 135677              **Organization Type:** Unaffiliated Individual

**Representative Quote:** Massive turtle closures and other stringent regulations under the CD have shown no appreciable beneficial effects, as nesting numbers within the park have mirrored those at PINWR, statewide and along the entire Atlantic seaboard, where the CD mandates were not in place. Large closures allow for more unrestrained movement and burrowing of Ghost Crabs within the fencing. Light abatement enclosures made from solid-weave materials further exacerbate the predation issue, as ghost crab and other mammalian predators are given a visible target for the location of the egg clutch. These light barriers also trap blowing sand within them placing further weight and depth -of sand upon the eggs, and they are notorious for trapping water and/or causing erosion over the egg clutch during period of overwash, putting the eggs and risk of drowning. Once again, PINWR uses protocols quite different and more effective than those just 60 miles southward.

**Corr. ID:** 15000                      **Organization:** *Not Specified*  
**Comment ID:** 140251              **Organization Type:** Unaffiliated Individual

**Representative Quote:** Over the past 10 years the total weather related nest losses amount to the destruction of 27,700 eggs. Failure to protect against such loss was a deliberate decision by the NPS. During this time period they have rejected numerous times the information presented to them by others and myself. We have informed the local staff with procedures used nearby in North Carolina as well as those in other Atlantic and Gulf Coasts that have been extremely successful. The best example of increasing the number of an endangered sea turtle species is that of Padre Island National Seashore.

There by relocating all Kemps Ridley nests to a hatchery and protected release of all hatchlings, approximately 90% of the eggs laid produce hatchlings to the water. The turtle program under the DEIS will continue the destruction and further endanger the Loggerhead, the endangered Leatherback and Green Sea Turtle species. These losses must be considered as a "Take" under the ESA and NPS should be prosecuted under the provision of that law. The NPS may see protection by claiming they are operating under the USFWS and NCWRC recommendations but it is the NPS boots that are on the beach sand. NPS is the agency that is solely responsible to husband this resource.

**Corr. ID:** 15000**Organization:** *Not Specified***Comment ID:** 140258**Organization Type:** Unaffiliated Individual

**Representative Quote:** On page 87, corrals (a form of hatchery) were rejected because of catastrophic events and predator concerns. This is sheer hypocrisy. Corrals would be located in safe areas of both Ocracoke and Hatteras Islands. One corral would be on the north/south oriented beach of Hatteras and another on the east/west beach to minimize the effects of hurricanes. Direct hit from a category five (5) hurricane wipes out everything. Predator control in a corral is far superior to the program selected by the DEIS. Catastrophic losses as documented on pages 219 and 220 ranged 16% to 54% which is identical to the nest losses routinely produced by NPS management and projected forward through the DEIS. A positive turtle program is set forth by the access/conservation group in a separate document and is recommended. The document entitled, "Sea Turtle Management", can be found at <http://obca-nc.org/turtles/turtleMgmtProgram.pdf> (Copy attached).

**Corr. ID:** 15010**Organization:** Cape Hatteras Access Preservation Alliance**Comment ID:** 140449**Organization Type:** Conservation/Preservation

**Representative Quote:** The NPS's stated concerns with regard to nest relocation also bear further examination. Changes in temperature (which may result in changes to the sex ratio) as well as increased hatch failure are known issues that can be addressed through the proper handling of eggs by properly trained personnel. Moreover, relocation can actually be beneficial to the sex ratio by taking advantage of temperature gradients to increase the percentage of female hatchlings. This is similarly the case with potential storm damage and predation at relocation sites. These issues can be addressed through utilization of multiple relocation sites, and appropriate corrals and screening to prevent predation. In fact, data from the Seashore and other coastal areas such as Cape Romain National Wildlife Refuge in South Carolina and Cape Lookout National Seashore in North Carolina consistently show that relocated nests have better hatch success than nests left in-situ. See, e.g., Cordes, J. and Rikard, M., Cape Lookout National Seashore 2005 Sea Turtle Monitoring program; [http://www.fws.gov/caperomain/text/Sarahforweb\\_poster.pdf](http://www.fws.gov/caperomain/text/Sarahforweb_poster.pdf) (stating that "[h]atcheries should continue to be used on Cave Island as a management tool" due to the 2 A - island's high erosion rate and other factors). With adherence to appropriate protocols, these risks can be addressed in a manner that ensures that relocation benefits, rather than harms, the species.

In sum, natural nesting has and can be expected to continue to be associated with a decline in turtle species populations. Rather than dismiss routine nest relocation out of hand as inconsistent with species protection, with no scientific support, the final EIS should seriously evaluate and consider routine nest relocation as a legitimate and beneficial species protection measure to address the special hazards to sea turtle breeding at the Seashore.

**Corr. ID:** 15010**Organization:** Cape Hatteras Access Preservation Alliance**Comment ID:** 140448**Organization Type:** Conservation/Preservation

**Representative Quote:** Rather than consider relocation of sea turtle nests as a viable measure to protect and enhance sea turtle populations at the Seashore, the DEIS, without any meaningful analysis, quickly dismissed nest relocation from further consideration as an alternative element. DEIS at 87. Although the DEIS discussed some of the concerns with nest relocation, it erroneously concluded-without scientific or other support-that conditions at the Seashore other than recreation do not present a high risk to sea turtle nests.

As a premise for its dismissive treatment of nest relocation, the DEIS states that "The revised Loggerhead Sea Turtle Recovery Plan (NMFS and USFWS 2008) recommends the use of the least manipulative method to protect nests and states that as a general rule, nests should only be relocated if they are low enough on the beach to be washed daily by tide or if they are situated in well documented high-risk areas that routinely experience serious erosion and egg loss." DEIS at 87. The DEIS, however, inexplicably concludes that the Seashore is not such a well documented high-risk area and does not present "special conditions" warranting further consideration of nest relocation as a species protection measure. It should go without question, however, that the beaches of the Outer Banks, and particularly Ocracoke and Hatteras Islands, are part of an extraordinarily dynamic system that experiences strong ocean currents and wave action, significant storm activity, high tidal action, and rapid erosion rates. These having nothing to do with recreation-present severe challenges to successful sea turtle reproduction. The DEIS's conclusion that they do not present a high-risk situation or special circumstances for sea turtle nesting and hatchling survival simply cannot be justified.

## Appendix C

Data from the Seashore's annual reports indicate that nests laid late in the season (i.e., after July 9) have a more than 50 percent chance of being lost. Many of these nests would benefit from relocation, owing to the special, high-risk, non-recreation related conditions present at the Seashore.

**Corr. ID:** 15010

**Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140445

**Organization Type:** Conservation/Preservation

**Representative Quote:** Because most of the extensive sea turtle nest loss historically experienced at the Seashore cannot be attributed to ORV use, the highly restrictive buffers and closures that would be required under Preferred Alternative F are an inappropriate and unnecessary tool to protect sea turtle species. Nesting success has been particularly poor near the Seashore's points and spits due to the especially high erosion rates at those locations. Hatchlings in these areas also face significant risk of mortality due to being swept into inlets upon entering the ocean or getting caught up in the violence of Cape Point without sufficient energy to escape. Nests in these areas should be relocated to improve the likelihood of successful emergence and hatchling survival.

**Corr. ID:** 15045

**Organization:** United Four Wheel Drive Associations, Inc.

**Comment ID:** 137915

**Organization Type:** Unaffiliated Individual

**Representative Quote:** 2. Failure to provide technical references.

The DEIS dismisses from further consideration routinely relocating turtle nests based in part, on reference to studies indicating that the "determination of the hatchling sex ratio depends on the temperature at which the eggs incubate". DEIS at 86. This portion of the DEIS fails to offer citation to which study or studies it makes reference to. When federal agencies evaluate technical issues or apply specialized expertise, NEPA requires them to rely on valid sources and to disclose methodology, present hard data, cite by footnote or other specific method to technical references, and otherwise disclose and document any bases for expert opinion. 40 C.F.R. § 1502.24; *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1150 (9th Cir. 1998). 42 U.S.C. § 4332(A); 40 C.F.R. § 1502.6. NEPA does not envision undocumented narrative exposition, instead requiring:

Agencies shall insure the professional integrity, including the scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement. An agency may place discussion of methodology in an appendix.

**Corr. ID:** 14993

**Organization:** *Not Specified*

**Comment ID:** 137172

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Table 10. Species Management Strategies for Action Alternatives

#### Management Activities Sea Turtles

This section describes how sea turtles will be managed at CHNS for the next ten to fifteen years with a number of references to NCWRC "direction", "handbook", "consult with" and "work with". In a paper titled "Distorting Gene pools by Conservation: Assessing the Case of Doomed Turtle Eggs" written by N. Mrosovsky, the author states that "Much depends on local circumstances," and "Rigid rules applied to whole beaches may be inappropriate because the presence and position of flood cliffs along the beach, or of other features indicating almost certain destruction of eggs, may change within a season. Some flexibility and room for judgment is recommended, combined with periodic validation of predictions about the fate of particular clutches."

NPS must request site specific guidelines for this Seashore to change procedures of the last ten years that have lead to 36.4% of nests laid at CHNS producing no hatchlings and 43.3% when you add nests hatchling fewer than 20%.

Three changes must be demanded from NCWRC:

1. Use of the "debris line from spring high tide" rather than the "average high tide line" as is now in the NCWRC handbook as the guide for nest relocation.
2. Use of relocation areas or zones as are used at Cape Lookout and approved by NCWRC and USF&W.

3. Reduced buffer sizes for nests at the hatch window for nests that will be watched by a Nest Watch Program. There is no need for current excessive closures 24/7 when nests are watched at night. Use the procedures used at Pea Island for closures which are approved by USF&W.

**Corr. ID:** 15072

**Organization:** COUNTY OF HYDE

**Comment ID:** 138142

**Organization Type:** County Government

**Representative Quote:** Hyde County believes endangered sea turtles would benefit from management practices now in use at other federal seashores that are more proactive in efforts to achieve nesting success. This includes relocating nests to more desirable locations as is done in other state and federally controlled areas. The Cape Hatteras National Seashore Recreational Area is on the northernmost fringe of turtle nesting locations for the southeast. In this area, weather and predators represent the greatest threat to sea turtles. Nesting in the United States occurs primarily in four southeastern states as detailed in the USFWS & NMFS species "Recovery Plan"

North Carolina 1.0 % The northernmost area with the fewest nests

South Carolina 6.5 %

Georgia 1.5 %

Florida 91.0 % Primary area where the most nesting occurs

The Loggerhead Recovery Plan recognizes that, "Historically, relocation of sea turtle nests to higher beach elevations or into hatcheries was a regularly recommended conservation management activity throughout the southeast U.S." (2009, Second Revision, page 52) while the North Carolina Wildlife Resources Commission (NCWRC) sea turtle program currently recommends relocation only "as a last resort."

The National Park Service in page 125 of the DEIS relies upon the approach used by North Carolina Wildlife Resources Commissioner (NCWRC). This contradicts the U.S. Fish and Wildlife Service (USFWS) practice of relocating nests on the Pea Island Wildlife Refuge, located on the north end of Hatteras Island, North Carolina.

By not supporting nest relocation, the Cape Hatteras National Seashore Recreational Area has lost over 46% of the nests laid in the last II years. Meanwhile, South Carolina relocated 40.1% of its nests during 2009, resulting in an incredibly low lost nest rate of only 7.7% making a strong case for the relocation of nests.

The turtle management practices outlined on DEIS pages 125, and 392 to 396 should be modified to allow nest relocation as a tool for species recovery. Statistics compiled Dare County DEIS Position Statement materials - Appendix B - Sea Turtle Management Practices in The Southeast Coastal Region. (attached)

**Response:** The management of sea turtle nests at the Seashore from a proactive relocation standpoint is consistent with the guidelines set forth in the most recent loggerhead recovery plan (2008) and set forth by the state of North Carolina in the NCWRC turtle handbook to use the least manipulative method to protect nests. The 2008 recovery plan states that "As a general rule, nests should only be relocated if they are low enough on the beach to be washed daily by tides or if they are situated in well documented high risk areas that routinely experience serious erosion and egg loss (e.g., nests laid near river mouths or beneath eroding sea walls)."

The Seashore's management protocols are also similar to the management of sea turtles in other states such as Florida and South Carolina. In Florida, the guidelines state:

"...nest relocation is considered a management technique of last resort.

Natural events, like storms, that accelerate beach erosion and accretion can sometimes reduce hatching success in existing nests. While damage from storm events can be severe, it is difficult to predict the precise areas where the storm is most likely to inflict damage. Because of the negative effects of relocating eggs and the unpredictability of storm events, FWC does not generally authorize permit holders to move nests out of areas threatened by storms. As a general rule, nests should only be relocated if they are low enough on the beach to be washed daily by tides or if they are situated in well documented high-risk areas that routinely experience serious erosion and egg loss (e.g., nests laid near river mouths or beneath eroding sea walls)." (FFWCC 2007)

## Appendix C

In South Carolina, the management guidelines state that:

“Moving marine turtle eggs may create adverse impacts. Movement alone is known to kill developing embryos by rupturing delicate membranes that attach to the top of the egg. We also know that the incubation environment greatly influences the developing embryo and that nest relocation can involve the transfer of eggs from an appropriate environment to an inappropriate one.

Nest relocation must be considered a management technique of last resort and only if the likelihood of the nest surviving to hatch is nil. Disposable gloves should be worn at all times. The most desirable alternative is to eliminate the problems that prompt relocation of the nest. Normally, the only situation that justifies nest relocation is when a nest is laid seaward of the debris line marking the spring high tide.” (SCDNR 2009).

As indicated in discussions with staff of the SCDNR Marine Turtle Conservation Program (Hope 2010), their protocols do not necessarily mean that every nest laid seaward of the debris line marking the spring high tide is automatically relocated; this is used only as a guideline. Based on the characteristics of the beach where the nest is laid (e.g. topography, slope, how quickly it drains etc.) nests are evaluated on an individual basis as to whether or not “the likelihood of the nest surviving to hatch is nil.” and are relocated only if they meet the primary criteria of “Will the nest be destroyed in situ?” Following these guidelines, 40% of all nests (880 out of 2194 nests) found in South Carolina in 2009 were relocated while in 2010 (as of August 23, 2010) 43% of all nests (1328 out of 3100 nests) have been relocated. However, as noted by SCDNR staff (Griffin 2010) the majority of the nests relocated in SC occur along the 5 miles of beaches on Cape Island which experience high rates of erosion. During 2009 67% of the nests on Cape Island were relocated while 26% of the nests throughout the rest of SC were relocated. To date in 2010, 60% of the nests laid on Cape Island have been relocated while 34% have been relocated throughout the rest of SC (SCDNR 2010). During this same timeframe, Cape Hatteras National Seashore relocated 31% of the nests found in Seashore in 2009 (32 of the 104 nests) and 41% of the nests to-date (as of August 19, 2010) in 2010 (58 of the 143 nests).

Seashore guidelines for relocating nests are discussed with NCWRC staff annually to determine the appropriateness of the criteria and their consistency with the NCWRC guidelines, the loggerhead recovery plan, and the goals of sea turtle management. However, because the location of “troughs” or flooding pools and other areas that are susceptible to erosion or frequent inundation change on a year-to-year basis, the specific guidelines for where nests will be relocated from/to will be evaluated and may change annually.

Despite misconceptions, the goal of the loggerhead recovery plan is not to place as many hatchlings in the water as possible. In the previous version of the recovery plan (NMFS & USFWS 1991), it advocated increasing nest success to 60%; however, this goal was originally set to encourage the management of human impacts to nesting success, such as lighting, vehicles, etc., and not storm events (pers. com. Michelle Bogardus, NPS, with Sandy MacPherson, USFWS). In the most recent recovery plan (NMFS & USFWS 2008), the goal of 60% nest success (i.e. hatching success) was removed. Recovery goals are now based on numbers of nests because it was felt that managers had gone beyond appropriate relocation measures to achieve the nesting success rate, even when nests did not need to be relocated, and this was not meeting the USFWS goal of providing protection for nesting females, nests and hatchlings while maintaining the natural process and behaviors to the maximum extent possible (pers. com. Michelle Bogardus, NPS, with Sandy MacPherson, USFWS).

Ultimately, nest hatching success is determined by environmental factors that cannot be controlled such as storms, temperature, sand-water content etc. While relocating nests that are laid low on the beach to areas higher on the beach protects nests from daily tidal inundation, relocating nests does not necessarily protect them from storm events. Storms are unpredictable as to if/when they will hit and where within the Seashore they will have an impact. As evidenced by the impacts of Hurricane Bill and TS Danny during 2009, storms can impact nests left in place as well as those that are relocated (7 of the 24 nests lost during these two storms had previously been relocated), and in fact, during the 2008 and 2009 seasons the nest success of relocated nests was lower than that of the in-situ nests. Also, NCWRC biologist Matthew Godfrey recently analyzed data from Bogue Banks, NC where due to a re-nourishment study; a 6-year moratorium was placed on Bogue Bank’s permit to relocate turtle nests. Godfrey compared the nest success from the 6-year moratorium period with the 6-year period prior to the moratorium when 30-40% of the nests on the island were being relocated. Overall, he found no statistical difference between the nest success during the two periods of time (pers. com. Michelle Bogardus, NPS and Matthew Godfrey, NCWRC).

While inundations of nests can reduce hatching success, studies have shown that nests that are partially inundated many times or completely inundated only once or twice still produce hatchlings (Foley et al. 2006).

While relocating nests can affect sex ratios in sea turtles, relocating nests can also alter other hatchling characteristics as well. Loggerheads naturally distribute their nests both temporally (nest several times throughout the nesting season) and spatially (locate nests low or high on the beach and in different sections along the beach). This not only helps to avoid completely losing their reproductive effort in case environmental factors, such as storms, temperature, sand conditions or other incubation environments preclude development of the hatchlings, but it also varies the incubation environment of the eggs. In addition to the sex ratio of the hatchlings, the incubation environment has also been shown to influence, among other things, size, early swimming behavior and early growth in hatchlings (Foley et al. 2006). Because the characteristics of hatchlings vary with incubation environments, a scattered nesting pattern also increases the variation of hatchling characteristics which may ensure that at all times, at least some hatchlings have characteristics that are appropriate for survival, when the exact characteristics that are best suited for survival vary unpredictably over space and time (Carthy et al. 2003). Relocating nests and/or concentrating them in one area of a beach (e.g. hatchery or corral areas) may very well reduce the variety of incubation environments that could influence the development of hatchling characteristics that increase survival rates (Foley et al. 2006).

The use of corral systems is also discouraged in the recent recovery plan that states management efforts should “phase out the use of hatcheries.” This is a result of increased understanding of the potential adverse effects associated with nest relocation, restraint of hatchlings, and concentrated hatchling releases (NMFS & USFWS 2008). Concentrating nests in a single location (corral) can increase the potential for disease, such as fungal problems, to spread to all nests and result in egg mortality. A single storm could wipe out all of the nests concentrated in one area, whereas if they have been left in-situ scattered about the beach some nests might otherwise survive and while corral systems may be able to help against predation during the incubation period, using corrals usually results in hatchlings being released in the same location, which has the potential to increase predation in the ocean area surrounding the release site after the hatchlings reach the water.

The use of true hatcheries is also being discouraged. At Padre Island National Seashore all Kemp’s ridley sea turtle eggs are relocated to an incubation hatchery. The decision to use this type of hatchery was a last resort management decision made when the species was on the brink of extinction as a way to help the species recover, a situation that does not exist for the loggerhead, leatherback or green sea turtle. Prior to 2005, the number of nests located along the entire Texas coast that were brought to the incubation facility averaged less than 50. Within the last several years nest numbers are now approaching 200 nests along the entire coast. As a result, the latest Kemp’s ridley recovery plan indicates that future management needs to consider protecting nests in-situ as nesting abundance reaches levels that outstrip the capacity to translocate all nests to hatcheries (NMFS & USFWS draft 2010).

The protocols for relocating nests at Pea Island are used due to the lower number of nests there each year. Given the size of the Seashore and the number of nests each year, using the same protocols that Pea Island uses would not be logistically feasible. Additionally, the use of key-hole fencing as opposed to filter fencing is not beneficial for the sea turtles and does have negative impacts. At Pea Island, volunteers install key-hole fencing every night and then remove it when they leave, for they do not watch the nest through the entire nighttime hours. When they leave, they cage the nest so that any hatchlings that emerge after the volunteers leave are trapped in the cage and then picked up by the turtle patrol the next morning. They are then kept in a bucket in the office over the day and released the following night. Unless volunteers are able to spend an entire night watching a nest, key-hole fencing would need to be installed and removed. This practice results in hatchlings expending a lot of their energy before they even reach the water, which likely results in greater mortality when released. If the Seashore used the key-hole fencing but did not cage the nest before volunteers left, emerging hatchlings would not have protection from light pollution, which is a documented problem at the Seashore. If the key-hole fencing were left up all night, it could funnel water to the nest even more than filter fencing, increase predation, and trap hatchlings. While the current use of filter fencing is not the perfect system and does have some drawbacks - it is labor intensive, some hatchlings have become trapped in it, and in some cases it can funnel water to a nest - it does provide protection against light pollution and is currently the best alternative available, though the NPS will continue to examine its effectiveness and possible alternatives with the NCWRC and USFWS.

## Appendix C

**Concern ID: 24145**

**Concern Statement:** Commenters suggested that bird chicks could be moved from the Seashore, suggesting Pea Island as a possible location. Commenters also provided examples of other areas where chicks have been captive raised and released, or moved from their current location to another location, as examples that the Seashore should consider in this process.

**Representative Quotes:****Corr. ID:** 14393**Organization:** *Not Specified***Comment ID:** 139916**Organization Type:** Unaffiliated Individual

**Representative Quote:** Reading different articles on the Piping Plovers it seems the use of "enclosures" is an effective way of notifying people where the birds are nesting and keeping the predators away. If one of the nests are found in a heavy traffic area and it is in emanate danger; move it as in the case of a Hurricane. No need to close the beach and grant the bird so much real estate. Post signs within a reasonable limit of the nests so everyone with binoculars can observe natures beauty if they like. If someone is caught doing intentional harm to any of the wildlife on our beaches they should be prosecuted.

**Corr. ID:** 14836**Organization:** *Not Specified***Comment ID:** 135786**Organization Type:** Unaffiliated Individual

**Representative Quote:** Pea Island is reserved for birds. Is it possible to relocate the endangered birds and move there eggs?

**Corr. ID:** 15017**Organization:** *Not Specified***Comment ID:** 137903**Organization Type:** Unaffiliated Individual

**Representative Quote:** - In Nebraska, plovers are discouraged from nesting in certain areas, and encouraged to nest in other areas. ([fernandplover.unl.edu/Marcus%20et%20a1%20paper.pdf](http://fernandplover.unl.edu/Marcus%20et%20a1%20paper.pdf))  
 - In Montana, plover nests are moved up and away from rising water around reservoirs.  
 - In Montana, vegetation is burned, bulldozed and generally gotten rid of to help plovers In Montana, a reservoir was NOT LISTED as "Critical Habitat" so the area could be altered. "This reservoir was excluded from the critical habitat designation because of a Memorandum of Understanding between the Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the local irrigation districts. The memorandum, in combination with a biological opinion from the USFWS, guides management actions at this location (USFWS 2003)."  
 - In Montana, captive plovers are reared and released to the wild.  
 - All Montana-<http://fwp.mt.gov/wildthings/tande/plover.html>  
 - In Canada, plover first nesting attempt eggs are gathered and captive raised. They know the plovers will relay their eggs.  
 o <http://www.swa.ca/~Publications/Documents/Piping%20Plover%20Captive%20Rearine%20Protocols.pdf>

**Response:** Appendix G of the 1996 Atlantic Coast Piping Plover Recovery Plan represents the U.S. Fish and Wildlife Service's best professional advice regarding the management options that will prevent direct mortality, harm, or harassment of piping plovers and their eggs due to recreational activities. The recovery plan emphasizes the protection of piping plover nesting habitat, nests and chicks from human disturbance in the natural environment, rather than programs to relocate eggs to a hatchery or raising captive-reared piping plover chicks for release into the wild. The recovery objective for this species is to achieve a well-distributed increase in numbers and productivity of breeding pairs, and provide for the long-term protection of breeding and wintering plovers and their habitat.

A captive breeding program or relocation program would not be compatible with the underlying principles established in NPS Management Policies 2006. Management Policies 2006 states that natural processes will be relied upon to maintain native plant and animal species. They also state that "The Service will not intervene in natural biological or physical processes, except when directed by Congress; in emergencies in which human life and property are at stake; to restore natural ecosystem functioning that has been disrupted by past or ongoing human activities; or when a park plan has identified the intervention as necessary to protect other park resources, human health and safety, or facilities." The Seashore is also required to "successfully maintain native plants and animals by preserving and restoring the natural abundances, diversities, dynamics, distributions, habitat, and behaviors of native plant and animal populations and the communities and ecosystems in which they occur."



***AL6010 - Alternatives Considered but Dismissed: Create new habitat*****Concern ID: 24146**

Concern Statement: Commenters suggested that the NPS look at creating additional habitat for these species. Suggestions included creating dredge spoil islands, as well as clearing vegetation around the salt pond and ephemeral ponds at Cape Point. One commenter suggested that the NPS provide information about the potential impacts of habitat creation and stated that manipulation of habitat requires funding and may not be legal.

***Representative Quotes:*****Corr. ID:** 1172**Organization:** *Not Specified***Comment ID:** 132212**Organization Type:** Unaffiliated Individual

**Representative Quote:** I would like to see the area around the salt ponds cleared for a bird habitat. When it was cleared before, birds used it and flourished.

**Corr. ID:** 2747**Organization:** *Not Specified***Comment ID:** 131658**Organization Type:** Unaffiliated Individual

**Representative Quote:** The DEIS states that the effort it would take to create habitat for plover and other species by clearing vegetation around the Point ponds would be prohibitive, based on other similar experiences. This area serves as cover at least, and likely habitat, for foxes, nutria, opossum, raccoon, feral cats and other species the NPS expends great effort to kill as part of predator management. This position is inconsistent.

**Corr. ID:** 11852**Organization:** *Not Specified***Comment ID:** 134854**Organization Type:** Unaffiliated Individual

**Representative Quote:** The pro-active adaptive management initiatives identified in the DEIS (pg. 124) would enhance both resource and visitor access if they were carried out by the NPS. If the vegetation & habitat management protocols were implemented (especially at Cape Point) the seashore bird populations would increase. The ideal habitat required for most of the seashore birds at Cape Hatteras does not exist as it once did, because the NPS does not practice the necessary management plans. This is most evident at Cape Point as I have witnessed the decline of the nesting birds in this area myself over the past 25 years of visiting the seashore. The vegetation around the salt ponds and the encroaching vegetation at the point in general discourages the seashore birds to nest. Those areas should have been maintained to encourage the birds to nest. The NPS should not include plans that they themselves have no intention to adhere to.

**Corr. ID:** 13030**Organization:** *Not Specified***Comment ID:** 140479**Organization Type:** Unaffiliated Individual

**Representative Quote:** Why wouldn't the NPS consider creating additional suitable habits such as the dredge islands?

**Corr. ID:** 15000**Organization:** *Not Specified***Comment ID:** 140254**Organization Type:** Unaffiliated Individual

**Representative Quote:** Creation of shell fish bars and AMOY habitat on the sound side of Hatteras and Ocracoke should be considered. Sand pumping or sod removal could accomplish good habitat for AMOYS.

**Response:** As described on page 88 of the DEIS, the creation of habitat was considered but dismissed as a viable alternative element for this plan without further study. Based on previous habitat-creation projects, these actions are labor-intensive while the results are short-lived. The DEIS (p. 124) does allow for this concept to be further studied through the creation of a pilot program to evaluate methods for managing vegetation and improving habitat and wildlife access to available habitat in the Cape Point dredge pond area, and evaluating the effectiveness of similar measures in other areas. Overall, the NPS has recognized that the creation of habitat is a viable option under certain circumstances, however it is not an appropriate substitute for providing adequate protection of existing habitat, as outlined under the plan/EIS.

## Appendix C

***AL6020 - Alternatives Considered but Dismissed: Fence chicks away from the ORV corridor*****Concern ID: 24148**

Concern Statement: Commenters suggested that fencing or other barriers be used to separate chicks from ORV use.

**Representative Quotes:**

**Corr. ID:** 15000

**Organization:** *Not Specified*

**Comment ID:** 140256

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Fencing to protect chicks from vehicles was another positive approach rejected by NPS on page 88. Application of a little common sense on use of fencing would be beneficial in reduction of buffer size to provide access by the public.

**Corr. ID:** 15042

**Organization:** *Not Specified*

**Comment ID:** 137958

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I feel that during nesting season, temporary barriers could be constructed around the nesting wildlife with quite large fines for anyone caught disturbing the barriers and/or the protected species.

**Response:** As described on page 88 of the DEIS, piping plover and American oystercatcher chicks require access to the intertidal zone and moist substrate habitat for foraging and chicks of all beach nesting bird species may utilize those same areas for thermal regulation. Therefore, fencing chicks away from these areas would be in direct conflict with conservation of those species and would essentially reduce their chances of survival. Therefore, fencing was dismissed as an alternative element.

***AL6030 - Alternatives Considered but Dismissed: Do not provide protection for the Seabeach Amaranth*****Concern ID: 24149**

Concern Statement: One commenter suggested that the seabeach amaranth not be introduced into the park, asking when the last verified sighting of the plant was.

**Representative Quotes:**

**Corr. ID:** 12493

**Organization:** *Not Specified*

**Comment ID:** 138788

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the Park Service plan to introduce Sea Beach Amaranth into the park. Is there any proof that it was ever on Hatteras Island. If so when was the last verified sighting?

**Response:** As discussed in Chapter 3, page 221, of the DEIS, seabeach amaranth is an annual plant native to barrier-island beaches along the U.S. Atlantic Coast. Within the Seashore, the plant numbers ranged from 550 to 16,000 between 1985 and 1990. This number has dwindled in the past ten years, with no plants found since 2005. The last confirmed plant sighting was in 2005. As discussed on page 88 of the DEIS, the seabeach amaranth is protected as a federally-listed threatened plant species and federal agencies are required to protect threatened and endangered species. Additionally, Section 4.4.2.3 of the 2006 NPS Management Policies state that the NPS will "reestablish extirpated populations as necessary to maintain the species and habitats on which they depend."; therefore reintroduction of this species would be consistent with NPS policies. As shown on table 10 (page 126), the DEIS includes a provision for the possibility of future studies to assess the feasibility of restoring plant populations, with no immediate plans to start reintroduction activities.

***AL6040 - Alternatives Considered but Dismissed: Give special consideration only to flora and fauna listed as threatened and endangered***

**Concern ID: 24150**

Concern Statement: Commenters stated that the American oystercatcher and species of colonial waterbirds should not be offered the same level of protection as those species with a federal threatened or endangered status as they are classified as species of special concern by the state and not the federal government. They further stated that the protections, including buffers and pre-nesting closures, afforded to them in the DEIS were excessive and this level of protection is not warranted by the state because of the state listing.

**Representative Quotes:**

**Corr. ID:** 3610

**Organization:** *Not Specified*

**Comment ID:** 133285

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The management buffers described in DEIS pages 121 to 127 should be modified to allow pre-nesting closures for only endangered or threatened species. This would result in establishing pre-nesting closures exclusively for the, Piping Plover, the only threatened bird species in the seashore. Also, pre-nesting closures are not warranted for the non-endangered and non-threatened American Oystercatchers. Because Colonial Waterbirds do not return to the exact same place for nesting each year, establishing pre-nesting closures for these birds is both unpredictable and unnecessary.

**Corr. ID:** 3887

**Organization:** *Not Specified*

**Comment ID:** 133197

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Excessive resource closures/buffers established for non-ESA listed species. These species (American Oyster Catchers, Black Skimmers, Common Terns, Least Terns & Wilson's Plover) are listed in the "Protected Wildlife Species of North Carolina" as "North Carolina Special Concern Species". The excessive closures as defined within the DEIS Species Management Strategies (pages 121-127, Table 10) in no way reflect the protection afforded these species by the state of North Carolina. The excessive closures granted these species by NPS has and will close more beach access than the closures afforded the ESA listed Piping Plover. We recommend that NPS not establish closures in excess of those defined/established by the state of North Carolina.

**Corr. ID:** 14932

**Organization:** *Not Specified*

**Comment ID:** 136852

**Organization Type:** Unaffiliated Individual

**Representative Quote:** AMOYS are on a North Carolina list of concern. By being placed on this list, North Carolina is monitoring and counting birds in a very limited fashion, but doing otherwise nothing to protect them. USFW does no enclosures in Pea Island Wildlife Refuge until an egg is laid. The management procedure is to "approach AMOY until it flushes then back away 15 yards for the closure." No more than this procedure should be used in the NPS area, keeping in mind that this is a recreational area first and a resource area second. If you state that you have only the Endanger Species Act (ESA) to go by for protecting a bird that is only on a list of concern in North Carolina, then either give it no protection or have regulations that are similar to the state procedures.

Colonial Waterbirds: The management procedures should be the same as the AMOY protection.

**Corr. ID:** 14942

**Organization:** NC Wildlife Resources Commission

**Comment ID:** 136794

**Organization Type:** State Government

**Representative Quote:** The treatment of state-listed species of special concern as if those species were federally listed is inconsistent with the letter and intent of the statutes that authorize the state-listing process.

Therefore we request the NPS not use state listing of species of special concern as justification for recommending actions required by federal listing, or in lieu of federal listing. Rather, we request the NPS consult with WRC biologists to understand specific monitoring other conservation actions warranted by state listing.

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**Corr. ID:** 15044**Organization:** *Not Specified***Comment ID:** 137811**Organization Type:** Unaffiliated Individual

**Representative Quote:** In view of the enabling legislation, no wildlife should be considered in restricting recreational access unless the animal is explicitly identified as "endangered" or "threatened" under the Endangered Species Act. The Supremacy Clause of the U.S. Constitution does not permit "state-listed" or "special status" wildlife to infringe on the enabling legislation.

**Response:** In addition to the Endangered Species Act, the NPS has responsibilities under many different regulations, policies, and requirements regarding species management, including the NPS Organic Act, the Migratory Bird Treaty Act (MBTA), Executive Order 13186, and NPS Management Policies 2006.

Section 4.4.1 of the NPS Management Policies 2006 says that "The National Park Service will maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems...by preserving and restoring the natural abundances, diversities, dynamics, distributions, habitats, and behavior of native plant and animal populations and the communities and ecosystems in which they occur...and minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them." NPS Management Policies 2006 (sec. 4.1) provide that "Natural resources will be managed to preserve fundamental physical and biological processes, as well as individual species, features, and plant and animal communities...including the natural abundance, diversity, and genetic and ecological integrity of the plant and animal species native to those ecosystems." Section 4.4.1.1 of the NPS Management Policies addresses the NPS responsibility to maintain "all native plant and animal species and their habitats inside parks." Section 4.1 of the NPS Management Policies also provides that "There may be situations in which an area may be closed to visitor use to protect the natural resources (for example, during an animal breeding season..." Simply put, the NPS has obligations under the Organic Act, other applicable laws and policies to protect wildlife, listed or not, even if it means some restrictions on access.

NPS Management Policies 2006 (sec. 4.4.2.3) also state that "The Service will survey for, protect, and strive to recover all species native to national park system units that are listed under the Endangered Species Act. The Service will fully meet its obligations under the NPS Organic Act and the Endangered Species Act to both proactively conserve listed species and prevent detrimental effects on these species." To meet the above obligations, the management policies direct the NPS to "conduct actions and allocate funding to address endangered, threatened, proposed, and candidate species." The policies further indicate that "the National Park Service will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible. In addition, the Service will inventory other native species that are of special management concern to the parks (such as rare, declining, sensitive, or unique species and their habitats) and will manage them to maintain their natural distribution and abundance."

In addition to NPS's responsibilities under the Organic Act and NPS Management Policies, Executive Order 13186 directs Federal agencies to minimize their negative impacts on migratory birds, promote conservation of migratory bird populations, and to perform certain actions to further implement the MBTA. This executive order requires that federal agencies "support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions" and to "ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern." Furthermore, the executive order requires agencies to "identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors" and to "develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service." All of the bird species that are described under the "State-Listed and Species Status Species" sections of the DEIS are listed in 50 CFR § 10.13, which indicates species that are subject to the protections of the MBTA. These species are also designated as Birds of Conservation Concern (USFWS 2008b) and/or Migratory Nongame Birds of Management Concern in the United States (USFWS 1995) which qualifies them as species of concern according to Executive Order 13186. Therefore, the NPS is required to protect these species according the provisions of both the executive order and the MBTA. Pursuant to the executive order, in April 2010 NPS and FWS entered into a memorandum of understanding (MOU) to establish how the two agencies will jointly promote the conservation of migratory birds by incorporating bird conservation measures into agency actions and planning processes.

NPS has obligations under the Organic Act and the Seashore's enabling legislation to protect these species, whether they are listed or not. NPS management policies clearly provide that the Seashore is to manage species of concern in a manner similar to the management of federally-listed species. As a result, the species management tables in the DEIS were developed to provide protective mechanisms for state-listed and special status species that are similar in practice to those established for the federally listed piping plover, but differ based on each species' breeding and migrating behavior, habitat requirements, and reaction to disturbance.

**Concern ID: 24151**

**Concern Statement:** Commenters stated that the DEIS does not show that the red knot is native and protection is warranted. They further stated that its proposed listing does not offer the same protection under the Endangered Species Act as a listed species.

**Representative Quotes:**

**Corr. ID:** 15045

**Organization:** United Four Wheel Drive Associations, Inc.

**Comment ID:** 137925

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The DEIS states that NPS Management Policies require it to "inventory other native species that are of special management concern to parks and will manage them to maintain their natural distribution and abundance (emphasis added). DEIS at 419, citing to NPS 2006, sec. 4.4.2.3. The DEIS fails to demonstrate that Red Knot are native to Cape Hatteras National Seashore, thus protection under NPS 2006, 4.4.2.3 is unwarranted. In contrast, the International Shorebird Survey autumn (July to October) counts, 1974-1978, using maximum recorded counts, does not list any Red Knot in North Carolina. The counts listed in nearby Virginia between 1974 and 1978 are zero except for a count of 24% in 1977. Even if Red Knot are arguably of special management concern, protection by NPS under internal Management Policies is not warranted as Red Knot are not "native" species. Alternative F purposely seeks to reduce adverse impacts by instituting nonbreeding closures and provides further protection including four miles of "floating" closures. DEIS at 139.

**Corr. ID:** 15045

**Organization:** United Four Wheel Drive Associations, Inc.

**Comment ID:** 137924

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Affording protection to species not listed by state or federal EPA is a violation of law. Red Knot is not listed by North Carolina or by the U.S. Fish and Wildlife Service (USFWS). Nonbreeding closures and "floating closures" of some areas is proposed with Alternative F to reduce impacts to Red Knot. DEIS at 139. The Endangered Species Act (ESA) provides no authority for the protection of species upon a mere "proposal" to list a species. To consider adverse effects on candidate species would be premature since the USFWS has yet to determine whether Red Knot or Red Knot habitat are in fact at risk. Imposing additional closures in the name of Red Knot protection is not warranted through public input and the processes required under the ESA. The Endangered Species Act (ESA) provides no authority for the protection of species upon a mere "proposal" to list a candidate species or a "proposal" to designate critical habitat. It is outside the authority of the NPS, and outside the confines of the ESA to reevaluate designation of public lands for the purpose of limiting or closing areas based on candidate species.

**Response:** Section 4.4.1.3 of NPS Management Policies defines native species as "all species that have occurred, now occur, or may occur as a result of natural processes on lands designated as units of the national park system" and exotic species as "those species that occupy or could occupy park lands directly or indirectly as the result of deliberate or accidental human activities". The USFWS considers the red knot to be a native species. (see 74 Fed. Reg. 57803-57878, "Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions; Proposed Rule"). The Red Knot occurs statewide in North Carolina (<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=BODM>) and uses lands in the Seashore during migration (DEIS at 248). Therefore, at the Seashore it is a native species and is subject to protection under the provisions of NPS Management Policies.

Although the red knot has been designated by the USFWS as a candidate for protection under the ESA (DEIS at 246), the NPS did not rely primarily on the authority of the ESA to establish protective measures for the red knot. NPS Management Policies 2006 state that "the Service will fully meet its obligations under the NPS Organic Act and the Endangered Species Act to both proactively conserve listed species and prevent detrimental effects on these

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species.” To meet these obligations, the Service will “conduct actions and allocate funding to address endangered, threatened, proposed, and candidate species.” The protections provided by the NPS Organic Act and other applicable laws and policies apply to the red knot.

Please refer to the response to Concern ID 24150 for information regarding the protections afforded to red knot under the Migratory Bird Treaty Act (MBTA) and Executive Order 13186, as well as its designation as a Bird of Conservation Concern.

***AL6070 - Alternatives Considered but Dismissed: Provide an area for off-leash dogs***

**Concern ID: 24156**

Concern Statement: One commenter stated that the NPS should consider providing an area for off-leash dogs in this planning process.

***Representative Quotes:***

**Corr. ID:** 12002

**Organization:** *Not Specified*

**Comment ID:** 134203

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 90, Chapter 2: Alternatives, Top of Page, Paragraph: Provide an Area for Off-Leash Dogs. This paragraph states "Creation of off-leash areas would not be consistent with 36 CFR 2.13 and would require promulgation of a special regulation allowing off-leash dog use, which is outside the scope of the plan/EIS." It would seem to be simple enough to cover the possibility of an off-leash area under the DEIS and go thru the process to promulgate a special regulation later. I oppose leaving this out of the DEIS. The DEIS is not a regulation per se, so inclusion of the possibility of an off leash area in the EIS wouldn't mean that it would become regulation until the proper CFR process was completed and even then it might be opposed so it might never become a reality. If it were included in the DEIS, then a major step would have been taken to modify the CFR later if it were found to be viable.

**Response:** Pet regulations, including the leash requirement, that apply throughout the National Park System, including Cape Hatteras National Seashore, are established in 36 CFR 2.15. To decide whether to propose a special regulation for a unit of the NPS for pets different than the national regulation would require its own planning process. As correctly stated in the DEIS, this is outside the scope of the ORV Plan/EIS. Additionally, unleashed pets have the potential to adversely impact wildlife at the Seashore, including beach nesting bird species and sea turtles. As described on p. 211 of the DEIS, unleashed pets have the potential to flush or kill piping plovers. Potential impacts from pets are also described on pages 232 and 233 with respect to disturbances to American oystercatchers. Pets are also identified in the DEIS as potential risk factors for colonial waterbirds and Wilson's plover. The NPS will continue to enforce the existing pet regulation in 36 CFR 2.15.

The following editorial changes will be made to the text on page 90 of the DEIS:

Currently, pets at the Seashore are regulated under 36 CFR 2.15, which applies to all units of the national park system and prohibits pet owners from “failing to crate, cage, restrain on a leash which shall not exceed 6 feet in length, or otherwise physically confine a pet at all times.” Creation of off-leash areas would not be consistent with 36 CFR 2.15 and would require its own planning process and promulgation of a special regulation allowing off-leash dog use, which is outside the scope of the plan/EIS.

***CC1000 - Consultation and Coordination: General Comments***

**Concern ID: 24153**

Concern Statement: One commenter stated that the surf fishermen should have had more input into the DEIS.

**Representative Quotes:****Corr. ID:** 15197**Organization:** *Not Specified***Comment ID:** 139333**Organization Type:** Unaffiliated Individual

**Representative Quote:** In closing, I want to say that this – that it is my opinion that surf fishermen did not have any input into the DEIS report. If they did have input, none of it ended up in this report. In other words, I believe that the report as written is biased. All I'm asking for is consideration and objectivity in the final report.

**Response:** Fishing advocacy groups were included and actively participated in the negotiated rulemaking process for the ORV management plan/EIS. Also, members of the American Sportfishing Association, Cape Hatteras Anglers Club, Recreational Fishing Alliance, and United Mobile Sportfishermen, as well as numerous other individuals expressing interest in related issues, submitted comments during the public comment period for the DEIS. The NPS received and evaluated comments from various user groups, including commercial and surf fishermen. The public notice mechanisms required by NEPA regulations afforded all stakeholders reasonable opportunities to provide input during the planning process.

**Concern ID: 24154**

**Concern Statement:** One commenter requested that any adaptive management process include the use of an oversight committee with external experts/scientists.

**Representative Quotes:****Corr. ID:** 5757**Organization:** *Not Specified***Comment ID:** 133385**Organization Type:** Unaffiliated Individual

**Representative Quote:** In chapter 5, under Consultation and Coordination, I did not see mention of any type of oversight committee or board. As the NPS adheres to a policy of using adaptive management, it seems a review process by an external panel or committee made up of scientists and managers should be established to periodically review protocols and results of key management operations. This allows for future modification and flexibility in CAHA management.

**Response:** NPS will seek technical advice as appropriate from other agencies with the relevant scientific expertise, such as the USFWS and individual advice and review from other species experts, but does not intend to form a committee under the Federal Advisory Committee Act to advise on management.

**ED1000 - Editorial****Concern ID: 24155**

**Concern Statement:** One commenter requested that the FEIS include a definition of "essential vehicle."

**Representative Quotes:****Corr. ID:** 15132**Organization:** *Not Specified***Comment ID:** 138117**Organization Type:** Unaffiliated Individual

**Representative Quote:** There could at least have been a definition of essential vehicle given in the DEIS, instead of referring the reader to a piping plover document.

**Response:** The following definition of essential vehicle appears on page 647 of the DEIS:  
Essential vehicle - Vehicles used by the National Park Service, or its agents, to conduct authorized administrative activities, such as resources management, law enforcement or other park operations, related to implementation of this plan or other applicable management plan(s) or permit(s), or as needed to respond to emergency operations involving threats to life, property, or park resources, within areas that are otherwise closed to recreational ORV or visitor use.

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**GA1000 - Impact Analysis: Impact Analyses (General)****Concern ID: 24157**

Concern Statement: Commenters expressed concern that the document uses "would" instead of "will" to define impacts, suggesting it creates ambiguity.

**Representative Quotes:****Corr. ID:** 175**Organization:** Not Specified**Comment ID:** 130037**Organization Type:** Unaffiliated Individual

**Representative Quote:** I disagree with the use of speculation when implementing such restrictions. There are numerous examples of non-factual speculation contained within "Table ES-1." "Habitat loss could also occur indirectly" is a statement overflowing with nonfactual ambiguity. Could it occur or does it occur? Also, is there any proof that "vehicular noise could create unsuitable habitat for Seashore wildlife", or is that speculation as well (use of "could" again)?

**Corr. ID:** 15046**Organization:** Cape Hatteras Business Alliance**Comment ID:** 139839**Organization Type:** Business

**Representative Quote:** NPS needs to simply change the language in the DEIS and replace every could, might, may and possibly with: could or could not, might or might not, mayor may not, possibly or possibly not, then balance the possibilities against the "WOULDS", inject a healthy dose of common sense, and keep in mind that they are holding peoples lives in their hands.

**Response:** When preparing environmental assessments and environmental impact statements, it is common practice for all federal agencies to use "would" instead of "will" when describing impacts under the proposed alternatives, given that a selected alternative has not yet been determined. Once an alternative is selected for implementation in the Record of Decision, the NPS will change the language in the Record of Decision from "would" to "will", as the selected alternative has been approved and will occur. "Could, may, might, and possibly" are appropriately used in NEPA impact analyses because there are often varying levels of uncertainty implicit in predicting impacts. Effects that are completely speculative are not included in the impact analysis.

**Concern ID: 24158**

Concern Statement: Commenters requested that the FEIS provide a better inventory of soundside access points.

**Representative Quotes:****Corr. ID:** 13619**Organization:** Virginia Coastal Access Now**Comment ID:** 139543**Organization Type:** Unaffiliated Individual

**Representative Quote:** The sound side access locations in the document seem to be lacking. A better and more complete inventory of sound side access needs to be included in the final document.

**Response:** All soundside ramps are labeled by number and denoted by a yellow star in the "ORV Routes and Areas" maps (beginning on page 147 of the DEIS). Map 1 has been revised to show an access point at Oregon Inlet Marina. Additional parking areas along both the soundside and the ocean side are also labeled on all ORV Routes and Areas maps beginning on page 147 of the DEIS. The NPS feels these are adequate representations of the existing soundside access throughout the Seashore.

**Concern ID: 24159**

Concern Statement: One commenter suggested that NPS conduct a study that compares the Seashore to an area with no/minimal vehicular activity such as Pea Island, to accurately assess the contribution of human activity on bird and turtle habitat.



**Representative Quotes:****Corr. ID:** 14930**Organization:** *Not Specified***Comment ID:** 137126**Organization Type:** Unaffiliated Individual

**Representative Quote:** An ideal control situation for Hatteras Island exists on Pea Island where there is no/minimal vehicular activity. NPS should work with its sister Federal Agency to conduct a statistically designed and interpreted study. Since vehicular activity is not a component on Pea Island you will be able to accurately assess the contribution from human activity on bird and turtle habitat in comparison to natural (storms) and predatory activity.

**Response:** Page 124 of the DEIS states that :

“the NPS may authorize qualified researchers associated with recognized academic or research institutions to conduct additional scientific research on the respective species that will add to the existing knowledge of shorebird species or improve resource protection within the Seashore.”

Therefore, if the proposal met the criteria stated on p. 124 of the DEIS, the NPS would consider authorizing a research study similar to the one suggested on Pea Island. NPS notes that Pea Island beaches are nourished beaches with a number of locations with high rates of erosion (“hotspots”), unlike the Seashore beaches, and may not provide the same habitat for birds or turtles.

**GA1050 - Impact Analysis: Issues Analyzed****Concern ID: 24160**

**Concern Statement:** Commenters stated that the DEIS did not adequately account for the cultural and historic significance of the Seashore. Specifically, some commenters felt that the Seashore qualified for the Traditional Cultural Property designation and this issue should have been carried forward and analyzed in the DEIS.

**Representative Quotes:****Corr. ID:** 241**Organization:** *Not Specified***Comment ID:** 130528**Organization Type:** Unaffiliated Individual

**Representative Quote:** I do not understand how TCP information was not included in the DEIS. I spent a little less than an hour on the internet and here is what I found as posted on the [nemuseumofhistory.org/nchh/amerindian](http://nemuseumofhistory.org/nchh/amerindian).

North Carolina American Indian History Time Line

Pre-Sixteenth Century American Indian History Time Line- 700-1550 A.D. Many groups of American Indians live in the area now called North Carolina. These include the Chowanoke, Croatan, Hatteras, Moratoc, Secotan, Weapemoc, Machapunga, Pamlico, Coree, Neuse River, Tuscarora, Meherrin, Cherokee, Cape Fear, Catawba, Shakori, Sissipahaw, Sugeree, Waccamaw, Waxhaw, Woccon, Cherawah, Eno, Keyauwee, Occaneechi, Suponi and Tutelo Indians.

1584

Sir Walter Raleigh sends explores Phillip Amadas and Arthur Barlowe to North America in search of potential colony sites. At Roanoke Island the explorers meet American Indian Wingina and finds the site excellent for settlement. They return to England with two Indians, Manteo and Wanchese who learn English and are used to create publicity for Raleigh's colony.

From the [accessgeneology.com/native/northcarolina](http://accessgeneology.com/native/northcarolina) site:

Hatteras-Meaning unknown. Location-Among the sandbankc about Cape Hatteras east of the Pamlico Sound and frequenting Roanoke Island.

Village-Sandbanks of Cape Hatteras

History - Lawson (1860) thought the Hatteras showed traced of white blood ... In 1762 the Rev. Alex Stewart baptized 7 Indians and the mixed blood children of the Attamuskeet, Hatteras and Roanoke tribe.

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Connection in which they have become noted- The possible connection of the Hatteras with the Croatan has been mentioned and their name has become perpetuated in the dangerous cape at the angle of the outer sand islands of their old country.

It seems to me, if there is historic documentation of the Hatteras Nation noting they lived on the cape of the outer sandbanks, and their blood line mixed with Sir Raleigh's colonists then, many of the people here, on Hatteras Island today, have historic as well as cultural properties in and about them, also. And since Native Americans are perpetuators in keeping their history & culture alive in their present, daily lives you can be sure the culture and history of the people of Hatteras Island perpetuate the same.

**Corr. ID:** 2675                      **Organization:** *Not Specified*  
**Comment ID:** 132132            **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The series of Life Saving Stations (US Life Saving Service) within the Seashore are a symbol of the Cultural/Historic Value of surf zone access. These stations, in addition to rescue of crew & passengers of ships in distress, often served as community centers. These stations pre-date the establishment of the Seashore and co-existed with the park until the 1950's. I believe the DEIS fails to recognize this, or in fact any, Cultural/ Historical Value of surf zone access.

**Corr. ID:** 10862                    **Organization:** Flowers Ridge Homeowners Assn  
**Comment ID:** 136140            **Organization Type:** Unaffiliated Individual  
**Representative Quote:** Second, the NPS-commissioned report Ethnohistorical Description of the Eight Villages Adjoining the Cape Hatteras National Seashore and Interpretive Themes of History and Heritage, issued in 2005 and signed by Superintendent Mike Murray appears to have been totally disregarded in the drafting of the EIS/ORV management plan. The 300-plus years of traditional symbiosis that has linked the people of the Outer Banks with the sea, the seashore and the birds and other creatures that share it with its human residents have no effect on the NPS's mechanistic strategy for diminishing human presence and clearing the landscape for a wildlife refuge. Unless the DEIS can be revised to incorporate the human values and cultural traditions of the islands into wildlife conservation it must be discarded entirely.

**Corr. ID:** 14588                    **Organization:** *Not Specified*  
**Comment ID:** 139231            **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The only groups that have any historical rights to all areas of the Seashore and are part of the cultural tradition are the legal residents of the village engaged in traditional (dory) commercial fishing. They should be entitled to fish in pedestrian access only areas.

**Corr. ID:** 14823                    **Organization:** *Not Specified*  
**Comment ID:** 137053            **Organization Type:** Unaffiliated Individual  
**Representative Quote:** In ignoring the formal identification of TCPs, the NPS has not fulfilled its NEPA obligations. It is further not in compliance with the Section 106 of National Historic Preservation Act of 1966, as Amended (NHPA), which mandates that federal agencies take into consideration the effect of their actions on historic properties. Historic properties in NHPA context (and under NEPA) refer to all cultural resources to include ethnographic resources, TCPs, and historic landscapes and their traditional uses.

The total failure to address the traditional cultural value of surf zone access in the DEIS is curious on several additional counts. For one, the DEIS describes ORV access as historical in nature (pg 83) and also both predating the Seashore and as being integral to the Seashores' public use by both residents and visitors. The document also illustrates and captions historical commercial fishing (pg 18), historical recreational fishing (pgs 15, 260) and historical general recreational activities (pg 259). These same traditional cultural activities are featured on the cover of the DEIS. The surf zone has long been not just a location for traditional economic activities such as surf dory seine net fishing but also other cultural activities as well. These include general beach recreation activities, social gatherings, and hook and line recreational/subsistence fishing. Collectively these activities are components of an unbroken pattern of land use that extend back many generations before the establishment of the Seashore and remain integral to the fabric of the historically unique Outer Banks communities. Further yet, the continuation of this traditional pattern of land use is central to maintaining the historic identity of these same communities.

**Response:** The Tuscarora Nation is the only affiliated tribe for the Cape Hatteras National Seashore. NPS is not aware of any historic properties that may be of religious and cultural significance to the Tuscarora Nation that would potentially be affected by the management alternatives described in the draft Plan/EIS. The Seashore has consulted with the Tuscarora Nation about the ORV Management Plan/DEIS and the Tuscarora Nation has not informed the Seashore of any historic properties of religious or cultural significance to them which would be potentially affected.

The FEIS continues to allow, as suggested by commenter, legal residents of the villages engaged in various commercial fishing activities under their park-issued commercial fishing permit to use ORVs to access areas otherwise closed to ORV use (i.e. vehicle free areas, safety and administrative closures), except in resource closures and on life-guarded beaches. There are a small number of commercial fishermen engaged in traditional haul seine (dory) fishing, and NPS believes it is not necessary to limit these access provisions to only that commercial fishing activity.

NPS has received a review of the Ethno history report, met with and considered information provided by Traditional Cultural Property (TCP) proponents, reviewed NPS Guideline 38 on Traditional Cultural Properties, consulted with NPS regional experts, and reviewed DEIS comments related to this topic. Since publication of the DEIS NPS has completed an analysis of the potential eligibility for the areas proposed by the Outer Banks Preservation Association as traditional cultural property. NPS determined the areas ineligible and provided its determination to the North Carolina Department of Cultural Resources, State Historic Preservation Officer (NCDNR/SHPO) and the NCDNR/SHPO offered no opinion.

Regardless of the ineligibility of the proposed areas as TCPs, NPS recognizes the interest of visitors (new and old) in accessing the beaches of the Seashore, whether by ORV or on foot, and has attempted in the preferred alternative to accommodate a diversity of opportunities for beach activities.

**Concern ID: 24161**

**Concern Statement:** Commenters noted impact topics they felt should have been carried forward for full evaluation in the DEIS including wilderness, the impacts of climate change specifically on the bird populations, the value of recreational fishing, and geology.

**Representative Quotes:**

**Corr. ID:** 3897

**Organization:** *Not Specified*

**Comment ID:** 132729

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Impacts of Climate Change

Studies predict that coastal barrier islands and their natural and cultural resources will be affected by sea level rise and potentially stronger storm events resulting from climate change. Relative sea level is currently rising in northeastern North Carolina at a rate of 16 to 18 inches per century, a substantially higher rate than the 7 inches per century one hundred years ago and the 3 inches per century rate 200 years ago

Stan Riggs & others;

<http://www.google.com/search?hl=en&q=stan+riggs+ecu+%2B+sea+level+rise&start=10&sa=N>

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IPCC (2001) PREDICTED MAXIMUM RATE OF GLOBAL SEA-LEVEL RISE = 0.88 M (2.89 FT) 2100

IPCC (2001) PREDICTED MEAN RATE OF GLOBAL SEA-LEVEL RISE = 0.49 M (1.61 FT) 2100

PRESENT RATE OF SEA-LEVEL RISE IN NORTH CAROLINA = 0.31 M (1.0 FT) PER CENTURY

-chart insert: showing sea-level changes through the Late Pleistocene, Holocene, present and future.

The above chart is wrong. IPCC (2001) prediction has not happened in CHNSRA. The present rate (solid line) has not happened. It cannot be demonstrated anywhere. If this prediction were true it would be evident on bridge pilings, dock pilings, breakwaters, seawalls, and most importantly all the beaches.

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Erosion is not sea level rise. Reduced beach width is not sea level rise. Tidal & wind driven flooding is not sea level rise.

Subsidence is not sea level rise.

**Corr. ID:** 13438                      **Organization:** National Parks Conservation Association

**Comment ID:** 140913              **Organization Type:** Unaffiliated Individual

**Representative Quote:** It is our position that it is absolutely essential that NPS protect the pedestrian visitor experience through environmentally appropriate access to primitive wilderness. As a consequence, we urge the National Park Service to execute and produce the wilderness suitability study for CAHA that is now 35 years overdue (see Management Policies 2006, Ch. 6).

**Corr. ID:** 13981                      **Organization:** Recreational Fishing Alliance - South Carolina

**Comment ID:** 140105              **Organization Type:** Unaffiliated Individual

**Representative Quote:** Recreational fishing has not been adequately represented for its economic, social and cultural value in the National Park Service's Draft ORV Management Plan/EIS for CHNSRA. The National Park Service should develop a consensus from as many interests as possible as it develops and recommends policy and regulations, and our strong concerns here should at least indicate that there is a great opportunity to be more inclusive of interests that are quite popular among the public not only in the Carolinas but in the entire country.

**Corr. ID:** 14094                      **Organization:** *Not Specified*

**Comment ID:** 135767              **Organization Type:** Unaffiliated Individual

**Representative Quote:** I do not see an analysis of the likely impacts of climate change. What is the affect of warmer coastal temperatures on the nesting range of the shore birds? Would the change in climate affect not only nesting but feeding habitat? Since Hatteras Island is the most southern point of the piping plover's nesting range would the continued increase in coastal temperatures, associated with climate change, naturally drive the nesting areas further north? If so the plan would be meaningless and obsolete. A study by the Audubon society has noted that significant numbers (46%) of shorebirds have been moving north as a result of global warming. I refer you to: <http://www.audubon.org/news/pressroom/bacc/pdfs/Birds%20and%20Climate%20Report.pdf>

**Corr. ID:** 14436                      **Organization:** *Not Specified*

**Comment ID:** 139466              **Organization Type:** Unaffiliated Individual

**Representative Quote:** I respectfully disagree with geologic impacts on beaches being left out of the EIS. The document said that " the Seashore is part of a dynamic coastal barrier ecosystem, and visual effects of ORVs on ocean beaches can no longer be visible in a matter of hours due to daily tidal action, winds, rain, hurricanes, and other storm events." (EIS). This is true but if the use of ORVs is not limited at all, then the tracks might be always visible because there will always be ORVs to make new tracks after the old ones have been washed away and it might be possible for a visitor to walk the beaches all day without enjoying a view unobstructed by tire marks on the beach. This leads me to a discussion on aesthetics.

**Corr. ID:** 14588                      **Organization:** *Not Specified*

**Comment ID:** 139210              **Organization Type:** Unaffiliated Individual

**Representative Quote:** All visitors (ORV access and pedestrian access) should expect a choice for the type of experience they can participate in. Listed below is new information to consider which would identify and protect primitive wilderness experience in CHNS. The greatest potential for wilderness areas in this park is areas where access is by foot and the above attributes are present. Scenic features; natural visibility, both day and night; natural landscapes; natural soundscapes and smells")

- a. In an unaltered state with minimal adjacent Infrastructure,
- b. Natural coastal and dune building processes,
- c. Observable wildlife resources,
- d. Wide beach with minimal degree of slope,

1. Ease of egress, all egress through NPS property with Ramps, boardwalks or established breaks through the dune
2. Traditional pedestrian beaches, beaches that have been Used extensively for pedestrian access only in the past and have suitable established parking infrastructure

3. Diversity of experience
  - a. Areas convenient to NPS services
  - b. Remote areas

The areas suggested in Plan F misses the mark on scenic features by designating the majority of those places to ORV access.

**Response:** The NPS has not made any assumptions in the EIS that would rely on scientific predictions regarding sea level rise. NPS has not made any attempt to attribute impacts from sea level rise on park resources in the Seashore in the EIS. The following text on page 293 of the DEIS explains why the impacts of sea level rise were not analyzed.

“Given the complex interactions among multiple factors and the uncertainties over human response to climate change on the barrier islands, the level of uncertainty about possible effects on specific resources or impact topics over the 10-15 year planning period makes analysis for impacts of climate change in this document speculative. It is assumed that management that would build resiliency into the Seashore’s wildlife and plant resources (e.g., management measures to allow increases in populations of protected species during the next 10-15 years) would be beneficial to those resources as they adapt to changed conditions over future decades.”

The Seashore does not have any areas that are currently designated or proposed wilderness, and therefore it was not addressed as an impact topic in the DEIS. A study to explore the suitability of wilderness at the Seashore is outside the scope of this planning effort and will be addressed during the upcoming process to develop a new General Management Plan for the Seashore.

With regards to how recreational fishing was represented in the DEIS, as noted in the response to Concern ID 24186, various recreational uses occur at the Seashore and the NPS does not place greater emphasis on one form of recreation over another. Therefore, recreational fishing was discussed in the DEIS in the context of all of the other uses occurring at the Seashore.

Soils and the possibility for disturbing sand, compacting sand, creating ruts, and changing the local topography, was dismissed under the “Geologic Resources” impact topic in Chapter 1 (pages 31 of the DEIS). While ORV use could result in increased erosion, the Seashore is a dynamic ecosystem and visual impacts from ORVs are quickly erased by tides, winds, rain, hurricanes, and other storm events. With the use of designated ramps, which are strictly enforced throughout the Seashore, ORV impacts to dunes are a rare occurrence. Alternative F includes the construction of new ramps and parking areas. As indicated in the impact analysis in chapter 4 of the EIS, ramps and parking areas would be designed and constructed with a semi-permeable clay/shell base, turf block, or some other porous material, using environmentally sensitive standards to minimize stormwater runoff. Given these conditions, it was determined that impacts to geologic resources, including soils, would be less than minor and therefore this was not carried forward for further analysis in the DEIS. The FEIS, under “Issues Considered But Dismissed From Further Analysis – Geologic Resources” will include additional text stating that the impacts would be minor or less. It should also be noted that issues related to sand compaction are included in the DEIS in the discussion of how ORV use impact invertebrates at the Seashore (DEIS starting on p. 484). In relation to ORV tracks as an aesthetic issue, this was considered in the EIS under Visitor Use and Experience. Alternative F, as modified, addressed the desire of some visitors to have an experience without ORV tracks by increasing the number of vehicle-free areas in the Seashore.

## Appendix C

**GA4000 - Impact Analysis: Impairment Analysis-General Methodology****Concern ID: 24167**

**Concern Statement:** One commenter stated that alternative F would cause an impairment to park values because it does not provide enough places with the desired scenic value to those wanting a non-ORV experience.

**Representative Quotes:****Corr. ID:** 14588**Organization:** *Not Specified***Comment ID:** 139222**Organization Type:** Unaffiliated Individual

**Representative Quote:** Plan F will cause an impairment of "Park Values". Criteria to identify where areas of the Seashore that have Park values and appropriate means to protect them is lacking. Those looking for a non-ORV experience at the Seashore would experience long-term adverse impacts. There was more year round non-ORV areas in the Park in 2002 than proposed in plan F. In addition the areas proposed for non-ORV access are areas that so eroded and narrow that it is unlikely they would be open to ORV use. The majority of the proposed pedestrian areas are of marginal aesthetic value and would constitute an impairment of values under NPS Management Policies 2006 (1.4.6 What Constitutes Park Resources and Values)

**Response:** Alternative F has been revised in the FEIS to provide additional vehicle free areas.

The impairment that is prohibited by the Organic Act does not apply to topics such as visitor experience, socioeconomics, or park operations and therefore impairment findings are not made for these topics (NPS 2010h). The scenic value of the Seashore exists whether it is observed by anyone and independent of whether an area is designated as an ORV route or a vehicle free area. However, the subjective visitor experience of a particular scenic value may differ among visitors. For this reason NPS has provided a variety of vehicle free areas as well as ORV routes to accommodate a diversity of desired visitor experiences.

**Concern ID: 24655**

**Concern Statement:** One commenter stated that alternative F would not allow for recovery of the seabeach amaranth and would result in impairment of the species.

**Representative Quotes:****Corr. ID:** 15073**Organization:** Southern Environmental Law Center**Comment ID:** 137740**Organization Type:** Conservation/Preservation

**Representative Quote:** Most fencing intended to protect shorebird areas is removed after the nesting season; generally Labor Day. This allows seabeach amaranth the opportunity to produce some seeds, but it does not allow them time to produce as many seeds as they would if they were allowed to senesce naturally, later in the fall. Staff at Cape Hatteras National Seashore has noticed an increase in the number of vehicles on the beach in recent years.. Alternative F will not allow for the recovery of this species on the Seashore and will result in impairment of this federally-listed species.

**Response:** Resource closure areas that are to be reopened are surveyed for seabeach amaranth before reopening them to ORV use. As noted on page 222 of the DEIS, plants are usually visibly detectable beginning in June, which is before the reopening of most shorebird closures. Therefore, any plants within the resource closures would likely be found and protected with a 30-foot (9.1-meter) by 30-foot (9.1-meter) closure, allowing the plants to senesce naturally and set their full complement of seeds. In addition to already stated reasons why alternative F would not result in impairment (pages 416-417 of the DEIS), the NPS has revised alternative F to include more year-round vehicle free areas. A total of 26.4 miles will now be vehicle-free at the Seashore, including the historically important seabeach amaranth habitat located from approximately 0.3 miles west of the point at Cape Point to approximately mile post 47 and the ocean beach on Hatteras Inlet Spit; and another 12.7 miles designated as seasonal ORV routes would be vehicle free 6 to 7 months a year. (see also response to Concern ID24269 and Concern ID24653). Protection of seabeach amaranth in resource closures before reopening them to ORV use, the increased amount and location of beach area closed to ORV use year-round or seasonal ORV use 6 to 7 months per year under the revised alternative F, and the protection afforded the plant by other resource closures will afford greater protection of

seabeach amaranth habitat and the species itself if it reappears or is reintroduced to the Seashore, precluding impairment of this federally listed species.

### **GA5000 - Literature Review**

#### **Concern ID: 24168**

**Concern Statement:** One commenter stated that the literature review did not include many relevant studies related to the impacts of ORV use and human disturbances on natural resources. Another commenter stated that the DEIS ignored certain studies addressing resource protection buffers and other protection measures.

#### **Representative Quotes:**

**Corr. ID:** 15010

**Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140424

**Organization Type:** Conservation/Preservation

**Representative Quote:** In this regard, the DEIS also ignores certain studies presented during the negotiated rulemaking process, including studies addressing resource protection buffers and other protection measures. One of these studies, for example, among other things, supports the creation of buffers during the fall and winter that would allow ORV traffic in certain key shorebird colony sites, and concludes that beach closures "are unnecessary and are not likely to favorably impact breeding piping plovers on the islands." Jaime A. Collazo, J.R. Walters, and J.F. Parnell, Factors Affecting Reproduction and Migration of Waterbirds on the North Carolina Barrier Islands, Final Report to the National Park Service Cape Hatteras and Cape Lookout Seashores (1995) (cited in Addendum to the Final Report of the Proceedings of the Negotiated Rulemaking Advisory Committee for Off-Road Vehicle Management at Cape Hatteras National Seashore, American Sportfishing Ass'n, et al., Mar. 27, 2009, at 15-16). Another study seriously questions using the flushing of incubating American oystercatchers to determine the need for adjustments to pass-through corridor widths, by concluding that "there was little or no association between ORV traffic and the rate at which incubating oystercatchers made trips to and from their nests or the percent time they spent incubating." Conor P. McGowan, Simons, T.R., Effects of Human Recreation on the Incubation Behavior of American Oystercatchers, The Wilson Journal of Ornithology 11 8(4): 485-493,2006, at 489 (cited in Addendum to the Final Report of the Proceedings of the Negotiated Rulemaking Advisory Committee for Off-Road Vehicle Management at Cape Hatteras National Seashore, American Sportfishing Ass'n, et al., Mar. 27, 2009, at 16).

**Corr. ID:** 15074

**Organization:** Southern Environmental Law Center

**Comment ID:** 137793

**Organization Type:** Conservation/Preservation

**Representative Quote:** Appendix A, DEIS, provides a literature review. This literature review fails to include many studies directly related to the impacts of off-road vehicle use and human disturbances on natural resources, and directly applicable to Cape Hatteras National Seashore. We provide the attached literature review which should include applicable scientific studies, conservation plans, recover plans, and other pertinent literature related to impacts of off-road vehicles and human disturbances on natural resources on beaches.

**Response:** The purpose of the literature review was to summarize what is known about impacts of ORV use on beach resources similar to those existing at Cape Hatteras National Seashore, and therefore did not include impacts of all human disturbances, conservation measures for areas outside of the beach environment (e.g. turtle excluder devices on fishing gear), or general studies about species. Regarding literature on sea turtles, some of the documents provided by the commenters are already included in the literature review appendix and/or used in the EIS, others provide information duplicated by studies already cited in the literature review (e.g. light pollution impacts, impacts of vehicle ruts), and others provide information that is not relevant to the environment experienced at Cape Hatteras National Seashore (e.g. effects of organized turtle watches, population modeling, at sea orientation mechanisms of turtle hatchlings, impacts of light pollution from heavily developed urban beaches in Florida, impacts of beach nourishment on nesting turtles, etc.). Several studies provided by the commenters do not pertain to ORV impacts and thus were not included in the literature review, but are nonetheless still useful. Studies pertaining to the effects of sand characteristics and the incubation environment on turtle hatchlings support the NPS's policy of relocating as few nests as possible. These references will be used to augment the existing discussions in Chapter 2 dismissing alternatives that would routinely relocate turtle nests and use turtle hatcheries.

In regard to bird species at the Seashore, while there are both historic as well as newly emerging studies that relate to the underlying science of the DEIS, the scientific studies we cited in the DEIS provide sufficient support for the

## Appendix C

stated conclusions and management options. The suggested citations were reviewed and a subset of 53 peer-reviewed, published studies further evaluated. Of the studies evaluated, it was determined that they did not appear to relate in any substantial way to the underlying science of the DEIS, or they related to the DEIS in a way that supported conclusions already supported by one or more of the citations already used in the analysis.

The 1995 Collazo et al. report was a compilation of eight separate shorebird studies (chapters) conducted at Cape Lookout National Seashore and Cape Hatteras National Seashore. The NPS had considered the entire compilation and has again reviewed it. NPS believes that the excerpts of this report quoted by commenters, when evaluated in the context of the whole report and data from the park since the 1995 report was written, as well as the other literature considered in the development of the plan/EIS do not support changes in the plan/EIS. Specific comments are addressed below.

One commenter states that the Collazo report “supports the creation of buffers during the fall and winter that would allow ORV traffic in certain key shorebird colony sites, and concludes that beach closures “are unnecessary and are not likely to favorably impact breeding piping plovers on the islands.” The first part of that comment comes from Chapter 4 of the Collazo report (as written by Parnell and Barbee) which states the following, in full context: “To assure that important sites where nesting birds are successful and where management is possible we recommend that ORV traffic be allowed in such key colony sites as Cape Point Hatteras Inlet Power Squadron Spit and the west end of Shackleford Island during the fall and winter to assist in maintaining the bare or nearly bare upper beach habitat necessary for nesting terns and skimmers.”

It is important to appreciate the context of this recommendation - as a way to use ORV activity to help keep potential nesting substrates open and vegetation free for future skimmer and other colonial waterbird breeding. This statement is solely in the context of colonial waterbirds and solely regarding ORV activity in the fall and winter. The NPS has evaluated this recommendation and not considered it for detailed analysis as stated on page 88 of the DEIS and in Chapter 2 of the FEIS.

The second part of the comment states that the Collazo report concludes that beach closures “are unnecessary and are not likely to favorably impact breeding piping plovers on the islands.” The complete sentence from Chapter 5 which contains the language from the commenter states the following: “With the present rate and nature of human disturbance on these beaches, there is no need to terminate beach access to visitors. It is possible, however, that areas that might be used are avoided due to human disturbance, namely the ocean intertidal zone.” Again, understanding the context of this statement is extremely important. That statement was part of a discussion in Chapter 5 of the Collazo report (written by Philhower et al.) The authors of Chapter 5 indicated that they were unable to investigate the impacts of human disturbance directly through experimentation but refer to an “intrusion study” for which no methodology was provided. Although it is not clear where on the islands these disturbances were measured or what distances were involved, Chapter 5 of the Collazo report clearly indicates that plovers are susceptible to various types of disturbances, including predators, competing nesters, humans, and vehicles all of which elicited some sort of behavioral response. This chapter of the Collazo report documents numerous instances of human and vehicular disturbance to plovers including a situation where a plover chick that was feeding along the ocean shoreline was nearly hit by a passing truck. It also refers to a situation where a group of pedestrians elicited a behavioral response from a plover that was 50 meters away (Collazo et al, Chapter 5, page 9). Chapter 5 discusses many other factors with the potential to influence plover reproductive success, including weather events, temperature, geographic location, and predation, with predation and weather events being the largest contributors to direct nest loss, which is consistent with the data and conclusions in the DEIS and FEIS. Although the NPS cannot control factors such as weather events and temperature, the NPS can provide management options to reduce the potential for disturbance by humans, vehicles, and predators. Consistent with the recommendations of Chapter 5 of the Collazo report, the NPS is not proposing to terminate beach access to visitors.

In addition to the more general response provided above, the NPS offers the following perspective on the Philhower study based on experience of piping plover management observations at the Seashore:

The study was conducted and observations were made during the period (1992-1994) in which the number of piping plover pairs was near its maximum (avg 11.7 prs/yr) and ORV closures along the shoreline generally did not occur. It may have appeared that shoreline closures were not necessary based on conditions at that time. The hypothesis that shoreline closures were not necessary and were unlikely to make a difference was never systematically tested.



The study's observations of chicks preferring wet flats and mud flats, rather than the intertidal zone, to forage is consistent with recent observations. What is not described in the study is how far chicks can travel from nest site to the selected foraging site and how the level of human disturbance in shoreline areas adjacent to the nest or foraging site may (or may not) affect the amount of time or energy that chicks have to spend on foraging vs. responding/avoiding to disturbance, or to what extent human presence in adjacent shoreline areas affects levels of predation in chick foraging sites.

To provide some management context, it may be worth comparing the trend in the number of breeding pairs with the level of shoreline closures since the study occurred.

Period	Avg # pairs	# of pairs (first/last year)	Regular Use of Shoreline Closures
1992-1995 (includes Philhower study)	12.25	12/14	no
1996-2000	8.8	14/4	no
2001-2005	2.6	3/3	no
2006-2010	8.8	6/12	yes <sup>1</sup>

<sup>1</sup>A limited number of shoreline closures occurred in 2006-2007 under the Interim Strategy. Routine use of shoreline closures occurred in 2008-22010 under the Consent Decree

In other words, there was a steady decline in the number of nesting pairs 1996-2005 in the absence of shoreline closures. It is unclear what caused the decline, but it occurred during an extended period in which shoreline closures were not typically used as a management practice. It is not possible to rule out the level of human disturbance and the lack of shoreline closures as a contributing cause for the decline, perhaps by having a secondary effect on the availability of chick access to foraging areas and energy available to forage, and/or the level of predator pressure or other disruptive factors in foraging areas. On the other hand, there has been steady improvement in the number of breeding pairs since the use of partial shoreline closures in 2006-2007 and routine use of shoreline closures in 2008-2010. While it is not possible to draw statistically valid conclusions from this information, it raises serious doubts about the validity of Philhower's hypothesis.

A commenter also referenced a study (McGowan and Simons 2006) and suggested that it seriously questioned using the flushing of incubating American oystercatchers to determine the need for adjustments to pass-through corridor widths. The commenter indicated that the study stated that "there was little or no association between ORV traffic and the rate at which incubating oystercatchers made trips to and from their nests or the percent time they spent incubating." Although this quote is taken directly from the McGowan and Simons study, the commenter did not appear to properly consider the context and the results of the study in question. The purpose of the study was to determine potential effects of human recreation on the incubation behavior of American oystercatchers, and was not intended to identify adjustments to vehicle corridor widths based on flushing response. Although this study was cited in the DEIS and FEIS, it was used in the context of predation impacts, and how mammalian predators may be able to better locate disturbed nests because the adult oystercatchers would leave a scent trail each time they left the nest after a disturbance. Investigators also noted several shortcomings of their incubation study, including the inability to measure the distance between the disturbance and the nest because the field of view of the video cameras varied at each nest. These researchers recommended that future human disturbance studies include methods that would allow for the measurement of distance to disturbance sources. The NPS does not purport to use this study to determine proposed corridor widths or buffer distances for American oystercatchers.

Overall, NPS has concluded that none of the studies suggested would result in changes to the DEIS in either the management measures suggested or impact levels of the alternatives.

## Appendix C

***GA6000 - Impact Analysis: Scientific Data Used to Determine Impacts (General)*****Concern ID: 24669**

Concern Statement: Commenters stated that the data and references used in the DEIS were not peer reviewed, scientifically sound, or were out of date, and therefore the conclusions of the DEIS do not have a valid basis. Some commenters specifically noted the USGS species management protocols, stating that they were not peer reviewed and, along with other cited references, were prepared by parties with a conflict of interest in this process. They also expressed concern that they were unable to readily find references cited in the DEIS.

**Representative Quotes:****Corr. ID:** 3874**Organization:** Outer Banks Chamber of Commerce**Comment ID:** 139502**Organization Type:** Unaffiliated Individual

**Representative Quote:** The final draft of the document was reviewed by NPS personnel to ensure that the description of the recent status and management of these species at CAHA was accurately represented and that the report was consistent with our work agreement..." The document has been at the center of controversy since first referenced during the negotiated rule-making process. There are continuing questions about whether it was peer reviewed per the USGS guidelines and although the published version states that there is no new science or additions to it, there are a number of changes that are referenced as being the result of research that occurred after the original document was produced. Questioned about the peer review process, a spokesperson for USGS responded that the acknowledgments at the end of each chapter of the original document was actually the list of those who peer reviewed that particular section. Calls to some of those listed as such said that they had never seen the document and therefore had not peer reviewed it. Those acknowledgments are not at the ends of the chapters in the published version of the report. Federal environmental regulations are to be based on best available science, yet the process to ensure that seems to be missing in this instance. This matter should be referred to the Department of Interior Inspector General with a request that the science we reviewed and that an investigation be conducted to determine if in fact the USGS complied with its own peer review guidelines.

**Corr. ID:** 3874**Organization:** Outer Banks Chamber of Commerce**Comment ID:** 139500**Organization Type:** Unaffiliated Individual

**Representative Quote:** In March of this year, "A Review and Synthesis of the Scientific Information Related to the Biology and Management of Species of Special Concern at Cape Hatteras National Seashore, North Carolina" by authors Jonathan B. Cohen, R. Michael Erwin, John B. French, Jr., Jeffrey L. Marion, and J. Michael Meyers was published by the U.S. Geological Survey's Patuxent Wildlife Research Center (PWRC) which conducted the original study at the National Park Service's request in 2005. According to the published report's summary, the intention was to "review, evaluate, and summarize the available scientific information for selected species of concern at CAHA (piping plovers, sea turtles, seabeach amaranth, American oystercatchers, and colonial waterbirds). This work consisted of reviewing the scientific literature and evaluating the results of studies that examined critical life history stages of each species, and focused on the scientific findings reported that are relevant to the management of these species and their habitats at CAHA...Although no new original research or experimental work was conducted, this synthesis of the existing information was peer reviewed by over 15 experts with familiarity with these species...To ensure that the best available information is considered when assessing each species of interest at CAHA, this review included published research as well as practical experience of scientists and wildlife managers who were consulted in 2005. PWRC scientists evaluated the literature, consulted wildlife managers, and produced an initial draft that was sent to experts for scientific review. Revisions based on those comments were incorporated into the document.

**Corr. ID:** 3890**Organization:** *Not Specified***Comment ID:** 137409**Organization Type:** Unaffiliated Individual

**Representative Quote:** In a slightly modified introduction to the most recent release of the Protocols, the government official responsible for the document states: "Although no new original research or experimental work was conducted, this synthesis of the existing information was peer reviewed by over 15 experts with familiarity with these species. This report does not establish NPS management protocols but does highlight scientific information on the biology of these species to be considered by NPS managers who make resource management decisions at CAHA."

The new publication was not accessible, peer reviewed, or fully explained by government authority at the time the DEIS was submitted to the public for comment in early March 2010. The literature reviews found in the USGS Protocols as currently published are significantly out of date. In fact many studies were decades out of date at the time the document was prepared in 2005. They are mainly non-replicated, selective papers and studies. Many citations are over 20 years old and most are not related to the Cape Hatteras National Seashore Recreational Area. The public does not have access to the literature reviewed in this essential report and most of the citations are so insignificant they cannot even be found in a major university library (UNC-CH).

**Corr. ID:** 10625      **Organization:** *Not Specified*

**Comment ID:** 136512      **Organization Type:** Unaffiliated Individual

**Representative Quote:** - David Rabon, who worked in the U.S. Fish and Wildlife Service's Raleigh field office in 2005 and is now supervisor for the Red Wolf Recovery Program at Alligator River National Wildlife Refuge.

- And unnamed U.S. Fish and Wildlife biologists and managers at Pea Island National Wildlife Refuge.

Almost all of the named scientists have done work that is listed in the acknowledgments for the piping plover section or other sections of the protocols. So contributors have become peer reviewers.

The author, Jonathan Cohen, of Virginia Tech worked as a contractor for USGS, which was paid by the Park Service for writing the protocols, gave a declaration in the lawsuit against the Park Service, and signed the Audubon letter."

**Corr. ID:** 13275      **Organization:** *Not Specified*

**Comment ID:** 140322      **Organization Type:** Unaffiliated Individual

**Representative Quote:** The data used to prepare the DEIS needs to be authentic & validated by a real panel of scientists. A lot of the information we were presented with during the meetings that took place before this DEIS, was full of theories & conjecture, & comes from research papers written by students. According to the EPA the data is supposed to be reviewed by real scientists before it can be considered "law".

**Corr. ID:** 13461      **Organization:** Park user

**Comment ID:** 138671      **Organization Type:** Unaffiliated Individual

**Representative Quote:** The decisions on ORV restrictions are not supported by the science cited in the DEIS nor the obvious facts or investigations available. The literature review in Appendix A is inconclusive, at best, in supporting ORV restrictions as a way of increasing shorebird breeding success. For example, the following quotes are taken directly from that Appendix:

- "no difference in mean productivity of Plover nesting was observed among the levels of ORV use" (page A-4)

- "ORV use was directly investigated in this study the primary cause of nest failure on barrier islands was mammalian predation" (page A-5)

- "the study (Patterson, 1991) found that predators accounted for most of the known nest losses (91%) with only one nest lost due to direct human destruction and no evidence that suggested recreational disturbance was a factor in productivity" (page A-5)

- Even the Park service data do not support ORV damage as a significant cause of nest failure. Nest Failures are predominately due to non-human events. Using your own statistics, the mammalian predation is 54%, Storm / Lunar Tides: 29%, Nest Abandonment: 6%, Avian Predation: 5%, and Ghost Crab Predation: 3%. So human interference accounts for only 3%. Yet the Park Service wants to ban humans to solve the problem.

Please explain how in the face of this science, that ORV restrictions seem to be the approach of choice to increase shorebird breeding success.

## Appendix C

**Corr. ID:** 14248                   **Organization:** *Not Specified*  
**Comment ID:** 140905           **Organization Type:** Unaffiliated Individual

**Representative Quote:** These protocols have yet to be shown as emanating from specific scientific, peer reviewed study and in fact by the governments own admission, "This report does not establish NPS management protocols but does highlight scientific information on the biology of these species to be considered by NPS managers who make resource management decisions at CAHA." As such, NPS preferred Alt. (F) is considerably flawed.

**Corr. ID:** 14408                   **Organization:** *Not Specified*  
**Comment ID:** 140827           **Organization Type:** Unaffiliated Individual

**Representative Quote:** An NPS Employee whose husband participated in the Negotiated Rulemaking process and consistently voted with the environmental organization seeking to close the beaches. 47 References to Marcia Lyons. These conflicts of interest were not disclosed in the document as required.

**Corr. ID:** 14421                   **Organization:** *Not Specified*  
**Comment ID:** 139639           **Organization Type:** Unaffiliated Individual

**Representative Quote:** The 2005 USGS Protocols are indicated by NPS as the primary basis for the highly restrictive boundary distances that restrict public access to the national seashore. The USGS Protocols are cited as being "in press" 5 years after they first appeared on the Park Service website. The 2005 USGS Protocols were challenged two years ago as being in non compliance with USGS Peer Review Policy. At that time the documents were not dated, had no government publication number, and were not published in the open literature or Federal Register and were clearly unsuitable to be a credible scientific basis for government decision-making, especially costly regulation. The documents were sent back to USGS for "review" in 2009, five years after they were first made known to the public. NPS has indicated a new citation for the USGS Protocols. They are currently referenced on page 660 as: Cohen, J.B., R.M. Erwin, J.B. French Jr., J.L. Marion, and J.M. Meyers In press, Recommendations for Management of Endangered Species at Cape Hatteras National Seashore. U.S. Geological Survey Open-File Report 2009-1262.

NPS uses the USGS protocol recommendations as if they are "best available science." They are not science and have not been shown to be connected with specific scientific studies. The management options presented in the protocols are the policy and management recommendations and opinions of biased and non-reviewed contributors, deemed by USGS to the "experts." Nowhere is a specific science basis (study, data) for a given management option--established solely for the Cape Hatteras National Seashore Recreational Area--demonstrated. In a slightly modified introduction to the most recent release of the Protocols, the government official responsible for the document states: "Although no new original research or experimental work was conducted, this synthesis of the existing information was peer reviewed by over 15 experts with familiarity with these species. This report does not establish NPS management protocols but does highlight scientific information on the biology of these species to be considered by NPS managers who make resource management decisions at CAHA."

The new publication was not accessible, peer reviewed, or fully explained by government authority at the time the DEIS was submitted to the public for comment in early March 2010.

**Corr. ID:** 14421                   **Organization:** *Not Specified*  
**Comment ID:** 139668           **Organization Type:** Unaffiliated Individual

**Representative Quote:** There is an "appearance of impropriety" and "conflict of interest" associated with the primary science basis justification for the Alternative F recommendation.

As noted two years ago, the cited protocols are not reviewed consistent with published USGS peer review policy guidelines (<http://www.usgs.gov/usgs-manual/500/502-3.html>) especially with regard to full disclosures and conflicts of interests. In fact the Protocols were developed and prepared in large part by well known environmental activists who subsequently used them as the basis for law suit against NPS, thus creating a very clear conflict of interest in full view of the federal government. A review of the public record indicates that USGS commissioned well known environmental activist scientists to selectively review and discuss the science as they choose to represent it, and then formulate and recommend management options and policies. There was no outside questioning and review of their work--paid for by federal tax dollars.

It is clear to those of us who understand the scientific methods and process, objective scientific review, and the internal workings of federal government, that the 2004-2005 cooperative agreement review of the science (undertaken in part by members of the Audubon Society and other activist organizations) is biased and selective, misrepresented, fraught with speculation and opinion, and in many cases based on information that has nothing whatsoever to do with Cape Hatteras National Seashore.

In 2005 the architects of the access denying protocols were acknowledged for their contributions. For nearly three years now we have asked NPS and USGS to identify the "independent outside reviewers" of the USGS Protocols consistent with USGS Peer Review Policy. We are now being informed by USGS through their press office that the "science peer reviewers" are the original contributors and architects of the Protocols (which are not science at all, but policy and management opinions/recommendations that regulate the public and deny public access to the national seashore). We are also being informed by press officials that it is the policy of USGS to not identify outside independent peer reviewers or their comments. This is a violation of the Freedom of Information Act and the Federal Advisory Committee Act.

**Corr. ID:** 14421

**Organization:** *Not Specified*

**Comment ID:** 139670

**Organization Type:** Unaffiliated Individual

**Representative Quote:** For over 15 months of Regulation Negotiation Process, Golder, other environmental activist members, and the federal government never disclosed participants' roles in the design of the Protocols, but constantly referred to them as being the definitive "best available science" justification for closures. Golder and others now appear as "peer reviewers" of their own work. This is discrediting in and of itself, but what is most disturbing and unethical about this is the fact that this highly biased, pseudo science process, sponsored by the federal government, has denied thousands of citizens access to their national seashore and will continue to do so unless it corrected by NPS, the federal courts, or the congress.

The above is clearly a "apparent conflict of interest" known to NPS and USGS officials and calls into question the credibility of science which in the public policy making process--specifically that of denying public access to the national seashore--must be "objective" beyond any doubt. Local media have noted this "apparent conflict of interest" and brought it to the attention of NPS and USGS officials who refuse to offer an explanation or response.

The best course of action to resolve this matter is to turn the science review and update over the National Academy of Sciences or some other neutral party, to objectively, critically, and comprehensively review all relevant science, disclose the facts and restore some public trust in the scientific process used as the basis for environmental management decisions at Cape Hatteras National Seashore.

**Corr. ID:** 15010

**Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140428

**Organization Type:** Conservation/Preservation

**Representative Quote:** Despite its statements to the contrary, to the extent the scientific basis for its determinations are even apparent, the DEIS does not "incorporate the best available scientific literature applicable to the region and setting, the resource evaluated, and the actions considered in the alternatives," DEIS at 292, and therefore cannot be said to "be based upon the analysis and supporting data from the natural and social sciences and the environmental design arts" as required by 40 C.F.R. 5 1502.8. The DEIS is woefully lacking in sound scientific support. As discussed above, the DEIS fails to consider significant, relevant scientific studies and information that was presented to the NPS in connection with the ORV management planning process.

**Corr. ID:** 15045

**Organization:** United Four Wheel Drive Associations, Inc.

**Comment ID:** 137912

**Organization Type:** Unaffiliated Individual

**Representative Quote:** 1. No peer review of scientific evidence relied upon to rationalize decisions. Failure to utilize only scientific evidence that has been peer reviewed is a violation of Office of Management and Budget Peer Review Bulletin; violation of NPS Director's Order #11B Information Disseminated by the National Park Service; and a violation of commonly held practice within the scientific community to peer review via journal publications where editors or other scientists in the same field of study review the work and determine its quality and thus suitability for publication.

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**Corr. ID:** 15045                   **Organization:** United Four Wheel Drive Associations, Inc.

**Comment ID:** 137919           **Organization Type:** Unaffiliated Individual

**Representative Quote:** 3. Citations to literature not peer reviewed and literature not applicable to DEIS location. The DEIS states that, "OHVs can churn up and damage delicate soils (Proescholdt 2007; Ouren et al. 2007; Webb 1982)". DEIS at A-2. Of the three pieces of literature cited, only one was presumably peer-reviewed; Webb 1982. However, the Webb study was conducted in the Mojave Desert in California where the annual precipitation is 5 inches. In contrast, soil compaction in North Carolina, particularly in Cape Hatteras National Seashore with annual precipitation of 57.8 inches, would vary significantly from that of the study area. The scientific data in the Webb study for Off Road Motorcycle use in the Mojave Desert of California is inadequate in making a determination, even by extrapolation, to Off-Road motorcycle effects on desert soils within Cape Hatteras National Seashore, if in fact soils at Cape Hatteras National Seashore can fairly be called "desert" soils.

**Corr. ID:** 15011                   **Organization:** Dare County Board of Commissioners

**Comment ID:** 140659           **Organization Type:** County Government

**Representative Quote:** Dare County formally requests as part of the NEPA process that the National Park Service provide peer-reviewed science that justifies a 1,000 meter closure in all directions as is currently outlined in the DEIS.

**Response:** NPS guidelines require that all scientific and scholarly information disseminated to the public in any format meets the requirements of NPS Director's Order 11-B: *Ensuring Quality of Information Disseminated by the National Park Service*, which may require peer review for activities and information used in the decision-making process (NPS Interim Guidance Document Governing Code of Conduct, Peer Review, and Information Quality Correction for National Park Service Cultural and Natural Resource Disciplines, January 31, 2008, available at <http://www.nps.gov/policy/Interimpeerreview.htm>). However, there is no requirement for all information used in a NEPA document to be peer reviewed. For example, the Handbook for NPS Director's Order #12: Conservation Planning, Environmental Impact Analysis and Decision Making (Section 4.5I) includes personal communications within cited references in an EIS. There are instances of Seashore staff providing species counts via personal correspondence, which are correctly used and cited in the DEIS. According to Director's Order 11-B (which was issued in response to the Information Quality Act), an exchange of information between individuals is not considered to be dissemination and is therefore not subject to peer review requirements. As listed in the References section in the FEIS (and on p. 657 of the DEIS), many of the references cited are from peer-reviewed scientific journals or are official agency publications, such as the U.S. Fish and Wildlife species recovery plans (including the piping plover recovery plan which recommends a 1,000 meter vehicle buffer for piping plover chicks), which have been reviewed by other scientific experts outside of the recovery teams that are knowledgeable of particular species. Interim guidance on Director's Order 11-B indicates that scientific or scholarly information published in peer-reviewed journals does not require additional peer review (NPS Interim Guidance Document Governing Code of Conduct, Peer Review, and Information Quality Correction for National Park Service Cultural and Natural Resource Disciplines, January 31, 2008, available at <http://www.nps.gov/policy/Interimpeerreview.htm>).

As stated in Chapter 2 of the DEIS and FEIS, the proposed 1,000 meter ORV buffer around piping plover chicks was derived, in part, from guidance provided in the USFWS' Piping Plover Revised Recovery Plan (USFWS 1996a), Appendix G: Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the ESA. Appendix G of the Piping Plover Recovery Plan was used as a basis for determining appropriate management measures under all of the action alternatives. This document provides guidance to beach managers and property owners seeking to avoid potential violations of Section 9 of the ESA (16 USC 1538) and its implementing regulations (50 CFR 17) that could occur as the result of recreational activities on beaches used by breeding piping plovers along the Atlantic Coast. These guidelines were developed by the USFWS Northeast Region, USFWS, with assistance from the U.S. Atlantic Coast Piping Plover Recovery Team. Appendix G of this recovery plan also references several studies that documented piping plover chicks moving hundreds of meters from their nests, with one study documenting a brood that moved more than 1,000 meters from its nest. For a detailed discussion of why the 1,000 meter chick buffer is supported at the Seashore, please refer to the response to Concern ID 24194.

The DEIS does not state that the USGS protocols (Cohen et al 2010) are the primary source of information used in the Plan. Information presented in the plan/EIS is based on a wide range of guidance and scientific data, of which

the USGS protocols are but one source. A combination of these data was used to determine potential impacts and to develop a range of reasonable alternatives for the plan/DEIS. NPS may consider the type of source, e.g. peer-reviewed journals, unpublished research progress reports, etc. in deciding what weight to give to a particular source, but is not limited in the types of information sources that it may use in the planning process. The age and the geographic location of a study are considered in determining weight and appropriate use of a reference along with other factors, but do not, by themselves, mean a reference may not provide useful information that may be considered. The NPS gathered hundreds of scientific journal articles and research papers prior to and during this planning process, and made a concerted effort to obtain reports and studies that were applicable to the species in question and the ecological characteristics of the Seashore. As noted in the References section in this EIS, the majority of the research that was relied upon was from peer-reviewed journals and official agency publications such as the USFWS species recovery plans. However, the NPS did review and incorporate the results of several studies that were completed by university researchers as part of their graduate theses or doctoral dissertations, as many of these research projects involved species found at the Seashore and also occurred in similar coastal or barrier island ecosystems. The NPS used a multitude of sources in the development of the species protection strategies contained in the EIS, in addition to the professional experience of Seashore staff implementing various species management measures under the Interim Strategy and the Consent Decree.

In sum, the NPS considered a wide variety of information sources to evaluate potential impacts in the EIS, the majority of which were from published peer-reviewed scientific journals or official agency publications, all of which have been part of the official administrative record for this project and were (and are) available for public review. The NPS believes that the information used in preparing the FEIS is of sufficient quality, objectivity, utility, and integrity to comply with the Information Quality Act and the OMB, DOI, and NPS policies and guidelines that address the Act.

Conflict of interest complaints about the USGS protocols should be directed by commenters to the USGS. The USGS protocols were peer-reviewed by species experts, whose names appear in the protocols themselves. NPS contact with the USGS indicates that the USGS has no reason to believe that the authors or reviewers of the protocols had a conflict of interest that would have precluded them from serving as peer reviewers. NPS has received no information from commenters or other sources to lead it to conclude that a conflict of interest existed. NPS also notes that it is normal practice for scientist whose scientific work is cited among that of other scientists in a journal article or report to serve as a peer reviewer of the article or report. They are not reviewing their own work, but the work of the author of the article or report.

One commenter noted that human interference accounts for only a small percentage of nest failure at the Seashore and that it was not necessary for the NPS to “ban humans to solve the problem”. The NPS acknowledges in the DEIS that human (or vehicle) disturbance is not the documented primary cause of direct mortality of species at the Seashore and has never proposed to “ban humans”. However, published studies have demonstrated that disturbance from vehicles and humans can result in adverse impacts to the breeding, resting, and foraging behavior of shorebirds. While the NPS cannot control disturbance factors such as weather and overwash events, it can reduce the potential impacts of human and vehicular disturbance through the implementation of the species protection measures included in the FEIS.

**Concern ID: 24170**

**Concern Statement:** Commenters stated that the DEIS did not include all available information including comments from the alternatives workbooks and materials provided by the Negotiated Rulemaking Committee.

**Representative Quotes:**

**Corr. ID:** 14258

**Organization:** *Not Specified*

**Comment ID:** 139811

**Organization Type:** Unaffiliated Individual

**Representative Quote:** It appears by way of emphasis in the discussion in the DEIS that NPS has every intention to promulgate Alternative F in the next year, regardless of past or present public comment. There is virtually no significant reference to the workbooks the public provided in the early stages of the plan development process or to countless constructive comments made by the public during the 15 month Regulation Negotiation Process.

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**Corr. ID:** 15010                   **Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140422           **Organization Type:** Conservation/Preservation

**Representative Quote:** A great deal of information was made available to the NPS during the early stages of the planning process and the negotiated rulemaking process with respect to the development of the ORV management plan. Inexplicably, much of this information is neither addressed nor so much as acknowledged in the DEIS. For example, the DEIS states that the NPS received a total of 386 completed "Alternative Option Workbooks" during the public comment period. DEIS at 634-35. Yet, although the DEIS makes the assertion that "[a]ll workbooks were reviewed and considered during the alternatives development process" and acknowledges that "[m]ost comments offered options for protected species management, law enforcement, ORV permitting, closures, and ORV ramp and route configuration," DEIS at 635, the DEIS contains practically no reference to or consideration of these materials. Similarly, an enormous amount of information was presented as part of the negotiated rulemaking process, some of which directly questions the conclusions and recommendations made by NPS in the DEIS. Yet, again, the DEIS contains practically no reference to or consideration of these materials.

**Response:** As stated on p. 635 of the DEIS, the NPS reviewed and considered all workbook comments. Although many of the comments were outside the scope of the plan or would be in conflict with management policy, regulations, or legislation, many of the comments were included as elements in the six alternatives analyzed in the DEIS. For example, the following is a partial list of suggestions from the alternatives options workbooks that are currently included in alternative F:

- Reduced speed limits
- Seasonal ORV-free areas in high use areas
- Increased parking opportunities
- Environmentally-friendly parking lot design
- Improved signage
- Pedestrian trails
- Vehicle equipment requirements such as a shovel, jack, or tow rope
- Gates at ORV access ramps
- Use permit fees to fund resource management activities
- Improvements to educational materials
- Seasonal ORV closure north of ramp 23
- Revocation of ORV permit following a violation

During the process of developing the DEIS, NPS considered all the information and input provided by members of the negotiated rulemaking committee and provided by the public during the negotiated rulemaking meetings' public comment opportunities. The DEIS addresses relevant issues raised by both committee members and the public. The comment did not provide any details as to which materials the commenter believed were not considered, which prevented NPS from responding more specifically to this comment.

### ***GA6200 - Cumulative Impacts (General)***

**Concern ID:** 24174

**Concern Statement:** Commenters suggested that cumulative impacts more extensively address past stabilization activities. Commenters also provided a list of actions that should be added to the cumulative impact analysis in the DEIS including:

- o Moderate to intensive residential and commercial development of beach habitats, with limited exceptions," from the North Carolina/Virginia line to South Nags Head, NC.
- o Moderate residential and commercial development of beach habitats in the 8 seashore villages (Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras, Ocracoke).
- o Off-road vehicle use with very limited restrictions on North Core and South Core Banks, Cape Lookout National Seashore, with accompanying high levels of disturbance to migrating and wintering shorebirds, and lower, but still significant, levels of disturbance to breeding shorebirds and colonial waterbirds.
- o Moderate to intensive residential and commercial development of beach habitats, with limited exceptions," from Morehead City, NC to the North Carolina/South Carolina boarder.



**Representative Quotes:****Corr. ID:** 15043**Organization:** Southern Environmental Law Center**Comment ID:** 137477**Organization Type:** Conservation/Preservation

**Representative Quote:** An EIS must discuss and disclose cumulative impacts of proposed actions. 40 C.F.R. § 1508.25(c)(3). "Cumulative impact is defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions .... Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. §1508.7. The DEIS, at Table 49, lists a "Cumulative Impact Scenario." DEIS at 294-296. The items that are listed appropriately belong in a cumulative impacts analysis. However, other past, present, and reasonably foreseeable actions also should be added to the list, including:

- Moderate to intensive residential and commercial development of beach habitats, with limited exceptions," from the North Carolina/Virginia line to South Nags Head, NC.

- Moderate residential and commercial development of beach habitats in the 8 seashore villages (Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras, Ocracoke).

- Off-road vehicle use with very limited restrictions on North Core and South Core Banks, Cape Lookout National Seashore, with accompanying high levels of disturbance to migrating and wintering shorebirds, and lower, but still significant, levels of disturbance to breeding shorebirds and colonial waterbirds.

- Moderate to intensive residential and commercial development of beach habitats, with limited exceptions," from Morehead City, NC to the North Carolina/South Carolina boarder.

**Corr. ID:** 15073**Organization:** Southern Environmental Law Center**Comment ID:** 137705**Organization Type:** Conservation/Preservation

**Representative Quote:** Even in the areas that are publicly owned, there has been large scale degradation of the extent and quality of shorebird and colonial waterbird habitat. In the DEIS, the NPS notes, as a cumulative impact, "Berm construction under the CCC and subsequent maintenance" and "Continued maintenance of NC-12 and berms," DEIS at 294, but these few words mask the significant adverse impacts to shorebirds and colonial waterbirds caused by stabilization activities in the Seashore. Indeed, in the section discussing stabilization, the adverse impact of the artificial dune at Cape Hatteras is specifically compared to the situation at Cape Lookout, where the USFWS notes that "by contrast, piping plovers nesting areas in 1990 included not only the spits at the current inlets, but several former inlets and large moist sand flats (McConnaughey et al. 1990)" Recovery Plan at 35. In addition, in the recently completed Status Review for the piping plover, the USFWS noted that' [h]abitat loss and degradation on winter and migration grounds from shoreline and inlet stabilization efforts, both within and outside of designated critical habitat, remain a serious threat to all piping plover populations." Status Review at 39. Berm construction under the Civilian Conservation Corps (CCC) provided dune stabilization that changed the habitat available to piping plover at the Seashore. These stabilization efforts provided for the establishment of NC-12 and subsequent development, removing this area from potential habitat. These past action resulted in long-term moderate adverse impacts to all bird species at the Seashore.

Similarly, continual maintenance of NC-12 and berm maintenance would have a short-term, minor to moderate, adverse impacts to the extent that it takes place during piping plover breeding season and if maintenance results in encroachment on any nest buffers or recreation closures. If encroachment occurs, it could result in habitat loss that would have a short-term, minor to moderate, adverse impacts to piping plover nesting and foraging could occur. Conversely, NC-12 widening (on Bodie Island) and berm maintenance could help to stabilize piping plover nesting habitat and in that case this activity would yield long-term moderate benefits. The degree to which this activity is positive or negative is a function of the timing and location of the activity itself relative to piping plover nesting and to the degree to which the activity results in the creation or stabilization of any high-quality piping plover habitat.

**Response:** Cumulative impacts, specifically related to species at the Seashore (covered under three separate impact topics: Federally listed threatened, or endangered species; State-listed or special status species; and Wildlife and wildlife habitat), addressed a wide range of activities. Included in these activities under past actions are the county

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land use plans for Hyde and Dare County, including the development that has occurred under these plans and addressing the areas of concern raised by commenters. While this was included under past actions, the description of what these past actions entailed was not fully explained in the DEIS in chapter 1 (pages 51 and 52). Likewise, the cumulative impact analysis under each of the three impact topics also focused on future land use plans, and did not include past development actions as intended. To provide this additional information, the following text changes were made:

- The following text will be added in the FEIS (Chapter 1, “Relationship to Other Federal Planning Documents and Actions” section) to the description of the county land use plans to reflect the role of the land use plans in the past development of the region:

“Since 1974, when the North Carolina General Assembly ratified the Coastal Area Management Act (CAMA), each of the local governments in the twenty county coastal region have been developing and updating land use plans. These land use plans have directed development in these areas and are responsible for the pattern of development we see today in Dare and Hyde counties. Both of these plans recognize the development that has occurred and the corresponding need for an increase in services as a result. These past patterns of land use development have influenced the amount of land available for habitat throughout the county, including portions of the counties located within the Seashore”

- The cumulative impact analysis for Federally listed threatened, or endangered species; State-listed or special status species; and Wildlife and wildlife habitat was expanded to better describe the impact of past land use development. The following text was added to pages 327, 375, 401-402, 428 and 488 of the DEIS. The addition of this text does not change the overall impact findings for the cumulative impact analysis.

“Several of the local and NPS past, current, and future planning efforts can also affect locally sensitive bird species. For example, new development that has occurred in Dare and Hyde counties under their land use plans had increased the residential housing and related services in the areas within the Seashore. This land development within the Seashore, as well as throughout the counties, has reduced the amount of habitat available to species, resulting in adverse impacts. In addition to past actions, new development could result from the implementation of the County Land Use Development Plans for Dare and Hyde counties, including expected revisions to the Dare County Plan..”

The DEIS also addressed actions related to the species management actions occurring at Cape Lookout National Seashore. For example, as noted on page 428 of the DEIS, both the ongoing ORV planning process and the interim species management plan were considered. In order to clarify that past, present, and future species management actions at Cape Lookout National Seashore were considered, the following text was added in the FEIS:

- Chapter 1 under Relationship to Other Federal Planning Documents and Actions:

“Located south of Ocracoke Inlet, Cape Lookout National Seashore also developed an interim protected species management plan / environmental assessment. The Cape Lookout National Seashore Interim Protected Species Management Plan / Environmental Assessment will guide management practices for the protection of special status species occurring at Cape Lookout National Seashore until a long-term ORV management plan/EIS and regulation is developed. Prior to the implementation of the interim protected species management plan in 2007, Cape Lookout conducted a range of species management activities that were less protective, but still provided a level of protection to the Seashore federally listed species as well as state-listed and species of special concern through species monitoring and management, as well as protective buffers.”

- Chapter 4, Cumulative Impact, Table 49

“Species management at Cape Lookout National Seashore, including the implementation of the Interim Protected Species Management Plan” was added to Past Actions under Federally listed threatened, or endangered species; State-listed or special status species; and Wildlife and wildlife habitat.

- The cumulative impact analysis for Federally listed threatened, or endangered species; State-listed or special status species; and Wildlife and wildlife habitat was expanded upon to better describe the impact of past species management measures at Cape Lookout National Seashore. The following text was added to the cumulative impact analysis (under alternative A) of the FEIS. The addition of this text does not change the overall impact findings for the cumulative impact analysis.

“The Cape Lookout Interim Protected Species Management Plan provides long-term moderate to major beneficial impacts to piping plover at the neighboring Seashore through the management policies that it employs. However, even with those management measures in place, adverse impacts would still occur to the species as recreational uses, including night driving, would still occur, but would be mitigated to an extent by the management measures being employed. The measures that are in place now under the interim plan increase protections, in part, by providing earlier prenesting closures and allowing for buffers for protected species to expand if needed, as noted in the Cape Lookout Interim Protected Species Management Plan/EA.”

- In Chapter 4, Wildlife and Wildlife Habitat, the following discussion was added under cumulative impacts for alternative A.

“The Cape Lookout Interim Protected Species Management Plan provides long-term moderate to major beneficial impacts to species at the neighboring Seashore through the management policies that it employs. However, even with these management measures in place, long-term negligible to minor adverse impacts would still occur to the species as recreational uses, including night driving, as noted in the Cape Lookout Interim Protected Species Management Plan/EA. The outcome of the Cape Lookout National Seashore ORV Management Plan/EIS would also have direct long-term impacts on bird populations within the Seashore, as well as within the state of North Carolina. Specifically, it would provide increased protection to more habitat in the area for all species of birds. However, whether the impact of the ORV plan would be moderate to major beneficial or adverse to other bird species would depend upon the management decisions that are made and ultimately implemented.”

The DEIS on pages 294-295 includes stabilization activities of “berm construction under the CCC and subsequent maintenance” and “continued maintenance of NC-12 and berms” as actions in the cumulative impact scenario. Additional discussion on the cumulative impacts of stabilization has been added to the FEIS. The following text will be added to the discussion of cumulative impacts in chapter 4 Piping Plover:

“Berm construction under the Civilian Conservation Corps (CCC) provided dune stabilization that changed the habitat available to piping plover at the Seashore. These stabilization efforts provided for the establishment of NC-12 and subsequent development, removing this area from potential habitat. These past actions resulted in long-term moderate adverse impacts to all shorebird species at the Seashore. Similarly, continual maintenance of NC-12 and berm maintenance would have a short-term, minor to moderate, adverse impacts to the extent that it takes place during piping plover breeding season and if maintenance results in encroachment on any nest buffers or resource closures, these impacts would be greater. If encroachment occurs, it could result in habitat loss that would have short-term, minor to moderate, adverse impacts to piping plover nesting and foraging. The degree to which this activity is negative is a function of the timing and location of the activity itself relative to piping plover nesting and the degree to which the activity results in the creation or stabilization of any high-quality piping plover habitat.”

Similar language will also be added to the cumulative impact discussion for sea turtles, seabeach amaranth, state-listed and special status species, and wildlife and wildlife habitat, under the alternative A analysis.

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***MT1000 - Miscellaneous Topics: General Comments*****Concern ID: 24241**

Concern Statement: One commenter noted that NPS does not have a right to place stakes in the water around the pond at Oregon Inlet as this is considered ocean rather than sound area.

**Representative Quotes:****Corr. ID:** 14826**Organization:** *Not Specified***Comment ID:** 140646**Organization Type:** Unaffiliated Individual

**Representative Quote:** NPS has no right to place stakes in the water around the pond at Oregon Inlet. The basis for the action by the NPS is the fact that in the sound you are allowed to fence 100 feet from shore areas. However, the pond area at the Inlet is east of the bridge and considered ocean rather than sound. The State of North Carolina clearly stipulates that waters east of the bridge fall under ocean rules and fishing laws reflect this. they should be removed now and are a clear hindrance to navigation. NPS rangers and Marine Fisheries Officers have issued warnings and tickets to anglers who were in possession of flounder and striped bass that met the sound limits but were in violation of ocean limits. You can't have two sets of conflicting rules governing the same area.

**Response:** NPS has authority to put markers around the Bait Pond because it administers the federally-owned submerged lands in Oregon Inlet, which include the submerged lands in the pond. This has no relevance to the enforcement of fishing regulations. NC Marine Fisheries and NPS enforce sound regulations west of Bonner bridge and ocean regulation east of Bonner bridge.

***ON1000 - Other NEPA Issues: General Comments*****Concern ID: 24175**

Concern Statement: Commenters stated that the comment period was not long enough due to the length and complexity of the document, with some asking for an extension of the comment period. One commenter noted that if additional information, such as the socioeconomic study, is made available the comment period should be reopened.

**Representative Quotes:****Corr. ID:** 13461**Organization:** Park user**Comment ID:** 138667**Organization Type:** Unaffiliated Individual

**Representative Quote:** 6b. The DEIS also refers to some, as yet unpublished additional economic data. You realize, of course, that if you release this data, you will have to re-open the DEIS for additional comments or release a supplemental DEIS and re-open the public comment period.

**Corr. ID:** 14248**Organization:** *Not Specified***Comment ID:** 140756**Organization Type:** Unaffiliated Individual

**Representative Quote:** I would like to address the lack of a suitable public comment period.

The National Park Service took approximately 38 years from the issuance of the aforementioned E.O. 11644 to draft a proposal for a final ORV management plan. At 810 pages in length, this often contradictory document is, and has been, difficult for even the most knowledgeable members of the public to understand and formulate comment. For those members of the public without comprehensive understanding of the various and sundry issues related to access, wildlife management, and the future of the Seashore, a sixty day comment period is simply not enough time. This is especially true since at no point has the Service made any attempt at educating the public about the contents and ramifications of the proposed alternatives. By virtue of the fact that the as of yet incomplete economic impact study has not been proffered for public scrutiny, I believe that public comment should be extended until at least sixty days after the DEIS has been completed. Proposed extension has been requested numerous times by elected federal and state representatives, our community leaders and the public at large. If the Service is genuine in its appeal for comment as is required within a NEPA process, then NPS needs to respect the request for additional time and provide for such.

**Corr. ID:** 14408      **Organization:** *Not Specified*  
**Comment ID:** 140899      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** In the future the public comment period should be adjusted accommodate the complexity and size of the documents.

**Corr. ID:** 15010      **Organization:** Cape Hatteras Access Preservation Alliance  
**Comment ID:** 140425      **Organization Type:** Conservation/Preservation  
**Representative Quote:** In sum, the considerable size and complexity of DEIS, and the DEIS's selective and incomplete use and explanation of scientific data make it difficult for the public to respond meaningfully to the DEIS and to provide specific criticisms and recommendations, particularly within the relatively short 60-day period provided for public comment. And rather than seriously consider requests for an extension of this period to allow sufficient time for the public to adequately review and respond to such a complex, lengthy, and significant document, the NPS has apparently determined to move full steam ahead on its current track, stating that organizations interested in the issue "were well represented and actively participated on the CAHA negotiated rulemaking advisory committee ?and related sub-committees and work groups . . ." and that several of the alternatives-though notably not Preferred Alternative F purportedly are "substantially the same" as alternatives "described to the committee and released to the public at a committee meeting on November 14,2008." Letter from D. Vela, Regional Director, NPS to J. Simon, Van Ness Feldman (Mar. 29,2010). In effect, the DEIS appears to have become a fait accompli, immune from valuable public comment, and a fatally flawed tool for helping to develop an appropriate ORV management plan for the Seashore.

**Response:** The NPS believes that the 60-day comment period more than satisfied the requirements of the National Environmental Policy Act and provided ample opportunity for public involvement and comment. The NPS Notice of Availability for the DEIS was published in the Federal Register on March 5, 2010. The DEIS was posted online at <http://parkplanning.nps.gov/caha> on March 5, 2010. The U.S. Environmental Protection Agency Notice of Availability for the DEIS was published on March 12, 2010, which opened the public comment period and established the closing date of May 11, 2010, for comments. Within that public comment period, five public hearings were conducted April 26-29, 2010. The hearings were well attended and provided the public with an opportunity to provide oral comments, which were considered in the same manner as written comments. While the DEIS was made available to the public on March 5, 2010, a considerable amount of information related to it had been made available to the public for a longer period of time. For example, five of the six alternatives analyzed in the DEIS were very similar to the five alternatives (A-E) that NPS released to the public at a negotiated rulemaking advisory committee meeting on November 14, 2008. The sixth alternative (F) analyzed in detail in the DEIS was developed by NPS based on concepts that originated in, or were discussed by, the Advisory Committee, or its subcommittees and work groups, recognizing that the Committee did not reach consensus on a recommended alternative.

The NPS received thousands of public comments in written and hardcopy form within the established 60-day public comment period. Therefore, the NPS believed that the 60-day public comment period provided a reasonable opportunity to comment to all interested parties and did not extend the public comment period.

Available economic data was sufficient for the purposes of NEPA analysis of the impact of the alternatives before any of the studies were undertaken. During the negotiated rulemaking process some members of the committee asked for other data to be collected. NPS responded by funding the following studies referenced in the DEIS:

- (1) A survey of local village businesses.
- (2) A non-contact count of ORV at selected ramps.
- (3) A visitor intercept study of visitors on the beach.

The results of these studies have now been released and the relevant sections of the FEIS updated to reflect them. It is not unusual for newly available results of studies that were not available at the time a DEIS is written to be incorporated into the FEIS. Agencies would prepare a supplemental EIS (with an accompanying public comment period) for review if there is significant new information relevant to environmental concerns and bearing on the proposed action and its impacts (40 CFR 1502.9(c)(1)(ii)) In this case, however, the study findings do not provide

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significant new information; they are consistent with the analysis provided in the DEIS; and a supplemental EIS is not required.

**Concern ID: 24177**

**Concern Statement:** Commenters stated that the public meetings should have been held at different times of the day (night meetings only) and in different locations (metropolitan Washington DC area) to more effectively include the public in this process.

**Representative Quotes:**

**Corr. ID:** 8563

**Organization:** *Not Specified*

**Comment ID:** 137054

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I would like to begin by saying that this hearing on Ocracoke should have been held in the evening. It is unfair to ask the people of Hyde County to miss work or abandon their businesses to attend this important public hearing. In fact, the ferry from Swan Quarter does not even leave until 10 o'clock, making it virtually impossible for people on the mainland to participate in these hearings about their future. The timing of this hearing prevented the maximum level of participation from Hyde County citizens.

**Corr. ID:** 13092

**Organization:** Coalition of National Park Service Retirees

**Comment ID:** 140466

**Organization Type:** Unaffiliated Individual

**Representative Quote:** While the procedural provisions of NEPA have been closely adhered to during the development of this plan, the Coalition is concerned about the undue influence of local economic and political interests in the process. Local interests are often the most vocal and persistent in the planning process. However, in the end, Cape Hatteras is a unit of a national system and is recognized for its national significance. We note that the public meeting locations have centered around the area adjacent to Cape Hatteras and have not been held in areas of Northern Virginia or the metropolitan Washington DC area. These areas are home to many vacationers who enjoy the resources of Cape Hatteras as well as persons interested in the maintenance and survival of species and resources that may be influenced by OHV activity the park unit. We believe that a better cross section of the interested public could have been involved if public meetings were conducted in a broader geographic area.

**Response:** Although there is no legal requirement to hold public meetings during a DEIS public comment period, the NPS realizes that the ORV management plan/EIS is of great interest to the public, not only at the local level but also at the regional and national levels. Therefore, the NPS held a series of five public hearings to gather additional public comment. Unfortunately, due to logistics and travel requirements, it was not possible to hold all of the meetings in the evenings. Overall, attendance at all of the public hearings was high and many of those in attendance chose to speak. However, providing oral comments was just one of several methods that were established for submitting public comments. On March 5, 2010, the DEIS was posted online, where thousands of public comments were received. The NPS also accepted comments by regular mail and hand-delivery. All comments, whether oral, written, or electronic, were considered equally important and treated in the same manner by the NPS. Public comments were also accepted at the public meetings in February 2007 and January 2008, which included meetings in Washington, D.C. (2007) and Richmond, VA (2008) (DEIS at 634). Comments on the DEIS were received from all 50 states and the District of Columbia, indicating a broad level of public awareness and interest in this planning process.

**Concern ID: 24179**

**Concern Statement:** Commenters noted that the NPS policy of not accepting bulk comments prevented comments from local students from being considered.

**Representative Quotes:**

**Corr. ID:** 14668

**Organization:** *Not Specified*

**Comment ID:** 133993

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I wanted to take this opportunity to make it known that while the deadline for public comment is rapidly approaching, that voices from Cape Hatteras Secondary's Middle School students are not going to be considered. This unfortunate reality is apparently due in part to my own lack of research or proper protocol. However, on May 7th I hand delivered an envelope containing student letters to a secretary at the Manteo office on

National Park Drive, indicating to the recipient that the package contained numerous student letters. I was not informed that this method was unacceptable by park service personnel until I was conveniently contacted on May 11th, the final date of public comment. Park Service representative, Cindy Holder made it very clear that my students' comments wouldn't be official despite the authenticity of their signatures because I happened to combine them in a single envelope. The circumstantial timing of her phone call towards the end of a school day made it impossible for students to resubmit their statements prior to today's deadline. As a result, I did not want the assumption to be made that the youth of Hatteras Island are indifferent to the impact of beach closures in our area, and I apologize that any act of neglect on my behalf could possibly limit their opinions from being taken into consideration. I feel that it is necessary to document that evidence of our children's concerns are in possession of the National Park Service should their views happen to be of interest.

**Response:** The NPS regrets any confusion that may have arisen regarding the protocols for submitting public comments on the DEIS. However, the following information was issued as a press release, posted on the Seashore's website, and published in the *Federal Register* at the beginning of the public comment period:

"The NPS will accept comments on the DEIS until midnight (Mountain Daylight Time) May 11, 2010. Electronic comments may be submitted online at the NPS Planning, Environment and Public Comment (PEPC) web site by visiting <http://parkplanning.nps.gov/caha>, clicking on \*Open for Comment, clicking on the Off-Road Vehicle Management Plan /EIS, and then clicking on Comment on Document. NPS encourages commenting electronically through PEPC. If you wish to submit your written comments in hard copy (e.g. in a letter), you may send them by U.S. Postal Service or other mail delivery service or hand-deliver them to: Mike Murray, Superintendent, Cape Hatteras National Seashore, 1401 National Park Drive, Manteo, NC 27954. Oral statements and written comments will also be accepted during the hearing-style public meetings. Comments will not be accepted by fax, email, or in any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted."

The NPS received two packages containing third-party bulk comments and contacted the senders to inform them that the comments could not be accepted as submitted. However, as the deadline for submitting public comments approached, the NPS was receiving numerous letters ,in addition to thousands of online comments, every day, which meant that incoming comments could not always be processed on the same day they were received. All bulk comments received were handled in the same manner. The NPS received thousands of comments from citizens of the Outer Banks and applauds the community's enthusiasm and concern regarding this planning process at the National Seashore.

**Concern ID: 24181**

**Concern Statement:** Commenters stated that they felt the DEIS was deficient because it did not address environmental justice and was not written in neutral tone.

**Representative Quotes:**

**Corr. ID:** 237

**Organization:** NCBBA

**Comment ID:** 130522

**Organization Type:** Unaffiliated Individual

**Representative Quote:** My comment is more general in nature and addresses the tenor of the Draft Environmental Impact Study which, when read objectively, displays a clear bias against ORV use and for environmental concerns real or imagined. Additionally the tenor is somewhat condescending which is typical of documents written by bureaucrats. I would expect our US Department of the Interior to require its employees to maintain a more neutral position on issues as sensitive as the "Rights of Individual Americans" to continue to use the Hatteras Island beaches as they have for decades.

**Corr. ID:** 8853

**Organization:** *Not Specified*

**Comment ID:** 132323

**Organization Type:** Unaffiliated Individual

**Representative Quote:** NEPA requires environmental justice. I believe that it asks who is bearing the brunt of the rulings in the DEIS. By building on the Consent Decree you have placed the burden squarely on the shoulders of the beach users, both pedestrians and ORVs. The DEIS does not meet the NEPA requirements.

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**Response:** As indicated on page 36 of the DEIS, environmental justice analyses are performed to identify disproportionate effects of high and adverse environmental or health impacts from proposed federal actions on minority or low-income populations, and to identify alternatives that could mitigate these impacts. The discussion provided on page 36 indicates that there are no minority or low-income populations that would be disproportionately impacted by the implementation of this plan/EIS. Therefore, the issue of environmental justice was not carried forward for analysis.

NPS believes the DEIS provides an objective analysis of the impacts of the alternatives. We are not aware of any instances of bias in the analysis, nor has commenter provided any specific details to which we can directly respond.

**Concern ID: 24635**

**Concern Statement:** Commenters stated that the DEIS did not follow the guidelines of NEPA and CEQ regulations as it was not written in a way decision makers and the public could understand. Commenter indicated that the DEIS is not concise, clear, or to the point, nor supported by evidence that NPS conducted the necessary environmental analyses.

**Representative Quotes:****Corr. ID:** 15010**Organization:** Cape Hatteras Access Preservation Alliance**Comment ID:** 140421**Organization Type:** Conservation/Preservation

**Representative Quote:** Pursuant to CEQ's regulations, among other requirements, EISs "shall provide full and fair discussion of significant environmental impacts" and "shall be concise, clear, and to the point, and shall be supported by evidence that the agency has made the necessary environmental analyses." 40 C.F.R. 5 1502.1. To achieve their purposes, EISs "shall be analytic rather than encyclopedic," "shall be kept concise and shall be no longer than absolutely necessary to comply with NEPA and with [CEQ's] regulations," and "shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made." 40 C.F.R. 5 1502.2. Moreover, EISs "shall be written in plain language and may use appropriate graphics so that decisionmakers and the public can readily understand them" and "be based upon the analysis and supporting data from the natural and social sciences and the environmental design arts." 40 C.F.R. 5 1502.8.

The DEIS is inconsistent with these provisions of CEQ's regulations in several key respects. First, the DEIS is neither concise, clear, to the point, nor supported by evidence that NPS has made the necessary environmental analyses, as required by 40 C.F.R. 5 1502.1.

Similarly, it is not written in a way that decision makers and the public can readily understand it, as required by 40 C.F.R. 5 1502.8. The DEIS is exceedingly long, and extraordinarily difficult to follow. Evaluation of, and comparisons between, the various alternatives, and their respective impacts, are extraordinarily difficult due to the repetition of information and conclusory statements that purport to be based upon scientific data, but, upon closer scrutiny, are not.

**Response:** Impact analysis in the DEIS is supported as needed by citations to the literature and expert, professional opinion. Conclusions drawn are supported by the impact analysis. The Executive Summary, which adds to the length of the document is required by CEQ regulations and, of necessity, repeats some information from the body of the DEIS. The length of the DEIS is necessary and appropriate because of the complexity of managing ORV use and the increased potential for human disturbance in the more remote areas of the park due to ORV access; the need for full disclosure of proposed management practices; the number of alternatives needed for a full range of alternatives; the number of impact topics and diversity of species affected; and the use of the DEIS as a Biological Assessment for consultation with the USFWS under section 7 of the Endangered Species Act. The document meets the requirements of NEPA both for content and organization. It is logically organized and provides information both in tabular and text format to meet the needs of different readers. In the places where comments on the DEIS have noted ambiguity, clarification has been made in the FEIS.



***PN1000 - Purpose And Need: Planning Process And Policy*****Concern ID: 24245**

Concern Statement: One commenter stated that the DEIS does not consider the Regulatory Flexibility Act and consideration of this law should be included.

**Representative Quotes:****Corr. ID:** 3874**Organization:** Outer Banks Chamber of Commerce**Comment ID:** 139385**Organization Type:** Unaffiliated Individual

**Representative Quote:** In the beginning of the DEIS, there is a list of federal rules, policies, etc. that the DEIS must comply with. Missing from this list is compliance with the Regulatory Flexibility Act which requires "federal agencies to consider the effects of their regulatory actions on small businesses and other small entities and to minimize any undue disproportionate burden." The economic impact analysis in this document does not comply with that and thus should not be certified.

**Response:** The Regulatory Flexibility Act (RFA) and several other statutory or regulatory authorities are appropriately addressed in proposed and final rules rather than in the NEPA documents. For this reason, the RFA and these other authorities are not in the list of federal statutes, regulations, policies, etc., in the DEIS, nor is the RFA analysis part of the DEIS economic impact analysis, though some of the same data may be used in both. The RFA certification will accompany the proposed and final ORV special regulation when they are published in the Federal Register.

**Concern ID: 24246**

Concern Statement: One commenter stated that the DEIS process lacked transparency and for that reason it is not in compliance with NEPA requirements.

**Representative Quotes:****Corr. ID:** 10862**Organization:** Flowers Ridge Homeowners Assn**Comment ID:** 136141**Organization Type:** Unaffiliated Individual

**Representative Quote:** Third, the three-year process that has brought the Seashore and the Hatteras and Ocracoke communities to this point of crisis has been shot through with unnecessary and mean-spirited aggressiveness by the environmentalist groups, marginally competent facilitation of the Reg-Neg process by the consultants, and a total lack of transparency in the whole process by the federal court and the NPS. By itself, the flaws in the planning process to-date are clear evidence of non-compliance with the NEPA and other federal regulations and should be grounds for withdrawing the DEIS and starting the planning process over.

**Response:** The planning process for the ORV Management Plan/EIS meets the requirements of NEPA as described in the Council on Environmental Quality regulations (40 CFR parts 1500-1508) and NPS Director's Order #12 and its Handbook (Conservation Planning, Environmental Impact Analysis, and Decision Making). The negotiated rulemaking process, while guided by the Negotiated Rulemaking Act, is not mandatory and is not required under NEPA or any other statute. NEPA does not apply to judicial decisions, nor does it apply to the NPS implementation of the consent order from the federal court, because the terms of that order require NPS to take specific actions and do not leave room for NPS to consider alternative actions. Therefore, NPS has determined there is no legal basis for the commenter's request that NPS "withdraw the DEIS and start the planning process over."

***PN2000 - Purpose And Need: Park Purpose And Significance*****Concern ID: 24247**

Concern Statement: Commenters stated their interpretations of the Organic Act and the Seashore's enabling legislation with respect to the management actions proposed in the DEIS. Some commenters stated that the intent of Congress was to protect wildlife and wilderness and that takes precedence over ORVs and if there's a conflict between recreational use and natural resource protection the NPS must side natural resource protection. Others stated that the proposed action does not meet the intent of the enabling legislation of the Seashore because it does

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not provide for adequate public access to the Seashore and would severely limit the ability of the public to enjoy the resources of the Seashore.

**Representative Quotes:****Corr. ID:** 803**Organization:** *Not Specified***Comment ID:** 141023**Organization Type:** Unaffiliated Individual

**Representative Quote:** The Enabling legislation for CHNS clearly intended for this Park to be preserved as remote seashore. ("permanently reserved as a primitive wilderness")(2). ORV use has enabled large numbers of visitors to drive to areas of CHNS that otherwise would have been seldom visited, diminishing a wilderness experience.

**Corr. ID:** 814**Organization:** regular park vacationer**Comment ID:** 132701**Organization Type:** Unaffiliated Individual

**Representative Quote:** Denying access to recreational opportunities, many of which are specifically protected in the Enabling Legislation, denies the Seashore's current visitors the opportunity to enjoy the park's resources and values and denies future generations the opportunity to enjoy the park's resources in direct violation of Park Services Management Policies.

**Corr. ID:** 10869**Organization:** High Country Audubon Society**Comment ID:** 136130**Organization Type:** Unaffiliated Individual

**Representative Quote:** As a unit of the National Park Service the Organic Act, which created the NPS, should be the guiding principle of how the park is managed. As we are sure you know, the Organic Act states that the parks should, "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." In creating the NPS Congress decided that protecting wild life in such manner that they are unimpaired for future generations should be the over-riding theme. Congress did not say preserving wild life should be secondary to ORV use, fishing, swimming or even birding.

**Corr. ID:** 14248**Organization:** *Not Specified***Comment ID:** 140864**Organization Type:** Unaffiliated Individual

**Representative Quote:** Clearly, even at this point, those that read this letter must agree that proposed Alt. (F) is in direct conflict with the above mentioned statutes and published policy. The derogation of the above described intended mission of the Seashore suggested within Alt. (F) infringes upon the guaranteed right of the legal residents of Hatteras and Ocracoke Islands to make a living by fishing. 16USC459 Sec.3 clearly provides: (in part) "That the legal residents of the villages referred to in section 1 of this Act shall have the right to earn a livelihood by fishing within the boundaries to be designated by the Secretary of the Interior, subject to such rules and regulations as the said Secretary may deem necessary in order to protect the area for recreational use as provided for in this Act." Neglected within Alt. (F) are measures to insure that this right, bestowed by Congress, is respected. The law does not indicate that this is a privilege that can be arbitrarily waived by NPS; but must be treated as what it truly is, a right guaranteed by Congress that is as important and legally defensible as is the freedom of speech asserted by Congress within the Bill Of Rights. In order for a fisherman to make a living by fishing, his nets must be set where the fish are likely to be found. As the structure of the beaches at Cape Hatteras National Seashore Recreational Area change daily, so do the locations of the targeted fish. The closures proposed by NPS preferred Alt. (F) will prevent the exercise of this right as provided by Congress and is, as such, a violation of federal law.

**Corr. ID:** 14248**Organization:** *Not Specified***Comment ID:** 140808**Organization Type:** Unaffiliated Individual

**Representative Quote:** Further evidence of the intent of Congress to develop an area for recreational purpose can be discovered within 16USC459 Sec.3. Here Congress guarantees the right of the legal residents of the Islands the right to make a living by fishing "subject to such rules and regulations as the said Secretary may deem necessary in order to protect the area for recreational use as provided for in this Act." (emphasis added). This provision resulted in the creation of an area of the Seashore that was set aside specifically for the "protection and enhancement of recreational sports-fishing". 36CFR7.58.21.b. (6) (in part) - Specifically identifies boundaries "A zone is established for the protection and enhancement of recreational sport-fishing commencing at Beach Access Ramp No. 22 and continuing south and west along the ocean shore, including Cape Point (Cape Hatteras), to Beach Access Ramp No. 30. Within this zone commercial fishing, as specified in the Act of August 17, 1937 (50 Stat.

669), is permitted." Of note is that with the Beach Access Ramp number re-designation that has occurred since this statute was enacted, the aforementioned Ramp 30 is now designated as Beach Access Ramp No. 45. Enacting NPS preferred Alt. (F) will result in the closure of the majority of the above mentioned area without scientific justification or the ability to show that ORV and pedestrian use of the Seashore has caused harm sufficient to warrant the drastic measures outlined within the preferred proposal.

**Corr. ID:** 14248      **Organization:** *Not Specified*  
**Comment ID:** 140870      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I submit that the Service has no authority to alter the mission of this Seashore from a recreational area as provided within 16USC459 CHNSRA (in part) ".said area shall be, and is, established, dedicated, and set apart as a national seashore recreational area for the benefit and enjoyment of the people and shall be known as the Cape Hatteras National Seashore Recreational Area..", (emphasis added) as NPS has no Congressional authorization to do so and as such, NPS preferred Alt. (F) carries the potential to be, and will be if enacted, in violation of federal law.

**Corr. ID:** 14248      **Organization:** *Not Specified*  
**Comment ID:** 140852      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Furthermore, considering that the intent of Congress was to create an area within which the public could pursue ventures, "particularly swimming, boating, sailing, fishing, and other recreational activities of similar nature" (16USC459 Sec.4), the following NPS published policy must also be considered when management considerations are being developed for application within the bounds of the Seashore.

NPS Management Policies 2006 handbook, Introduction; "Hierarchy of Authorities" (in part) - "It is especially important that superintendents and other park staff review their park's enabling legislation to determine whether it contains explicit guidance that would prevail over Service-wide policy."

NPS Management Policies 2006 handbook, Para 1.4.4 (in part) - "The impairment of park resources and values may not be allowed by the Service unless directly and specifically provided for by legislation or by the proclamation establishing the park. The relevant legislation or proclamation must provide explicitly (not by implication or inference) for the activity, in terms that keep the Service from having the authority to manage the activity so as to avoid the impairment."(emphasis added)

NPS Management Policies 2006 handbook, Para 8.1 (in part) - "The 1970 National Park System General Authorities Act, as amended in 1978, prohibits the Service from allowing any activities that would cause derogation of the values and purposes for which the parks have been established (except as directly and specifically provided by Congress)"(emphasis added)

**Corr. ID:** 14288      **Organization:** *Not Specified*  
**Comment ID:** 133755      **Organization Type:** Unaffiliated Individual

**Representative Quote:** The National Park Service cannot ignore its responsibilities under the Organic Act and the National Seashore's authorizing legislation to protect all visitors and wildlife and the habitat on which it depends. Conserving Cape Hatteras for future generations and protecting its wildlife must take precedence over one form of recreation (ORVs), and any recreational use is required by law to leave the resource "unimpaired for the enjoyment of future generations."

When Cape Hatteras was established, Congress specifically designated it a park system unit for the following reason, "Except for certain portions of the area, deemed to be especially adaptable for recreational uses... , the said area shall be permanently reserved as a primitive wilderness...."

Thus, the intent of Congress was to protect the visitor experience of primitive wilderness, not ORV use.

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**Corr. ID:** 15000                    **Organization:** *Not Specified*

**Comment ID:** 140235            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Thus the phrase, "except for certain portions of the area deemed to be especially adaptable ..." was redefined to be the beaches of the three islands instead of the land between Corolla and South Nags Head. The new 1950's interpretation would still follow the precepts set in the 1938 Prospectors (DEIS page 12): "Primarily a seashore is a recreational area ...provide ample shoreline for all types of recreational purposes ... secondarily the area should include adjacent lands ... forestry, wildlife, or other interests ... to be preserved in the hinterlands."

The concept of water sports "swimming, boating, sailing, fishing" defined the kind of visitor usage to be experienced in this new type of park; a national seashore recreational area. Enjoyment from some place afar, as proposed by the current NPS, was not the prime purpose for this seashore. Visitor enjoyment here is a direct personal contact with wind, wave, and sand, and all other renewable resources.

**Corr. ID:** 15000                    **Organization:** *Not Specified*

**Comment ID:** 140229            **Organization Type:** Unaffiliated Individual

**Representative Quote:** The DEIS is a travesty as a government document. The DEIS will violate four laws:

- a. CFR459 et seq Enabling legislation: conversion of a recreational area into a wildlife refuge.
- b. 160SC 1531 et seq ESA: Destruction (take) of loggerhead eggs and hatchlings.
- c. 40CFR 1500 et seq NEPA: Loss of human amenities and standard of living.
- d. I8OSC 1961-1968 Anti Racketeering Law (RICO): Fraud in obtaining land.

**Corr. ID:** 15000                    **Organization:** *Not Specified*

**Comment ID:** 140234            **Organization Type:** Unaffiliated Individual

**Representative Quote:** What is this pile of words cluttering up the Organic Act?

5. Is the enabling legislation of 1937 and 1940 simply a reaffirmation of the Organic Act or an amendment or modification of the old 1916 Act? Or does it stand by itself?
  6. If congress was concerned with bird life and their habitat on the beaches, why didn't they just extend the Pea Island Refuge all the way to Oregon Inlet? Why wasn't the beach bird life mentioned at all? Recreational activities were certainly identified.
  7. How does the DEIS continue to fulfill the old NPS request that the villages provide the services necessary for park visitors? How are the villagers encouraged to have a flourishing economy as promised by NPS to obtain the village land holdings to create CHNSRA?
  8. When did the NPS 2006 Management Policies become a congressional amendment to the 1916 Organic Act?
- B. Development- These questions do have answers but most are not found in the 800 page DEIS. They can be secured by reading the complete enabling legislation instead of selected excerpts. Especially helpful is an appreciation of the tortured development of the CHNSRA as portrayed in the NPS 1938 Prospectus and the CHNSRA Administrative History. First, understand that CHNSRA was not created in one fell swoop of 1937. It may have been conceived in 1937 but was not born until 1958. Its twenty (20) year gestation was long and complicated and nearly aborted.

**Corr. ID:** 15000                    **Organization:** *Not Specified*

**Comment ID:** 140233            **Organization Type:** Unaffiliated Individual

**Representative Quote:** Why did NC 12 get built right through the middle of Hatteras and Ocracoke Islands which were supposed to be preserved as a primitive wilderness with all its flora and fauna?

If congress intended CHNSRA to be administered and managed only by the Organic Act like any other park, why did they not say so? The simple statement in bold print on page 11 should have been enough. The current NPS acts as if that statement justifies all their programs set forth in the DEIS.

**Corr. ID:** 15010                    **Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140416            **Organization Type:** Conservation/Preservation

**Representative Quote:** In establishing the Seashore, Congress drew a clear distinction between portions of the Seashore "especially adaptable for recreational uses" and other portions of the Seashore, and clearly mandated that

the two types of areas be developed and managed differently. In managing areas "especially adaptable for recreational uses," the NPS must, under the statute, consider and accommodate recreational uses. It is not to manage such areas as "primitive wilderness." Remarkably, except for a one-sentence reference on page 527, the DEIS contains no further reference to this requirement, and the DEIS contains no discussion about how this mandatory statutory language will be reflected in its management of ORV use at different areas of the Seashore. The DEIS inexplicably fails to acknowledge the differential treatment that it must accord to the two categories of lands under the statute, and therefore fails to comply with its directive to develop and manage those areas "especially adaptable for recreational uses ?as needed." The DEIS reflects little to no effort by the NPS to attempt to accommodate public access and use, particularly in those portions of the Seashore "especially adaptable for recreational uses." Indeed, the NPS appears inclined to accept the unreasonable goal of having the entire Seashore managed as a "primitive wilderness," regardless of the extent to which the specific area is adaptable for recreational use. The NPS's total failure to distinguish between areas that it may continue to manage as a primitive wilderness and areas that are especially adaptable for recreational uses is wholly inconsistent with the Seashore's enabling statute. Based upon the nature of the activities specifically identified in the enabling legislation, the location of those areas especially adapted for recreational use should include all waters and shorelines of the Seashore. See Position Statement at 11-15. These areas should not be managed as primitive wilderness, as would be the practical effect of the implementation of NPS's Preferred Alternative F, but in a manner that recognizes and accommodates the important recreational uses of these areas as contemplated and required by the seashore's enabling legislation.

**Corr. ID:** 15248                    **Organization:** Southern Environmental Law Center

**Comment ID:** 138608            **Organization Type:** Conservation/Preservation

**Representative Quote:** What's also clear is that, under the law, if there is a conflict between the resources and the people, the Park Services must side on the side of the resources; that the Organic Act and the enabling legislation of the seashore, the regulations that are in place to guide ORV use, demand -- and National Park Service's demand that if there is a conflict between recreational use and Natural Resource Protection, that the Park Service must side on the -- with the Natural Resource Protection.

**Corr. ID:** 15010                    **Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140412            **Organization Type:** Conservation/Preservation

**Representative Quote:** CHAPA believes that, as written, the DEIS and the NPS's Preferred Alternative F do not meet the NPS's dual mandate set forth by its Organic Act to promote and regulate the use of the national parks "by such means and measures as conform to the fundamental purpose to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment for the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." 16 U.S.C. § 1 (emphasis added). The closures and restrictions imposed as a result of the April 30,2008 Consent Decree in *Defenders of Wildlife v. USFWS* (No. 2:07-cv-45-BO (E.D. N.C.)) already have had a serious adverse impact--economic and other CHAPA's members. CHAPA and its members fear that the ORV management plan envisioned under the DEIS will result in even more stringent use restrictions on vehicles and closure of beaches or access points that will further significantly affect the way of life that area residents have enjoyed since long before the establishment of the Seashore-reducing recreational access, depriving fishermen dependent upon vehicles for their daily work of their livelihoods, shrinking economic activity, and changing the very culture that has defined the Outer Banks for so many years.

### Response:

The Organic Act gives NPS broad authority and discretion to manage the sometimes conflicting goals of resource conservation and visitor enjoyment and to determine how visitor activities, including recreational activities, may be managed to avoid or minimize impacts to natural and cultural resources. The express language of the Organic Act does not mandate that NPS equally balance preservation with public use in making its management decisions. Courts have held that the Organic Act places an overarching concern on preservation of resources in the management of national parks. Since the Act speaks of but a single purpose, conservation, where the goals of resource preservation and user enjoyment conflict, preserving the resources takes precedence. Thus, NPS's interpretation of the Organic Act as

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allowing the Seashore to manage appropriate recreational uses in the interest of resource protection is consistent with the Act and is a proper exercise of discretion.

Other laws and policies also support NPS’s decision to manage recreational use at the Seashore. The General Authorities Act, which amended the Organic Act, requires NPS to manage all units of the park system so as to effect the primary purpose of the Organic Act, which is to conserve park resources. Unless the general provisions of the Organic Act are in express conflict with any specific provision, they are applicable to all areas within the national park system. Because all units of the park system—including seashores—are to be managed to conserve and avoid impairment of resources, a unit’s designation as a park, monument, or recreation area is irrelevant with regard to NPS’s duties under the Organic Act, except where Congress explicitly directs specific treatment for particular park units. The Seashore’s enabling legislation does not specifically mandate or authorize ORV use, nor does it require or authorize NPS to allow unmanaged recreation that damages park resources or values in violation of the Organic Act. Even for legislatively mandated uses (which ORV use is not), the NPS has the authority and must manage and regulate the use to ensure, to the extent possible, that the impacts on park resources from that use are acceptable. (Management Policies section 1.4.3.1). The Seashore’s enabling legislation and the Organic Act must be read in tandem when evaluating the appropriateness of NPS’s management decisions, as the former supplements, but does not supersede, the latter.

The NPS understands the language of the enabling legislation as authorizing it to provide infrastructure and facilities for visitors in selected areas to support recreational use, as needed (e.g. parking areas, day-use facilities for beach-goers, life-guarded beaches, boat launch areas, and campgrounds, ORV ramps), even though this would not be appropriate in primitive wilderness. The enabling legislation does not expressly provide for recreational activities in a way that would affect NPS’s duty to manage those activities so as to avoid impairment of resources or unacceptable impacts, to avoid or minimize resource impacts, and to strive to restore the integrity of park resources that have been damaged or compromised in the past (as provided for by the NPS Management Policies). In fact, the enabling legislation states in 16 USC § 459a-1 that “the administration, protection and development” of the Seashore shall be exercised “subject to the provisions of sections 1, 2, 3, and 4 of this title”, with section 1 being the Organic Act (NPS 1937). Accordingly, recreation must be managed to provide for resource conservation. The preferred alternative, Alternative F, is consistent with the Organic Act’s mandate to conserve park resources and values because it provides for actions to preserve protected species during important lifecycle stages. NPS Management Policies 2006 explain that “The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. This mandate is independent of the separate prohibition on impairment and applies all the time with respect to all park resources and values, even when there is no risk that any park resources or values may be impaired. NPS managers must always seek ways to avoid, or to minimize to the greatest extent practicable, adverse impacts on park resources and values. However, the laws do give the Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values” (Section 1.4.3).

Section 1.4.6 of the Management Policies describes “park resources and values” as

the park’s scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals.

Appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them

The park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and

Any additional attributes encompassed by the specific values and purposes for which the park was established.

The Seashore has many of the resources and values described above and is responsible for conserving them.

Alternative F has also been developed to be consistent with the policy stated in section 1.4.3 of the NPS Management Policies that "The fundamental purpose of all parks also includes providing for the enjoyment of park resources and values by the people of the United States. The enjoyment that is contemplated by the statute is broad; it is the enjoyment of all the people of the United States and includes enjoyment both by people who visit parks and by those who appreciate them from afar. It also includes deriving benefit (including scientific knowledge) and inspiration from parks, as well as other forms of enjoyment and inspiration. Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act." The FEIS discloses in Chapter 4 the beneficial and adverse effects of managing the use of ORV in the Seashore under alternative F. NPS has thoroughly considered all the impacts, including those impacts from existing and potential changes in visitor use which indirectly affect the local economy. Alternative F was developed, and has been revised based on public comment, to support ORV and other access methods to mitigate the indirect economic impacts of resource management on local businesses.

NPS has considered the potential for economic and cultural effects of the Plan/EIS on commercial fishermen. The action alternatives are designed to avoid creating additional impacts on commercial fishermen. Commercial fishing access would continue to be restricted only in resource closures, lifeguarded beaches, and at Cape Point, where commercial fishing is prohibited to avoid conflict with recreational fishing. Commercial fishermen would continue to operate under Seashore special use permits and would not need an ORV permit under any of the alternatives in the ORV Plan/EIS.

NPS recognizes that culture is not static, has changed over time on the Outer Banks already, and will continue to change. In response to public comment NPS has further examined and considered whether a traditional cultural property exists in the Seashore. This is discussed in the ethnography section of Chapter 1 of the FEIS (also see response to Concern ID 24160).

In addition to meeting statutory and policy requirements related to the Organic Act, Alternative F meets the purpose of the plan" to develop regulations and procedures that carefully manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors." (DEIS p. 1) It also resolves the need to bring the Seashore into compliance with Executive Orders 11644 and 11989 respecting ORV use, and with NPS laws, regulations (36 CFR 4.10) and policies to minimize impacts to Seashore resources and values. In particular Executive Order 11644 requires that the location of routes minimize damage to soil, watershed, vegetation, or other resources of the public lands; minimize harassment of wildlife or significant disruption of wildlife habitats; minimize

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conflicts between ORV use and other existing or proposed recreational uses of the same or neighboring public lands, and ensure the compatibility of such uses recreational uses of the same or neighboring public lands. ORV routes may be located in areas of the national park system only if the respective agency head determines that ORV use in such locations will not adversely affect their natural, aesthetic, or scenic values.

***PN3000 - Purpose And Need: Scope Of The Analysis*****Concern ID: 24249**

**Concern Statement:** Commenters stated that the DEIS is more than an ORV management plan as it addresses overall access to the Seashore and species management. Some commenters noted that these issues are outside the scope of the document, which should just address ORV use.

***Representative Quotes:*****Corr. ID:** 28**Organization:** *Not Specified***Comment ID:** 126102**Organization Type:** Unaffiliated Individual

**Representative Quote:** Please remove all portions of the Draft ORV Management Plan that references and restricts pedestrians. This plan is not the place for it. Feel free to work up a Draft Pedestrian Management plan independently.

**Corr. ID:** 13002**Organization:** *Not Specified***Comment ID:** 140354**Organization Type:** Unaffiliated Individual

**Representative Quote:** Also, there are many references to this "plan" that utilize the wording "pedestrian access" yet this is being offered as an ORV plan. Why are limitations to pedestrian access being discussed in a plan that is meant to designate the ability of people to utilize off road vehicles? It seems that these 800+ pages of documentation are further reaching than the title suggests or implies.

**Corr. ID:** 13030**Organization:** *Not Specified***Comment ID:** 140446**Organization Type:** Unaffiliated Individual

**Representative Quote:** First and foremost, it is disingenuous of the NPS to call the DEIS an "Off-Road Vehicle Management Plan." In fact, the document itself encompasses nearly every activity, recreational or otherwise, that concerns access to the beaches of Cape Hatteras National Seashore Recreation Area (CHNSRA).

**Corr. ID:** 13262**Organization:** *Not Specified***Comment ID:** 140177**Organization Type:** Unaffiliated Individual

**Representative Quote:** This plan is clearly written to add protection to non-endangered species which is not the intent of a written access plan.

**Corr. ID:** 14826**Organization:** *Not Specified***Comment ID:** 140639**Organization Type:** Unaffiliated Individual

**Representative Quote:** We have watched with disbelief as the Off-road Management Plan has been developed and is not being presented to the public as the "best way to manage ORV usage within the park." To us, it comes across as a very complex bird management plan, with little or no regard to the public use and enjoyment of the park.

**Corr. ID:** 15048**Organization:** *Not Specified***Comment ID:** 138219**Organization Type:** Unaffiliated Individual

**Representative Quote:** Lastly, when the final product is published, it needs to be re-titled to reflect the true nature of its content, not simply "off-road vehicle management" but more accurately "beach access management".

**Response:** During scoping for the plan and during the negotiated rulemaking process, NPS public concerns surfaced over how the Seashore would handle pedestrian access and what species management would be implemented. The NPS believes these topics are closely related to ORV management. Designation of ORV routes could best be accomplished by also considering the other two topics. For example, ORV drivers/passengers often drive to a



destination and then get out of the vehicle, becoming pedestrians. Designation of an ORV route in a remote location likely would increase the number of pedestrians brought to the area by ORV compared to the number that would walk in if the area is not designated as an ORV route, increasing the potential for human disturbance of breeding shorebirds during the breeding season, by both ORV and pedestrians.

Additionally, addressing related topics was also necessary for NPS to resolve the need for the plan as described in the DEIS p. 2, which is based on the requirements of Executive Orders 11644 and 11989 as they pertain to designation of routes in units of the National Park system. Without a management framework for protected species affected by ORV and pedestrian use related to the plan for NPS to use upon expiration of the *Interim Protected Species Management Strategy* and related consent decree, it would not be possible for NPS to meet the requirement of the Executive Orders that routes be located to minimize damage to soil, watershed, vegetation, or other resources of the public lands; that routes be located to minimize harassment of wildlife or significant disruption of wildlife habitats; and that trails shall be located in areas of the National Park System only if the respective agency head determines that off-road vehicle use in such locations will not adversely affect their natural, aesthetic, or scenic values.

**Concern ID: 24250**

**Concern Statement:** Commenters stated that the scope of the plan should include guaranteeing visitors an opportunity to experience NPS values to a high degree in addition to minimizing recreational conflicts.

**Representative Quotes:**

**Corr. ID:** 803

**Organization:** Not Specified

**Comment ID:** 140578

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The proposed plans do not:

1. Sufficiently identify criteria for establishing pedestrian only access beaches with high "NPS Values".
2. Identify high or moderate NPS "Value" areas.
3. Acknowledge the negative impact of scenic features and natural visibility caused by off road vehicles.

**Corr. ID:** 803

**Organization:** Not Specified

**Comment ID:** 141022

**Organization Type:** Unaffiliated Individual

**Representative Quote:** An ORV management plan for Cape Hatteras National Seashore (CHNS) must establish areas that guarantees visitors an opportunity to experience NPS Values (as described in Management Policies 2006) to a high degree in addition to minimizing recreational conflicts.

In April 27, 1999 a precedent was set in CHNS where visitor use conflicts were addressed and a recreational activity regulated as a result. The NPS banned Personal Water Craft (PWC) use in CHNS because of visitor use conflicts and impairment of NPS values.

**Response:** Executive Order 11644 imposes a default of no ORV use unless ORV routes can be designated consistent with the Executive Order, which states that trails shall be located in areas of the National Park System only if the respective agency head determines that off-road vehicle use in such locations will not adversely affect their natural, aesthetic, or scenic values. Part of the purpose of the ORV Management Plan/EIS is to manage ORV use/access in the Seashore to protect and preserve natural and cultural resources and natural processes to meet this requirement of Executive Order 11644, and does take into account these values.

After review of public comment, alternative F has been modified to include an allocation of ORV routes and vehicle-free areas, plus seasonally managed areas/routes, that was developed to present all visitors with several options to enjoy park resources and values in different manners. This designation of routes and areas was included partly to minimize visitor and recreational conflicts, and higher resource "value" areas, including areas of higher concentrations of nesting shorebirds, were considered in designating vehicle-free routes and areas. As noted in the response to Concern ID 24247, Section 1.4.6 of the Management Policies describes "park resources and values" as

the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night;

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natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals.

Appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them

The park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and

Any additional attributes encompassed by the specific values and purposes for which the park was established.

The Seashore has many of the resources and values described above and is responsible for conserving them.

Visitor conflicts and resource impacts were considered in other past decisions including the prohibition of personal watercraft (PWC); however, that decision was not based solely on visitor conflicts or on a finding of impairment and did not set a precedent for disallowing all non-pedestrian uses of the Seashore. Further, the PWC decision did not find an impairment of NPS values but that PWC use was "considerable threat to estuarine flora and fauna, pollutes waters essential to commercial and recreational fishing in the park, poses unacceptable risk of injury to operators and bystanders, conflicts with the majority of other longstanding uses of the Seashore, and is an inappropriate use of the Seashore since PWC noise intrusion is inconsistent with the 'primitive wilderness' intent." (NPS 1999) Each decision on visitor uses is made based on numerous factors, and considers longstanding uses of the Seashore as well as derogation of park resources and values.

**Concern ID: 24251**

Concern Statement: One commenter requested that the NPS add the following as part of the premise of the FEIS "None of these regulations shall prohibit or interfere with public access to the waterline at any stage of tide."

**Representative Quotes:**

**Corr. ID:** 15000

**Organization:** *Not Specified*

**Comment ID:** 140265

**Organization Type:** Unaffiliated Individual

**Representative Quote:** One statement should be included at the beginning of the DEIS:

"None of these regulations shall prohibit or interfere with public access to the waterline at any stage of tide."

This principle will fulfill the promises of the CHNSRA enabling legislation. With such a foundation, the NPS can work toward a successful management of its wildlife resources.

**Response:** NPS disagrees with this comment's interpretation of the Seashore's enabling legislation. Furthermore using this premise could conflict with NPS responsibilities under other statutes such as the Organic Act. Therefore, NPS declines to adopt the commenter's premise. See response to Concern ID 24247 for a discussion of recreational access, the Organic Act and the Seashore's enabling legislation.

**Concern ID: 24252**

Concern Statement: One commenter suggested altering the need statement to add that NPS has a responsibility to achieve a balance between population and resource use which will permit high standards of living and a wide range of life's amenities, in accordance with NEPA.

**Representative Quotes:**

**Corr. ID:** 15004

**Organization:** *Not Specified*

**Comment ID:** 137412

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Need for Action section, page ii, 2nd paragraph, last sentence: The sentence should include additional information about the role that the NPS has in carrying out the policy set for in the National Environmental Policy Act. Namely that the NPS has the responsibility, as an agent of the federal government, for

achieving a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities. (Reference NEPA 1969) The document fails to convey details associated with the workbooks which provided for public input. The full results obtained from the workbooks should be conveyed as fact and not minimized and presented as a general statement.

**Response:** NEPA section 101(b) goals are broad national goals, without the level of specificity appropriate for the need statement in the ORV Management Plan/EIS. Similarly, NPS does not include all of its general responsibilities under the NPS Organic Act and other park statutes in the need statement. The DEIS (p. 92-93) discusses how the alternatives meet the purposes of NEPA as listed in NEPA section 101(b), including the one the commenter requests be added to the DEIS need statement (DEIS p. 1-2 and p. ii). Therefore NPS has determined not to add this NEPA goal to the plan/EIS need statement (page ii of the DEIS) as requested by commenter.

### ***PN8000 - Purpose And Need: Objectives In Taking Action***

#### **Concern ID: 24283**

Concern Statement: Commenters suggested additional/revised objectives for the FEIS including:

- Include an objective to ensure ORV usage to provide access to park visitors
- Make recreational access a priority
- Base conservation measures on honest science and common sense

#### ***Representative Quotes:***

**Corr. ID:** 13279

**Organization:** *Not Specified*

**Comment ID:** 140623

**Organization Type:** Unaffiliated Individual

**Representative Quote:** iv Objectives Section, Visitor use and Experience:

Comment: there should be a specific objective to ensure ORV usage to provide access to the park for visitors

**Corr. ID:** 14228

**Organization:** *Not Specified*

**Comment ID:** 137870

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I oppose the DEIS because the objectives on page iii are fatally flawed. Two additional objectives must be added:

1. Recreational Access Is A Priority
2. Conservation Measures Will Be Based On Honest Science and Common Sense

Unless these objectives are stated and met, large stretches of beach will be closed every year to protect a handful of marginal nesting sites at a cost of over \$3,000,000 per year

**Response:** NPS considers providing for ORV use in the Seashore to be covered under the objective "Manage ORV use to allow for a variety of visitor use experiences" (DEIS p. 3). Therefore a separate objective is not needed and has not been added.

NPS has determined that the objectives "Manage ORV use to allow for a variety of visitor use experiences" and "Minimize conflicts between ORV use and other uses" (DEIS p. 3) have resulted during the planning process in substantial and sufficient attention to providing ORV and other access for visitors to enjoy the Seashore. Therefore commenter's suggested additional objective "to ensure ORV usage to provide access to the park for visitors" has not been added. See the response to Concern ID 24247 for a detailed discussion of why recreational use does not take precedence over the primary purpose of units of the National Park System. NPS notes that consideration of visitor experience opportunities at the Seashore will also be part of the upcoming planning process for the Seashore's General Management Plan.

NPS has determined that Commenter's suggested additional objective "Conservation Measures Will Be Based On Honest Science and Common Sense" is not needed and, therefore, has not been added. The NPS guidance on the NEPA planning process provides that reasonable alternatives show evidence of common sense (NPS Director's Order #12 Handbook section 2.7 B). Accordingly, as is standard NEPA practice, NPS considered the common sense

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feasibility of potential alternatives when developing action alternatives, including conservation measures, for the DEIS. An action alternative with conservation measures that did not consider the results of scientific research and the opinion of species experts from the scientific community would be unlikely to resolve the Plan/EIS purpose and need for action and would not meet the objective "to provide protection for threatened, endangered, and other protected species (e.g., state-listed species) and their habitats, and minimize impacts related to ORV and other uses as required by laws and policies, such as the *Endangered Species Act* (ESA), the *Migratory Bird Treaty Act* (MBTA), and NPS laws and management policies." (p. 3 DEIS).

Using common sense and science are implicit in the NEPA planning process, which was followed for the Plan/DEIS.

See Concern ID 24669 for a response to comments about the "science" used in the plan/EIS.

**Concern ID: 24284**

Concern Statement: Commenters stated that having fixed buffers and year-round closures would not meet the plan objective to "Establish management practices and procedures that have the ability to adapt to the Seashore's dynamic physical and biological environment." They further stated that current turtle management policies would not allow the NPS to meet objectives related to the protection of threatened and endangered species.

**Representative Quotes:**

**Corr. ID:** 14948      **Organization:** Cape Hatteras Anglers Club

**Comment ID:** 137154      **Organization Type:** Recreational Groups

**Representative Quote:** Alternative F of the DEIS proposes year around closures for the following stretches of beach (11.9 miles):

Bodie Island (north to south) Ramp 1 to north end of Coquina Beach - (page xiii)

Ramp 27 to ramp 30 (Species Management Area) - (page xiv)

Approximately 1.7 miles south of ramp 38 (i.e., Haulover) to Buxton line (Species Management Area)(page xiv)

Ocean shoreline from 0.2 mile southwest of Bone Road (a.k.a, Fort Clark Spur) to inlet(Species Management Area) - (page XVI)

Ocracoke Island (north to south) Inlet to 0.25 mile northeast of ramp 59 (Species Management Area) (page xvi)

0.25 miles southwest of ramp 59 to new ramp 62 at 3.0 miles northeast of Pony Pen area - (page xvi)

New ramp 64 at 1.0 mile northeast of Pony Pen to 0.75 mile northeast of ramp 67- (page xvi)

All of these areas have historically either been open year around to ORV use or ORV areas closed as "safety closures" and all subject to resource closure. not permanently closed.

The year around closure of above listed 11.9 miles of ocean beach for the term of this proposed ORV plan clearly does not satisfy the DEIS stated objective of: " Establish ORV management practices and procedures that have the ability to adapt in response to changes in the Seashore's dynamic physical and biological environment."

Past year around beach closures have encouraged vegetation and small dune development which have effectively destroyed bird nesting habitat. This NPS destruction of nesting habitat was first done at the dredge ponds at Cape Point. These ponds are now home to predators and bird nesting no longer takes place. Next, the NPS closed the interior of Bodie Island Spit to year around use and this area is now covered with grass and emerging dunes which are not conducive to piping plover nesting. NPS then closed the interior of Cape Point which has resulted in emerging dunes and grass starting to take over much of the interior beach. Year around closures at the above sites, as proposed in Alternative F, which will last for the next ten to fifteen years, presume that these beaches will remain unchanged, which is impossible to ascertain.

**Corr. ID:** 14969      **Organization:** *Not Specified*

**Comment ID:** 137323      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Page iii of DEIS and page 129

"OBJECTIVES IN TAKING ACTION

THREATENED, ENDANGERED, AND OTHER PROTECTED SPECIES

- Provide protection for threatened, endangered, and other protected species (e.g., state-listed species) and their habitats, and minimize impacts related to ORV and other uses as required by laws and policies, such as the *Endangered Species Act*, the *Migratory Bird Treaty Act*, and NPS laws and management policies.

Draft Off-Road Vehicle Management Plan I EIS iii and 129

Regarding sea turtles (threatened Loggerhead, endangered Green and endangered Leatherback) at CHNS:

Using procedures outlined in Alternative F of the DEIS, which are the same as has been used in the past ten years, will continue to produce worse than the catastrophic results as listed on page 44 of the 2009 "Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle" under the heading of "Natural Catastrophes". Events creating losses of 24.5%, 22.7%, 19%, 16% and 54% (average losses of 27.2%) are listed as having been catastrophic. Sea turtle protection policies at Cape Hatteras National Seashore Recreational Area (CHNSRA) have produced an average percent of nests lost (zero % hatch rate) of 37.25% during the last ten years. Using NCWRC guidelines and the added restrictions on night driving of the consent decree in 2008 and 2009, the lost nests were 33.9%, or some 33% above the average of catastrophic losses listed in the Loggerhead Recovery Plan.

Losses at the rate experienced at CHNSRA clearly show that Alternative F for sea turtles does not satisfy the DEIS stated objective of "protection for threatened, endangered? species" as stated.

**Corr. ID:** 15010

**Organization:** Cape Hatteras Access Preservation Alliance

**Comment ID:** 140450

**Organization Type:** Conservation/Preservation

**Representative Quote:** During the negotiated rulemaking process, beach user groups recommended that the NPS maximize the use of "floating" resource closures in the place of fixed closures. Such closures would move along with the range of the birds and, the groups advocated, would provide both better protection for shorebirds and more access for the public. Given that the NPS envisions that the ORV management plan will be in effect for ten to fifteen years, making the plan flexible and adaptable to the Seashore's dynamic conditions only makes sense. Fixed closures do not satisfy the DEIS's stated objective to "[e]stablish ORV management practices and procedures that have the ability to adapt in response to changes in the Seashore's dynamic physical and biological environment," DEIS at iii, and should not be used in the final plan.

**Response:** In determining the amount of designated ORV routes versus vehicle-free areas, the NPS considered all aspects of visitor use and experience at the Seashore in addition to resource protection; therefore, vehicle-free areas are not just for resource protection, but also to provide pedestrian-only recreational experiences. Alternative F has been revised to include 26.4 miles of year round vehicle-free areas and 27.9 miles of designated year-round ORV routes, with 15.1 miles of seasonally designated OR routes that are vehicle free 6-7 months of the year. The increase in vehicle-free areas comes mainly from changing previously seasonal ORV routes to year-round vehicle-free areas to benefit pedestrians desiring a vehicle-free experience, to address safety and erosion considerations, and to better protect migrating/wintering shorebirds. The revised alternative F also eliminates SMAs and floating closures. Floating closures were removed from alternative F to be able to provide closures that are more predictable and based on historic breeding activity. While they would not have the flexibility of floating closures, the year-round and seasonal closures under revised alternative F would be more consistent and predictable.

While they would not adjust with the frequency of floating closures, vehicle-free areas for resource protection are not necessarily fixed for the next 10-15 years. Flexibility to adapt to changing conditions under the revised alternative F results from the NPS conducting a systematic review of data, habitat conditions, and other information every 5 years, after storms or events that Seashore management determines to be a major modification of habitat quantity or quality, or after a significant change in protected species status in order to evaluate the effectiveness of management actions in making progress toward the accomplishment of stated objectives. These periodic reviews could result in changes in the management actions in order to improve effectiveness and may allow for more flexible management of recreational use, provided wildlife populations are not adversely affected and continue to make progress toward desired conditions. Where progress is not being made toward the attainment of desired conditions, the periodic review and adaptive management may result in increased restrictions on recreational use. Floating closures and SMAs were removed from the revised alternative F to simplify resource management and increase the predictability of visitor experience opportunities associated with vehicle free or ORV use areas; however, buffers may still be adjusted as needed when unfledged chicks are mobile.

Regarding the succession of beach habitat to dunes and vegetated areas within vehicle-free areas, the NPS is not destroying habitat by allowing this process to occur. Succession is a natural process and per the NPS *Management*

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*Policies 2006*, “Natural resources will be managed to preserve fundamental physical and biological processes, as well as individual species, features, and plant and animal communities.” In defining what natural processes are, the *NPS Management Policies 2006* state that “Natural resources, processes, systems, and values found in parks include:... biological processes such as photosynthesis, succession, and evolution”. Therefore, allowing these natural processes to occur within the Seashore is consistent with NPS management policies as well as the enabling legislation that states “...and no development of the project or plan for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing in this area.” Allowing these areas to progress through the natural stages of succession is also consistent with the objectives of the plan found on pages 2 and 3 of the DEIS relating to Natural Physical Resources: minimize impacts from ORV use to soils and topographic features, for example, dunes, ocean beach, wetlands, tidal flats, and other features; Vegetation: minimize impacts to native plant species related to ORV use; and Other Wildlife and Wildlife Habitat: minimize impacts to wildlife species and their habitats related to ORV use.

Regarding NPS management of sea turtle nests with respect to weather related events see the NPS response to Concern IDs 24018 and 24143.

**Concern ID: 24285**

**Concern Statement:** One commenter requested that the NPS further explain how the preferred alternative can “largely meet” rather than “fully meet” objectives related to threatened and endangered species.

**Representative Quotes:**

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137727

**Organization Type:** Conservation/Preservation

**Representative Quote:** The DEIS accurately notes that the Seashore provides habitat to several endangered, threatened and protected species and states “NPS is required to conserve and protect all of these species, as well as other resources and values of the Seashore. The use of ORV’s must therefore be regulated in a manner that is consistent with applicable law, and appropriately addresses resource protection (including protected, threatened and endangered species). DEIS at ii. The DEIS further states that Preferred Alternative F meets the objective to “[p]rovide protection for threatened, endangered, and other protected species (e.g., state listed species) and their habitats, and to minimize impacts related to ORVs and other uses as required by laws and policies” only “to a large degree.” DEIS at xxxiii. If Alternative F remains the preferred alternative, NPS must explain in the final EIS how it can authorize a plan that “largely meets” but does not fully meet the legal requirements for species protection.

**Response:** Alternative F complies with the legal requirements of statutes such as the Endangered Species Act, while meeting the plan objective to “provide protection for threatened, endangered, and other protected species (e.g. state-listed species) and their habitats, and minimize impacts related to ORV and other uses as required by laws and policies, such as the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), and NPS laws and management policies.” Alternative F meets the first part of the objective (Provide protection for threatened, endangered, and other protected species (e.g. state-listed species) and their habitats), though not as well as alternative D. For example, NPS has determined that alternative F may affect/is likely to adversely affect species listed under the Endangered Species Act and has requested consultation with the U.S. Fish and Wildlife Service as required. Alternative F meets the second part of the objective (minimize impacts related to ORV and other uses as required by laws and policies, such as the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), and NPS laws and management policies). Therefore, NPS considers that this objective is met by Alternative F.

The consideration and disclosure of the degree to which each alternative meets the purpose, need and objectives of the plan is a NEPA practice, recommended in the NPS Director’s Order #12 Handbook section 4.5 E 10 (a). It is not a finding of whether an alternative complies with the ESA.

**Concern ID: 24286**

**Concern Statement:** One commenter stated that NPS may have difficulty meeting education and outreach objectives related to a turtle watch program due to the way current management is structured.

**Representative Quotes:****Corr. ID:** 14946**Organization:** Cape Hatteras Anglers Club.**Comment ID:** 137070**Organization Type:** Recreational Groups**Representative Quote:** Alternative F of the DEIS on page xxxii states the following:

Meets objective to a large degree as the Seashore would implement more educational programs in local schools, expand the Junior Ranger program, and enlist volunteers for a Sea Turtle Nest Watch Program.

The above statement concerning "enlist volunteers for a Sea Turtle Watch Program " sets a goal that will be very difficult to achieve. I say this because the current procedures of not using relocation zones would require literally hundreds of volunteers every night of a hatch window for multiple nests spread along the 68 miles of the Seashore until 72 hours after each nest hatches . Many members of the general public are so upset with the access restrictions of Alternative F and the poor results of the sea turtle program , that attracting volunteers to watch a nest fail will be very hard to do. Civic involvement would be greatly enhanced if access the beaches was increased rather than decreased. Running a Recreational Seashore must allow reasonable access which Alternative F does not do. A much more reasonable approach to a nest watch program is detailed in the "Sea Turtle Management - A Common Sense Approach for Cape Hatteras Seashore Recreational Area" proposal filed by Outer Banks Preservation Association, North Carolina Beach Buggy Association and Cape Hatteras Anglers Club.

**Response:** NPS believes that a nest watch program could be successful and should be implemented. Other areas have had experience with successful nest watch programs. Nests are laid and therefore hatch over a period of months and would not require a large number of volunteers on the same days. Depending on their distance from sources of light pollution, some nests may not need watcher presence. See the response to Concern ID 24143 for a discussion of the Outer Banks Preservation Association, North Carolina Beach Buggy Association and Cape Hatteras Anglers Club document describing proposals for sea turtle management.

***PO4000 - Park Operations: Impact Of Proposal And Alternatives*****Concern ID: 24253**

**Concern Statement:** Commenters expressed concern that the NPS would not be able to fund the preferred alternative and noted that if visitation decreases, park funding could also decrease and adversely impact the Seashore's ability to carry out management actions. Other commenters asked how many new staff members would be needed to carry out the preferred alternative.

**Representative Quotes:****Corr. ID:** 7126**Organization:** *Not Specified***Comment ID:** 133410**Organization Type:** Unaffiliated Individual**Representative Quote:** There aren't enough park rangers under the current consent decree. I'd like to know how many additional rangers, trappers, and middle managers will need to be hired to administer the new plan.**Corr. ID:** 10625**Organization:** *Not Specified***Comment ID:** 136506**Organization Type:** Unaffiliated Individual**Representative Quote:** Section 3.3: Funding for proposed ramp, access, and corridor improvements

In this time of a weak economy and reduced tax revenues, I am concerned that the NPS does not have the funding necessary to provide the proposed ramp, access, and corridor improvements described in Option F.

**Corr. ID:** 14974**Organization:** *Not Specified***Comment ID:** 139490**Organization Type:** Unaffiliated Individual**Representative Quote:** If this downward trend continues, it not only will have a huge negative impact on the people of Hatteras Island, but at some point also on the National Seashore itself. With fewer and fewer visitors, it will be harder for the Seashore to justify its funding levels. If funding would be cut, visitor services would be cut, maintenance projects would be cut, employees would be cut, and resource protection also would have to be cut.

**Response:** Once the planning is completed, and a decision is made, a request for additional funds would occur. A description of additional funding needs and potential sources is provided below. Expected staff needs for the

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implementation of the preferred alternative are detailed on pages 625 to 630 of the DEIS. As noted in this analysis, the increase in staffing that would be required would not be fully covered by existing and expected funding and would be partially offset by permit fees and by reprioritizing staff from other efforts. Based on further experience implementing the Consent Decree in 2009 and 2010, additional staff beyond those noted in the DEIS would be required for plan implementation, regardless of the alternative selected, to meet needs for increased attention to public information, resource education, science and adaptive management, and program management, all of which would be funded in part through the ORV permit fee revenues. As these positions would be common to all action alternatives, the relative cost of revised alternative F would not change compared to the other action alternatives.

In addition to the staffing needs detailed in the FEIS, implementation of the plan would also require funding for construction, such as new ramps and parking areas. As revised, alternative F would include fewer construction projects than stated in the DEIS, therefore reducing the amount of funding needed. Like most federal agencies, the NPS relies on Federal appropriations to fund its core activities, although there is increasing use of alternative revenue sources, such as fees, to supplement operations. Parks generally obtain project funding either from annual appropriations or recreational fees; however, Federal and non-Federal grants can be a potential fund source as well.

Annual appropriations are obtained directly from Congress. As an agency, the NPS develops an annual budget request that is submitted to Congress for review, modification, and approval. Base funding approved in the Operation of the National Park System appropriation covers basic operations (operating visitor centers, patrolling park grounds, and maintaining facilities). Other appropriations cover special programs (e.g. funding research, land acquisition, and construction) of the NPS.

The NPS also collects Recreation Fees as authorized by the Federal Lands Recreation Enhancement Act (FLREA). This fee revenue is generated at over 190 sites through park admission fees and user fees (such as for guided tours, parking, and campgrounds). All revenue collected at these sites is retained by the NPS with 80% being retained by the collecting park. Fee funds are immediately available without being subject to Congressional appropriation, but must be spent only on approved projects that meet FLREA eligibility criteria and emphasis factors.

The NPS anticipates that funding for construction of any access ramps, parking lots, roads or other infrastructure needs outlined in the alternatives will come from appropriated NPS programs such as Line Item Construction (major or costly construction activities) or Repair and Rehabilitation (improvements to existing infrastructure at moderate costs), or from the Park's Recreation Fees. Construction projects are required to compete for NPS approval prior to funds being provided. This competition process occurs annually and requires parks to enter project proposals into the NPS's Project Management Information System (PMIS), which is a system used to track requests, document review comments, and track project status. Approved projects generally receive funding two years after the year the project was submitted.

Major construction and reconstruction projects generally require a three-year schedule for completion. The first year funding is for obtaining surveys and preparing preliminary design plans. The second year is for completion of project planning (construction drawings). Actual construction is generally scheduled in the third year. Projects under this program are usually accomplished by the NPS's Denver Service Center.

### ***RN1000 - Regulatory Negotiation Process***

#### **Concern ID: 24254**

**Concern Statement:** Commenters stated that the preferred alternative did not represent the work of the negotiated rulemaking committee and asked that this alternative be modified to reflect their work. Some commenters stated that this process failed because NPS failed to enforce the rules.

#### ***Representative Quotes:***

**Corr. ID:** 10999

**Organization:** *Not Specified*

**Comment ID:** 136069

**Organization Type:** Unaffiliated Individual

**Representative Quote:** In order to restore balance to the DEIS, I highly recommend that the NPS revisit the proposal put forth to the Negotiated Rulemaking Committee in December of 2009. It provides the necessary protections for wildlife resources while having the support of a majority of the local community.



**Corr. ID:** 14099

**Organization:** Avon Property Owners Assoc.

**Comment ID:** 141073

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Negotiated Rulemaking Committee (NRC) Recommendations: In the interview stage to select members of the Negotiated Rulemaking Committee (NRC), the public was assured that the National Park Service (NPS) would give us a level playing field. The public and the interviewees were assured that the members would be able to think out of the box, to make adjustments to the interim plan, possibly finding solutions that would make the final ORV plan even less stringent than the interim plan.

As an Avon Property owner and interested audience of the Negotiated Rulemaking Committee that addressed this problem, I am astounded and disappointed in the direction the NPS took the alternatives shown in the DEIS. I am particularly disturbed by statements and comments that many of the parts of the NPS preferred Alternative F came from the Negotiated Rulemaking Committee. When three committee members who agreed in advance not to litigate, they brought suit against the NPS that resulted in the highly restrictive Consent Decree. Many of the members of this Committee on the access side wanted to terminate our good faith participation at that time, but were advised and encouraged by their support groups to not be quitters and stay the course, which they did. Some of the members of the panel were given legal advice during the law suit and signed on to the consent decree to avoid the judge shutting the entire beach until the new plan was in place which has been several years in the making counting the Interim Plan that was in effect at the time of the formation of the Reg-Neg committee.

Some members of the access group on the NRC went well beyond reasonable negotiation in a last ditch alternative that was an attempt to test if the environmental side was trying to come close to negotiating. However, even with NPS, USFW, and all state agencies on board with the last ditch, test proposal, the environmental groups would come to no consensus--they refused to negotiate, as they did from the very beginning of the 15 month process. I would never have agreed to several items in that plan including the buffer distances of up to 1000 meters and the closing of Ramp 27-30 year round.

**Response:** Many of the concepts included in alternative F originated in, or were discussed by, the Advisory Committee or its subcommittees and work groups during the negotiated rulemaking process. Different members put forth a number of proposals and counter proposals, both during and at the end of the committee process. NPS participated in those discussions and considered all the ideas presented before developing alternative F. As stated in the DEIS (p. 80), in the case of conflicting advice from Committee members about any particular issue, the NPS made management judgments as to which approaches would make an effective overall ORV management alternative. Comments received on the DEIS have reiterated recommendations from different members for various management actions contained in these proposals and these recommendations have been responded to by topic in this Concern Response Report.

NPS notes that different members of the Advisory Committee, as well as members of the public, have differing views as to what other members did or didn't do, and why the process did not reach a consensus agreement on an alternative for ORV management at the Seashore. NPS appreciates the commitment of time and effort members made to participate and believes the process was helpful in generating new ideas and better defining the differing perspectives.

### ***SE1000 - Socioeconomics: Guiding Policies, Regs And Laws***

**Concern ID:** 24255

**Concern Statement:** Commenters noted laws and regulations they felt should be considered in the economic analysis including the Magnuson-Stevens Act, as well as the "right to earn a livelihood by fishing" statement in the Enabling Legislation, stating this goes beyond commercial fishing.

***Representative Quotes:***

**Corr. ID:** 15000

**Organization:** *Not Specified*

**Comment ID:** 140239

**Organization Type:** Unaffiliated Individual

**Representative Quote:** In 459 a-1 the words "commercial fishing" are not used as a provision applied to the Organic Act. The exact words are "shall have the right to earn a livelihood by fishing". This phrase encompasses

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more than just "commercial fishing". This right includes: recreational head boats, charter fishing boats, captains and crew, boat building and repairs, fuel and provisions, professional guides, repairs, bait and tackle shops, food and lodging for recreational anglers. Thus when a tackle shop owner complains of lost business due to beach closings and is told by NPS that he needs to adjust and retrain - that response is a violation of the law.

**Corr. ID:** 15157

**Organization:** *Not Specified*

**Comment ID:** 138887

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Do ya'll know what the Magnuson-Stevens Act is? I -- if you don't, I suggest you read through it, because one of the things that's mentioned in there, is -- is a socio-economic impact study on how regulations affect the fishing industry. Our industry is constantly dealing with endangered species. But yet, there is slowly becoming a balance between the threatened species and what the general fisherman needs. I suggest that ya'll do this study and not just take the word off of these people that these businesses are gonna be affected. This is mandated by Congress. It's in there. You should look at the guidelines put in that document, and apply those document -- those guidelines where it comes to the economic study to the regulations and stuff that you're trying to throw down on this island.

**Response:** The NPS does not agree with the commenter's interpretation of the phrase "shall have the right to earn a livelihood by fishing" in the Seashore's enabling legislation. Even if, for the sake of argument, one assumed it was correct, case law upholds the authority of the Department of the Interior to regulate the use of Seashore beaches for "commercial fishing" under the enabling legislation. Similarly, the NPS has authority to regulate fishing-related use of Seashore beaches.

The section of the Magnuson-Stevens Act (Act), 16 U.S.C. 1864 §315 (c), Regional Impact Evaluation, referred to by commenter applies to specific situations, which do not pertain to this ORV Management Plan. The Plan does not regulate a fishery in the meaning of the Magnuson-Stevens Act, nor would any of the actions under alternative F constitute a catastrophic regional fishery disaster as defined in section 315(d) of the Act.

### ***SE2000 - Socioeconomics: Methodology And Assumptions***

**Concern ID:** 24256

**Concern Statement:** Commenters stated that the DEIS incorrectly identified the Region of Influence (ROI) for this project. They stated that analysis at the county-wide level masks the impacts that would occur in the Seashore villages, and that northern communities such as Kill Devil Hills and Southern Shores should not be included in the ROI.

***Representative Quotes:***

**Corr. ID:** 3490

**Organization:** *Not Specified*

**Comment ID:** 141215

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The analysis of economic impact to the Seashore Villages appears to be significantly down played. Emphasis in DEIS is on the ROI-wide or county-wide level impacts.

Nowhere is it clearly addressed that the overwhelming majority of negative impacts will be felt by small businesses in the Seashore Villages rather than by overall economic interests within the greater ROI.

**Corr. ID:** 13427

**Organization:** *Not Specified*

**Comment ID:** 140823

**Organization Type:** Unaffiliated Individual

**Representative Quote:** To include the economic statistics of northern beach communities as part of the southern beach communities is similar to including the time of the pace horse at the Kentucky Derby as part of the overall race statistics. Our adjoining northern beach community neighbors, Southern Shores, Kitty Hawk, Kill Devil Hills, and Nags Head are completely different economies. In fact, tourists (our main industry) must bypass these northern beach communities in order to get to the southern beaches. The extra half hour to hour and a half drive south makes these northern beaches more of a competitor than a companion to the southern village communities.

Full time population differences alone clearly reflect the dichotomy between the southern villages and northern towns. These northern beach towns include Southern Shores (population 2,587 (2008 Dare Co.)), Kitty Hawk (population 3,260 (2008 Dare Co.)), Kill Devil Hills (population 6,642 (2005 Dare Co.)) and Nags Head (population 3,016 (2008 Dare Co.)).

The population of these northern beach communities totals 15,500 people spread across approximately 18 miles.

In comparison, the southern beach villages include Rodanthe (population 203), Waves (population 49 or 50), Salvo (population 339), Avon (population 735), Buxton (population 1,848), Hatteras Village (population 743), and Hyde County's Ocracoke Island (population 769).

The population of these southern beach communities totals 5,456 spread across approximately 65 miles (all population statistics from most recent data and most reputable sources between 2000 census and 2008 Dare County records. Mileage does not include Pea Island Wildlife Refuge nor does it include any water area across Hatteras Inlet).

When one compares revenues from the restaurant, hotel, rental cottage, and retail establishments, the economic dichotomy of these different communities becomes ever more clear.

**Corr. ID:** 13646                    **Organization:** *Not Specified*

**Comment ID:** 139605           **Organization Type:** Unaffiliated Individual

Additionally, I understand that there were no surveys done with the local businesses on Ocracoke and Hatteras Islands. Given the "test run" that was provided because the area has been operating under the Consent Decree for two complete seasons, I think businesses have a perfect idea what the DEIS will do to their income considering how much more restrictive Alternative F is over the Consent Decree.

**Corr. ID:** 14408                    **Organization:** *Not Specified*

**Comment ID:** 140898           **Organization Type:** Unaffiliated Individual

**Representative Quote:** The ROI used for the analysis utilizes all the villages in the Park. The impact will primarily impact Ocracoke, Avon, Frisco, Buxton and Hatteras. There is existing data that the consent decree has had a major impact on business in the area. The increase in pedestrian only areas will have a minimal impact on the economies of the areas. Survey the parking lots with pedestrian access versus the number of vehicles on the beach. ORV users are the vast majority of users and most pedestrians will only walk a limited distance in heavy sand.

**Corr. ID:** 14714                    **Organization:** Outer Banks Preservation Association

**Comment ID:** 133685           **Organization Type:** Unaffiliated Individual

**Representative Quote:** The socioeconomic analysis on pages 270-281 and pages 561-598 are misleading and erroneous. There are critical weaknesses in the analyses of the statistical definition of the Region of Influence, incomplete visitation/business survey data (p. 566), erroneous recreational user data, inflated overall seashore visitor counts pertaining to beach use, and flawed key assumption concerning the maintenance of access under Alternative F. These flaws are directly manifested in both the Effected Environmental and Socioeconomic Impact sections of the DEIS. Areas that are not even associated with CHNSRA or ORV use are included in the ROI and the economic impact statistics. This allows NPS to downplay the excessiveness of the restrictions to access as well as the horrendous economic impact that the restrictions are causing in CHNSRA.

**Response:** To gather data for the socioeconomic analysis, NPS conducted a survey of businesses in the Seashore villages and in Kill Devil Hills, Nags Head, and Kitty Hawk (see page 566 of the DEIS for a description of the survey). In the business survey, some of the businesses in the three villages north of the Seashore reported that beach closures to ORVs would affect their revenue and forecast revenue losses in the future, so it is not inaccurate to include these communities in the ROI. However, it is true that other businesses in the three northern communities reported that ORV restrictions would have no impact on their business. In the economic impact analysis, we apply a range of losses around the mean reported by businesses in the three northern communities to the entire Outer Banks area of Dare County north of the Seashore. The resulting impacts most likely overstate the economic impacts on the northern part of Dare County.

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We fully agree that the impacts will fall mainly on the Seashore villages. For this reason we report the range of revenue impacts used to calculate the impacts for each alternative separately for the Seashore villages and the rest of the ROI (see tables 67, 69, 72, 74, 77 and 79). Although the results from running the IMPLAN model are presented at the county-level, in the discussion of each alternative, we state that the Seashore villages would experience the majority of the direct impacts. In the discussion of the impacts on small businesses for each alternative, we state that the impacts will be larger for businesses that depend on visitors who use particular beach access ramps or visit particular beaches that will be closed or restricted under the alternative. In the conclusion for each alternative, we reiterate that the Seashore villages will experience the majority of the impacts and that small businesses may be disproportionately impacted. We forecast higher adverse impacts on the small businesses than for the ROI as a whole.

In Hyde County, Ocracoke is relatively wealthier than the rest of the county and accounts for a large portion of the county's income. The IMPLAN analysis estimates the ripple effect of revenue changes in Ocracoke on Hyde County as a whole.

As discussed in the DEIS and FEIS, we used a variety of data sources to create the low, moderate and high impact scenarios for each alternative because each source of data has pros and cons. We do not directly use the absolute number of recreational users to calculate impacts. Instead, we compared visitation trends over a number of years to see how visitation in 2007 and 2008 compared relative to previous visitation levels.

In initial meetings shortly before the Negotiated Rulemaking committee was officially formed and in early meetings with the committee, we were told that the economic impacts would be widespread. We were urged by members of the local community to consider the impacts on Dare County, the State of North Carolina, and potentially neighboring states. We chose to narrow the ROI to just the island portions of Dare and Hyde counties, and assessed the resulting indirect and induced impacts on Dare and Hyde County as a whole and for the Seashore villages where possible.

**Concern ID: 24257**

**Concern Statement:** Commenters stated that the DEIS did not include a complete economic study and failed to address full costs--direct costs, indirect costs, lost opportunity costs, costs of future liability, and hidden costs and therefore the document was flawed. They requested a complete study be done that includes a survey of businesses and incorporates the first year of economic data from the consent decree (2009). Commenters also expressed concern over the use of 2004 data when newer data should have been available.

**Representative Quotes:****Corr. ID:** 889**Organization:** OBPA**Comment ID:** 137220**Organization Type:** Unaffiliated Individual**Representative Quote:** Economic analyses in the DEIS do not use data from the first full year of the Consent Decree (2009).**Corr. ID:** 3874**Organization:** Outer Banks Chamber of Commerce**Comment ID:** 139314**Organization Type:** Unaffiliated Individual**Representative Quote:** Page 566 in the DEIS states "To provide information for the economic analysis, a survey was conducted by RTI, International of selected categories of potentially affected businesses. The results of this survey are currently being analyzed and will be addressed in the final plan/EIS." Page 571 also notes that data is still being analyzed and will allow future analysis of the economic impact. How is it possible to comment on something that does not yet exist?

2. Page 566, table 63 uses what it purports to be revenues from 2004 when current data was available. And the revenues in the table are incorrect even for 2004 and don't appear to include Ocracoke village.

**Corr. ID:** 12214                    **Organization:** *Not Specified*

**Comment ID:** 137450           **Organization Type:** Unaffiliated Individual

**Representative Quote:** My first comment concerns the fact that the Economic Impact analysis component of the planning process is not completed. This is the single most important component to the planning process and was supposed to be completed for public comment in conjunction with the DEIS. As a local businessman, and park user, without this most important piece of the document, the rest of the DEIS is useless.

**Corr. ID:** 13030                    **Organization:** *Not Specified*

**Comment ID:** 140492           **Organization Type:** Unaffiliated Individual

**Representative Quote:** I would propose that study of all the individual businesses on the Island be conducted in order to collect data pre-Consent Decree and post-Consent Decree. This would likely paint a much dire picture of the future of the Island economy if Alternative F (similar closures to Consent Decree) indeed becomes the final plan.

**Corr. ID:** 13996                    **Organization:** MIDGETT BROS INC, HATTERAS MARLIN MOTEL

**Comment ID:** 140053           **Organization Type:** Unaffiliated Individual

**Representative Quote:** The Economic Impact Analysis found the DEIS by its own admission is incomplete. How can we comment on an incomplete document? The Economic analysis is structured in such a manner that it fails to address full costs--direct costs, indirect costs, lost opportunity costs, costs of future liability, and hidden costs.

**Corr. ID:** 14099                    **Organization:** Avon Property Owners Assoc.

**Comment ID:** 141077           **Organization Type:** Unaffiliated Individual

**Representative Quote:** Socioeconomic Impact is Incomplete: NPS is using incomplete data and analysis to reach economic impact conclusions in the DEIS. Due to a hasty, underfunded, and limited (if any) data collection and analysis process, there is no completed and peer reviewed economic analysis. This makes the DEIS seriously flawed and an illegal, if not missing, component of the DEIS. The Cost / Benefit ratio needs to be determined and balanced against the intent and survival of the residents and visitors to the CHNSRA and its designated purposes (by the Federal Government in the 1930s and again in the 1950s).

**Corr. ID:** 14242                    **Organization:** ENVISCI3330 Land Use Management

**Comment ID:** 140409           **Organization Type:** Unaffiliated Individual

**Representative Quote:** One last thought, as I have conducted my research behind this issue, it has been apparent to me that one concern of the public and surrounding communities is the effects of restrictions to the local economy. I may have missed it, but could not find a complete economic impact study. My question would be what percentage of people currently utilize ORVs to gain access to the many sites and facilities of the seashore?

**Corr. ID:** 15115                    **Organization:** *Not Specified*

**Comment ID:** 139507           **Organization Type:** Unaffiliated Individual

**Representative Quote:** The Economic Impact Analysis is, to be quite honest, tentative and incomplete. I urge you to push RTI to get hard-edged, and to push into greater depth in analyzing the impact on these communities. I urge you to watch for professional -- Professor Dan Stein's 2009 report on the National Park visitor spending, coming out in July or in August of this year, and look at it very carefully in comparison to 2008 data on the economic life and viability of these communities.

**Response:** Available economic data was sufficient for the purposes of NEPA analysis of the impact of the alternatives before any of the studies were undertaken. During the negotiated rulemaking process some members of the committee asked for other data to be collected. NPS responded by funding the following studies referenced in the DEIS:

- (1) A survey of local village businesses.
- (2) A non-contact count of ORV at selected ramps.
- (3) A visitor intercept study of visitors on the beach.

The results of these studies have now been released and the relevant sections of the FEIS updated to reflect them. It is an acceptable NEPA planning practice for newly available results of studies that were not available at the time a DEIS is written to be incorporated in the FEIS. Agencies would prepare a supplemental DEIS for review if there is significant new information relevant to environmental concerns and bearing on the proposed action and its impacts

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(CEQ regulations Sec. 1502.9(c)1.(ii)) In this case the study findings are consistent with the analysis already provided in the DEIS and a supplemental DEIS is not required.

The economic analysis estimates the regional economic impacts for three scenarios (high, moderate and low) from each action alternative relative to the no-action alternatives. The baselines (no action alternatives) are the Consent Decree and the Interim Protected Species Management Strategy, not historic conditions. Information on ORV use at the Seashore from the non-contact count of ORVs and the visitor intercept survey has been added to Chapter 3 and Chapter 4 of the FEIS.

As described in the Socioeconomic Impacts section of Chapter 4, the IMPLAN model generates direct, indirect and induced impacts on the regional economy from a change in visitor spending. We are not sure what “lost opportunity costs, costs of future liability, and hidden costs” refer to in the comment. The estimates of impact on revenue were derived based in part on interviews with local businesses.

Data from 2004 was available when the first analysis for the DEIS was started. The thresholds for the different impact levels (negligible, minor, moderate and major) are based on percent changes, rather than absolute changes. We do not believe that the multipliers programmed into the IMPLAN model have changed significantly between 2004 and 2006 or 2007, which would have been the most recent data during preparation of the analysis for the DEIS, so the relative impacts in percentage terms would not be significantly different.

Dr. Daniel Styne uses a model called the Money Generation Model (MGM) to estimate the economic impacts of park visitors on local economies. The MGM is an IMPLAN model that has been modified for use estimating the benefits of national parks. We also use IMPLAN for our analysis. The reports published by Dr. Styne on individual park impacts are based on official NPS visitation statistics and assumptions about per person spending (for reports and details on the model see <http://web4.msue.msu.edu/mgm2/>). The economic impacts are relative to a situation where the park did not exist and, because of that, no visitors came to the area. Based on the reports from 2007 and 2008, Dr. Styne estimates that visitor spending increased in 2008, which seems to be driven by the assumption that individual visitors spent more in 2008 than in 2007, since official visitation was lower in 2008. The impacts are based on generic assumptions applied to a variety of parks about the percent of visitors who are local, the average number of days in a trip and spending in different categories. For the DEIS, we did not try to estimate how the alternatives would change the number of visitors in comparison to the no-action alternatives and multiply the change in visitation by per visitor spending to generate the inputs for the IMPLAN analysis. Instead we used various sources of data to create assumptions about the percent reduction in overall spending as the input into the IMPLAN model.

**Concern ID: 24258**

**Concern Statement:** Commenters stated that the assumption that access corridors would remain open for an appreciable portion of the visitor use season was flawed since there is a lack of predictability in the resource closures. They further stated that the DEIS economic impact analysis did not fully consider these closures.

**Representative Quotes:**

**Corr. ID:** 13279

**Organization:** *Not Specified*

**Comment ID:** 140637

**Organization Type:** Unaffiliated Individual

**Representative Quote:** All socioeconomic analyses related to Alternative F are predicated on the assumption that access corridors will remain open for at least an appreciable portion of the visitor high season.

Under Alternative F, the access corridors will be subject to Resource Closures based on buffers similar or identical to the Consent Decree. Unless some predictability of access to Cape Point and South Point Ocracoke can be assured, economic analyses predicated on assumption of access are fundamentally flawed.

**Corr. ID:** 14214

**Organization:** *Not Specified*

**Comment ID:** 137973

**Organization Type:** Unaffiliated Individual

**Representative Quote:** To Be Closed Year Round: Hatteras Inlet, North End Ocracoke Island, Ramp 27-Ramp 30 (Salvo). The DEIS never fully addressed the economic impacts on the local economies of the effected villages by creating and enforcing these restrictions. These should be studied in more detail.

**Corr. ID:** 14246      **Organization:** *Not Specified*

**Comment ID:** 140342      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Maintenance of Future Access to Cape Point and South Point Ocracoke: All socioeconomic analyses related to Alternative F are predicated on the assumption that access corridors will remain open for at least an appreciable portion of the visitor high season. Under Alternative F, the access corridors will be subject to Resource Closures based on buffers similar or identical to the Consent Decree. Unless some predictability of access to Cape Point and South Point Ocracoke can be assured, economic analyses predicated on assumption of access are fundamentally flawed.

**Response:** Beach closures that occurred between 2007 and 2010 have been included in the FEIS in table 37-2. Although the addition of previous closures at the Seashore provide a historical perspective of beach access, the exact location, size, and timing of closures are dependent on variables such as species activity and weather that cannot be accurately predicted. Page 561 of the DEIS states that the resource closures are unpredictable and will vary year to year. This is one reason the DEIS includes a range of potential impacts (high, medium and low) for each alternative. Thus the estimated impacts of alternative F are not predicated on a single, specific assumption about the length of closures. Alternative F has been adjusted to be more similar to alternative B in regards to the size of buffers for piping plover, American oystercatchers, and colonial waterbirds, although the buffer zones for piping plover breeding behavior/nesting are 25 meters larger in F than in B. Alternative F has also been revised to allow for increased pedestrian access seaward of prenesting closures.

**Concern ID: 24259**

**Concern Statement:** Commenters noted where they felt data used in the socioeconomic analysis was incorrect or needed further explanation. Issues included:

- recognizing that almost all businesses in the Seashore villages qualify as "small businesses"
- There is no basis for stating 54% of the direct impacts would occur in Seashore villages, it is expected to be higher
- Visitation based on vehicle counts can skew the data the analysis is based on
- Not separating out Ocracoke as it has a different economic situation than the other Seashore villages
- Using data on new houses rather than housing growth

**Representative Quotes:**

**Corr. ID:** 3874      **Organization:** Outer Banks Chamber of Commerce

**Comment ID:** 139325      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 568 uses "visitation" statistics reported annually by the National Park Service. These statistics are based on traffic counts, the amount of which is then multiplied by a formula. There is no way to know if vehicles have five passengers or just a driver or whether they are even a visitor. The formula utilized doesn't take into account events such as high numbers of construction vehicles in the area due to storm damage or other extraordinary events. Attempts often are made to use the gross occupancy tax collected as a method to determine the number of visitors, however, there are numerous confounders that negate this from being a reasonable barometer for visitation. There is no valid way to count visitors on the seashore and the only gauge of impacts available is current data such as unemployment, increases/decreases in government aid, etc. in a given locality.

**Corr. ID:** 3874      **Organization:** Outer Banks Chamber of Commerce

**Comment ID:** 139345      **Organization Type:** Unaffiliated Individual

**Representative Quote:** . Page 595, table 80. There is no logical basis for this table and it seems to attempt to dilute impact by including all portions of Hyde and Dare counties. And there appears to be no basis for the footnote that states that 54 percent of the direct impact is expected occur in the Seashore villages. Obviously direct impact is going to be felt most by those in the seashore and it will be substantially more than 54 percent.

**Corr. ID:** 3874      **Organization:** Outer Banks Chamber of Commerce

**Comment ID:** 139351      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 595. "This uncertainty may impact small businesses disproportionately." By Small Business Administration's definition almost all of the businesses in the seashore are small businesses.

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**Corr. ID:** 14722**Organization:** OBPA**Comment ID:** 133635**Organization Type:** Unaffiliated Individual

**Representative Quote:** The chart of housing growth Table 45 at page 284. A better piece of data would be new houses on the Island 2000-2009 available at <http://islandfreepress.org/2010Archives/03.02.2010-HatterasIslandRealEstateWhatIsHappeningInTheMarketForUnimprovedLot.html>. See the chart on single housing permits. You'll see the Island results are not the County results, and so the ROI definition is flawed. Request the NPS response address the Hatteras and Ocracoke micro housing markets vulnerability to beach closure effects by comparison with larger area data, ie. Dare and Hyde Counties minus villages in NPS.

**Corr. ID:** 15160**Organization:** Outer Banks Chamber of Commerce**Comment ID:** 138854**Organization Type:** Town or City Government

**Representative Quote:** The Village of Ocracoke is little more than a passing thought to those who wrote the Economic Impact Section of the Draft Environmental Impact Statement. Although it has its own economic character and challenges, apparently addressed under the heading of "Seashore Villages," a little investigation would have shown that each of the villages in the Seashore is unique, and economic impact can't be addressed in the blanket forum, or a one-size-fits-all approach. Although Ocracoke Village is home to only 10 to 15 percent of Hyde County's population, it provides approximately 50 percent of the tax base for the entire county. That's a huge burden and responsibility for a village that has only about 600 acres of buildable land. Any negative impact that's experienced in the village has a ripple effect that makes what is one of the poorest counties in the state, into an even more economically depressed area. Any decrease in revenues is felt in the schoolrooms, the health department, and all other county agencies that provide services. According to U.S. Census data, the average wage earner in Hyde County can expect to make \$22,356.00 a year. For a family of four, that's just about \$100 more than the federal poverty level. The Economic Impact Data in the DEIS does not attempt to address the impact of Alternative F on Ocracoke's small businesses, nor the pain that will be felt by the community. The conclusion to the section on economic impacts of Alternative F states, "This uncertainty may impact small businesses disproportionately." If the company that was paid to do the Economic Impact Study had taken any time to learn the geography and character of the area, they would realize that Ocracoke is a collection of small businesses. There are no major industrial plants or employers, which isn't surprising, when considering the fact that we can only be reached by ferry or plane. Our infrastructure will not sustain other industries. The economic engine of the village has long been commercial fishing and tourism. However, many commercial fishers have had to adapt to federal rules for that industry, which has forced them into other occupations. Most all are related to tourism. The Economic Analysis suggests that small businesses that are negatively impacted can adapt over time.

**Response:** Page 570 of the DEIS states that "In 2008, the ROI contained 768 establishments in affected industries, with 222 located in Hatteras villages (InfoUSA 2008). Assuming each location is an independent company, 95% of these could be small entities of the ROI, and 98% could be small entities in the Seashore villages (U.S. SBA 2008)"

The estimate that 54% of the direct impacts would occur in the Seashore villages results from the estimated impacts on the Seashore villages and the area north of the Seashore. As shown in Tables 67, 69, 72, 74, 77, and 79, the percentage forecast revenue decreases on the areas north of the Seashore are much smaller; however these percentages are applied to a much larger revenue base.

Recreational visitors to the Seashore as reported by NPS do rely on vehicle counts, however these are only one source of data to inform the analysis. We rely primarily upon projected impacts as estimated by area businesses. Impacts to Ocracoke businesses were in line with impacts reported by other Seashore villages.

One commenter referred to data on new housing from an article in the Island Free Press. The article cited shows a peak in prices in 2005, and a decline in construction beginning in 2004, neither of which are useful in teasing out the additional impact of the beach closures relative to the nationwide decline in housing market. The housing data used in Chapter 3 was purely descriptive of the area, and was not used to generate impacts.



**SE4000 - Socioeconomics: Impact Of Proposal And Alternatives****Concern ID: 24277**

Concern Statement: Commenters disagreed with statements in the DEIS that said businesses will "adapt" to new rules and claimed that the DEIS underestimated the socioeconomic impacts of the preferred alternative.

**Representative Quotes:**

**Corr. ID:** 2988      **Organization:** *Not Specified*  
**Comment ID:** 141173      **Organization Type:** Unaffiliated Individual

**Representative Quote:** 2) The socio-economic data and analyses are incomplete and erroneous and result in an understatement of the effect the restrictions will have upon the Island, the region and the state of NC.(p. 270-286, 561-598). The US Park Services answer: Businesses will have to "adapt" to the new rules. (p. 383) The negative economic impacts of the decree ARE KNOWN, so to say that the added restrictions would have negligible to moderate impact is indefensible.

**Corr. ID:** 11106      **Organization:** *Not Specified*  
**Comment ID:** 136007      **Organization Type:** Unaffiliated Individual

**Representative Quote:** With an estimated population of 4,000 and taking an employment to population ratio of 70% (see OECD employment outlook-or perhaps you know the number of employed Hatteras Islanders), the number of people employed on Hatteras Island would be 2800. If the higher impact finding were true (and I find it to be modest as a high end estimation), that would mean an INCREASE in unemployment of 400/2800 or 14.3% . Having looked up the unemployment rate for Dare County (annual average for 2009) at 9.6% adding the 14.3% more than doubles that figure to a whopping 23.9%!! Almost 1 in 4 Hatteras Islanders will be out of work. Despite this, a conclusion was drawn by the authors of Alternative F stating, "under Alternative F, it is expected that small businesses would experience long term negligible to moderate adverse impact." Illogical conclusion.

**Corr. ID:** 12512      **Organization:** *Not Specified*  
**Comment ID:** 138945      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Particularly distressing are the dismissive and unevaluated assumptions of the economic impact of the proposed alternatives on the individuals and businesses in the affected area, specifically Ocracoke Island and Hatteras Island.

May I ask how the writers of this DEIS proposal recommend or suggest that business on Ocracoke Island, reached only by boat or air, and acclaimed nationally and internationally for its beaches (in 2007 named the best beach in the entire country and the 5th best beach in the world by "Dr Beach"), "provide alternate products and services"?

**Corr. ID:** 13661      **Organization:** *Not Specified*  
**Comment ID:** 139578      **Organization Type:** Unaffiliated Individual

**Representative Quote:** In referring to your own studies under Plan "A" (p 574) at the extreme worse, only 135 jobs would be lost causing long term minimal effect. Under Plan "F", 400 jobs (p. 594) will be lost. Neither mentions how this will have the "ripple effect" to the local economy for those that live from paycheck to pay check. All of the studies are put into a model that predicts out comes, but not real life. Just as an example, with the statistics being drawn from the 2000 census ([http://mcdc2.missouri.edu/websas/dp\\_products\\_overview.shtml](http://mcdc2.missouri.edu/websas/dp_products_overview.shtml)) there was a working population of 2241 working and a total of 3371 capable of working; this gives 66% of this population working. Now if we go under Plan "A", 62% would remain working or 94% of the original population, under Plan "F", 55% would remain working or 83% of the original population. The difference in the un-employed is 6% under Plan "A" and 17% under Plan "F". This is a difference of 11% would have a big ripple effect to the both the local and regional economy.

**Corr. ID:** 14398      **Organization:** Ocracoke Civic and Business  
**Comment ID:** 140611      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Pg. 100 ".5 mile SW of ramp 68 to 1.2 miles NE of ramp 70" has dates for ORV route Nov. 1st to Mar. 14th. These dates do not allow for any spring and fall fishing. Closing the beach from Mar. 15 to Oct. 31 would cause an economic hardship on the Ocracoke community as a whole. Most businesses open around

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the middle of March and close the 1st of November, fishermen sustain these businesses until there is enough other traffic from school being out for family vacations. This area is also a long way from the road and parking making it extremely difficult for fishermen, elderly people and families to be able to use this area without the benefit of an ORV. The dates of May 15th to Sept 14 non-ORV area would allow more use of this area while people are visiting here specifically to fish without affecting the wildlife.

Pg. 101 "1.2 miles NE of Ramp 70 to .5 mile NE of ramp 70" the dates for ORV area are Nov. 1st to Mar. 30, these dates also have the same affect on the island economics as the paragraph above. The dates should also be changed to non-ORV area May 15th to Sept 14th. These shoulder months are crucial to the economic survival of our island and without them we will not be able to survive.

**Corr. ID:** 14971

**Organization:** *Not Specified*

**Comment ID:** 138966

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The NPS downplays the potential for economic harm by asserting that the long term benefits that would accrue to non ORV users are expected to outweigh the long term moderate to major adverse impacts to ORV users (Footnote 13) resulting in a new mix of visitors and new business opportunities. Under this scenario, the NPS projects business revenue losses of 0%. (Footnote 14) This is utter nonsense. As per the above discussion, during the Spring and Summer seasons non ORV users will be subjected to the same limitations that NPS states will have a long term moderate to major adverse impact on ORV users. Since the seashore has little to offer outside of the beaches and since Spring and Summer visitors account for approximately 70% of all visits, (Footnote 15) I submit that the projected business revenue decline of 35% to 70% is the most accurate of the three projections offered in the DEIS. In point of fact, as the quote presented below clearly demonstrates, the DEIS recognizes that beach related tourism is the primary driver for the economy.

**Response:** In the economy at large, businesses are always adapting their products and services in response to changes in customer preferences, technology, income, and government policy. The DEIS qualifies that statement about adaptation, saying that "to the extent that" businesses adapt, impacts could be partially mitigated. The statement in the DEIS reflected the pattern that has been observed in some other communities where the economy of the region adapts over time to changes in visitation patterns (Industrial Economics Incorporated 1998). The statement does not imply that all communities will adapt. Individual businesses may or may not be able or choose to adapt. We do not suggest that adaptation will always completely counterbalance the losses associated with change in visitation, only that it can blunt the effects over time. With regard to Ocracoke having the nation's #1 rated beach in 2007, it is noted that the Ocracoke Day Use beach, which is seasonally closed to ORV use, was selected based on Dr. Stephen P. Leatherman's 50 beach rating criteria, which gives 1 point to beaches where ORVs are common and 5 points to beaches where there is no ORV use.

NPS use of the threshold terms (impact definitions) "negligible," "minor," "moderate", and "major" in the DEIS and FEIS to describe impacts is defined in Chapter 4 as they are used for each impact topic. For example, in the socioeconomic impact analysis, a negligible impact means that the impact is difficult to detect at the level of the combined economies of the Seashore villages or at the county level. It does not mean that within the Seashore villages or Dare and Hyde counties effects are not occurring to a specific individual business. These impact definitions are not intended to define the level of impact on an individual or to downplay effects on an individual. The impact definitions are not meant to imply a subjective judgment by NPS on the impacts, but rather are used to denote whether the estimated impacts fall within a given definition.

As discussed in the DEIS, the FEIS, and in response to other comments, the IMPLAN model estimates the ripple effects in the wider economy of the change in spending. The impacts estimated in the DEIS/FEIS are meant to capture the incremental impact of the ORV management alternatives separate from national economic conditions or the high price of gasoline in 2008. Given the timing of the economic downturn and the imposition of the Consent Decree, it is impossible to fully separate these two. That is one reason we have three impact scenarios for each alternative and why we used a variety of data sources to create the scenarios. The comments that calculate unemployment rates mix numbers from different reports and for different geographic areas.

**Concern ID: 24278**

Concern Statement: Commenters stated that pet restrictions should specifically be examined in the socioeconomic analysis. They noted the large number of pet friendly lodging in the area, and that the preferred alternative may discourage visitors with pets to come to the Seashore.

**Representative Quotes:****Corr. ID:** 15046**Organization:** Cape Hatteras Business Alliance**Comment ID:** 139796**Organization Type:** Business

**Representative Quote:** One such component is the economic effect that the ban on dogs would cause, be it short or long term in some areas. There are numerous websites and publications including books devoted solely to "Pet friendly travel destinations" Recognizing the demand, due to the large number of travelers who bring their pets along and the income potential, several national hotel chains are now 100% pet friendly.

There are three boarding facilities located within the Seashore Villages, every private campground allows pets, there are well over 100 pet friendly motel rooms available and about one third of the weekly rental properties are pet friendly. The NPS campgrounds have historically been pet friendly also. What RTI (Research Triangle Institute) failed to do was to recognize the obvious socioeconomic impact and diminished visitor experience that the proposed bans on dogs would create, but even more egregious is the failure of RTI to recognize the very real and direct effect to the local economy.

In reality, a certain segment of visitors will no longer visit the Seashore simply because of the dog ban; in turn there will be a loss of revenue to at least one of the aforementioned pet friendly places. Another segment of visitors may still visit without their dog but will be spending less money. That money will now be put into their local economy via a pet sitter or boarding facility. Money that would have been spent here within the seashore, in the form of pet fees, averaging anywhere from \$5 to \$10 nightly to \$75 to \$100 per week per pet, and subject to local occupancy, county and state taxes!

Other visitors chose to spend that money at one of our unique boarding facilities, because they could take their dog with them during the day and back to the kennel at night! (This is a great option for those sharing rental houses with other family members, creating situations not conducive to their dog/dogs for whatever reason.) Furthermore RTI also overlooked the ripple effect to other businesses that would be result.

**Response:** Changes have been made to alternative F so that the management of pets at the Seashore would be similar to current management, with the exception of prohibiting pets in pedestrian shoreline access seaward of pre-nesting areas during the breeding season. The impact of the pet restriction on socioeconomics was not evaluated in the FEIS because quantitative data on the subject is lacking and it was felt that any such analysis would be speculative; however, the NPS does believe that the range of pet restriction in the action alternatives are similar (current management with additional restrictions for resource protection during breeding season), and an analysis of these impacts would likely not show a difference between the action alternatives.

**Concern ID: 24279**

Concern Statement: Commenters cited a study that examined the impacts of beach management activities on local economies and requested that the DEIS include these findings. They further asked that the FEIS differentiate the expenditures between different user groups, make additional allowances for the compensatory increases in visitation by those desiring less ORV traffic, to accurately address the positive and negative impacts of ORV regulations, and to define what constitutes the "community" in the impact analysis.

**Representative Quotes:****Corr. ID:** 3883**Organization:** *Not Specified***Comment ID:** 133200**Organization Type:** Unaffiliated Individual

**Representative Quote:** Page 284 of the DEIS states "Recreational fishing is a significant part of N.C's economy, attracting spending from both local and out-of-state anglers." With the restrictions for ORV in the DEIS how will recreational fishing continue to help the NC economy?

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**Corr. ID:** 15043                   **Organization:** Southern Environmental Law Center  
**Comment ID:** 137473 and **Organization Type:** Conservation/Preservation  
 137475

**Representative Quote:**

One of the most notable gaps in the DEIS economic analysis is the failure to reference the experiences of other beaches along the Atlantic that have faced similar tensions between off-road vehicle uses and natural resource protections. While each situation is unique from multiple perspectives, the historical results from similar areas that implemented ORV restrictions is highly instructive when attempting to predict future economic impacts from increased vehicle restrictions on Cape Hatteras beaches.

A good starting point for that analysis would be a study done in 1998 by Industrial Economics, Inc., for the Division of Economics of the U.S. Fish and Wildlife Service. U.S. Fish and Wildlife Service, Division of Economics, An Economic Analysis of Piping Plover Recover Activities on the Atlantic Coast (1998) ("PIPL Econ. Analysis"). "An Economic Analysis of Piping Plover Recovery Activities on the Atlantic Coast" employs the IMPLAN model in relation to "five case studies of local areas where beach managers have initiated closures and other management actions to protect piping plovers. . . . The beach areas studied range from Assateague Island in Maryland/Virginia to Parker River National Wildlife Refuge (NWR) in Massachusetts and include areas in four states." PIPL Econ. Analysis at ES-I.

The study acknowledges the impacts of increased closures, indicating they were primarily on ORV users. The impacts on the local economies ranged from "negligible to economically significant," depending on a number of factors: the extent of restrictions due to management (from minimal to full beach closures); the availability of alternatives for ORV users within the same economic region, along with the continued access to beaches for pedestrians and other users; the popularity of the beach area and magnitude of expenditures per visitor-day; the size and growth of the local economy; and the mitigating effects of adaptability to the beach-driving restrictions within the local economy.

We would encourage the researchers for the DEIS to reference this study and perhaps update its findings, including additional sites that have been through similar management challenges related to ORVs. We believe these historic cases may temper all the predictions of the DEIS as to economic impacts of alternatives. As you refine projections of potential economic impacts, we ask that you differentiate the expenditures of surf fishing participants from those saltwater anglers who use boats (either personal or charter) (Table 46 and related text). We also ask that you make additional allowances for the compensatory increases of visitation by those attracted by more limited ORV traffic or alternative marketing of the Seashore. The case histories provide ample evidence of mitigating changes in demographics of visitors after increased restrictions on ORVs.

**Corr. ID:** 15043                   **Organization:** Southern Environmental Law Center  
**Comment ID:** 137468           **Organization Type:** Conservation/Preservation

**Representative Quote:** The DEIS claims that "The Communities are concerned that if a permit system or other ORV restrictions are implemented that make it harder for ORV users to use the area, fewer tourists may come to the villages, resulting in impacts to the local economy." DEIS at 31. Certainly, some members of the communities are concerned about adverse economic impacts of restricting ORV use. However, to suggest that those people represent "the community" inaccurately oversimplifies the complex and varying views on this issue. Clearly, there are other community members, such as those who own houses near the beaches in the villages of Frisco and Hatteras, who are concerned that opening up village beaches to ORV use could adversely impact their rental income and endanger public safety. In addition, there are visitors who favor non-motorized recreation, who may visit more often if ORVs were restricted. Thus, adverse impacts from certain ORV users could be offset by positive impacts from other visitor segments, as has occurred at other beaches implementing ORV regulations. The NPS should more carefully use language that accurately addresses the positive and negative impacts of ORV regulation, rather than using overbroad language.

**Response:** Recreational fishing data comes from a report on the entire state of North Carolina. ORV restrictions affect the anglers who come to the Seashore and use ORVs to reach the parts of the beach where they would like to fish, but the regulations in the Seashore do not affect other recreational anglers in the Seashore and in the rest of North Carolina.

The DEIS was revised to include a reference to the 1998 study by Industrial Economics that includes some examples of local businesses that adapted to ORV restrictions. However, given the differences between the study sites and the Seashore, we do not think that the results can be directly transferred from the study to the Seashore. We did not use data on per visitor spending to derive the economic impacts because of a lack of reliable data on the percent of visitors who fall into different groups (ORV users, anglers, and others), data on per visitor spending by group and estimates of the potential change in visitation by different groups at the time of the DEIS analysis. Instead, we used a variety of data sources to create a range of possible impacts that incorporate both pessimistic and optimistic forecasts of future visitation.

The data in the DEIS on visitation and economic activity has been updated with figures from 2009 in the FEIS. Data on gross tax receipts provided by the Outer Banks Visitor Bureau were not included because over the years there have been changes in what was taxed and the figures are not adjusted for inflation. In the FEIS, a figure was added showing the percent of total Dare County revenue generated in the Seashore villages across a number of years. As long as all businesses in Dare County are treated similarly under the tax code, the percent of revenue generated by the Seashore villages provides one way to assess whether there has been a disproportionate impact on the Seashore villages relative to the rest of Dare County during the times when the beaches are closed under the Consent Decree.

In the FEIS, use of the word “community” has been clarified by replacing it with “members of the community” or with “some businesses in the community”, depending on the context.

**Concern ID: 24280**

**Concern Statement:** One commenter requested that the FEIS consider the economic impacts on self-employed residents in Dare and Hyde counties.

**Representative Quotes:**

**Corr. ID:** 15046

**Organization:** Cape Hatteras Business Alliance

**Comment ID:** 139825

**Organization Type:** Business

**Representative Quote:** In spite of the fact that RTI acknowledged that almost half (49%) of Dare and Hyde County residents were self employed I was unable to find any references acknowledging that many business owners either work out of their homes or reside in/on their business properties and will also be homeless when they lose their businesses. These same people will also be devoid of unemployment benefits from the government, another fact that was overlooked. Most of them do not have health insurance, they don't receive holiday pay or paid vacation days or paid sick leave, they don't get overtime pay for their 100 hour work week- they are lucky if they get paid at all.

**Response:** On page 278, the DEIS contains the following statement: “The construction, real estate, rental and leasing, and agriculture, forestry, fishing and hunting (of which 61% are commercial fishermen) industries comprise 49% of all nonemployers in the two counties (table 41).” The statement says that 49% of self-employed individuals come from a particular set of industries. Using the Census estimate of nonemployers and the Bureau of Labor Statistics data on employed individuals, approximately 23% of employed individuals in Dare and Hyde county are self-employed.

The socioeconomic analysis looks at aggregate changes in the economy and employment in the affected areas. Therefore, the discussion of economic impacts of the alternatives includes impacts on self-employed citizens.

Footnote 4: From <http://www.census.gov/econ/nonemployer/intro.htm> : “Nonemployers are typically self-employed individuals operating very small businesses, which may or may not be the owner's principal source of income...Data are primarily comprised of sole proprietorship businesses filing IRS Form 1040, Schedule C, although some of the data is derived from filers of partnership and corporation tax returns that report no paid employees.”

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***SL5000 - State-Listed and Special Status Species: Cumulative Impacts*****Concern ID: 24261**

Concern Statement: Commenters stated that the cumulative impacts to breeding shorebirds were not properly characterized. They stated that the analysis should also include impacts from development and stabilization activities.

***Representative Quotes:*****Response:**

The criteria set forth to justify a conclusion of major adverse for cumulative impacts was not met for either state or federally listed species. Major adverse impacts would have meant that impacts on listed/special status species, their habitats, or the natural processes sustaining them would be detectable, would be expected to be outside the natural range of variability, and would be permanent. Frequent responses by some individuals to disturbance would be expected, with negative impacts to feeding, reproduction, or other factors resulting in a decrease in Seashore population levels or a failure to restore levels that are needed to maintain a sustainable population in the Seashore. Impacts would occur during critical periods of reproduction or in key habitats in the Seashore and result in direct mortality or loss of habitat. Local population numbers, population structure, and other demographic factors might experience large declines.

Rather, cumulative impacts were deemed to be minor to moderate adverse because large declines in population numbers would not result and ample functional habitat would remain to maintain a sustainable population in the Seashore. To be sure, some negative impacts to feeding, reproduction, resting or other factors affecting population levels would occur and may result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and functional habitat would remain to maintain a sustainable population in the Seashore. So, minor to moderate adverse was believed to better characterize impacts as opposed to major adverse. This also holds true for the for the finding of impairment as the impacts from cumulative actions would not prevent sustainable populations at the Seashore. The FEIS includes additional information on the role of development in cumulative impacts, but this additional information does not change the finding of the analysis (see the response to Concern ID 24174 for more information.)

***SS2000 - Soundscapes: Methodology and Assumptions*****Concern ID: 24262**

Concern Statement: Commenters stated that the soundscape analysis was incomplete as it did not consider all noise sources in the Seashore or how sound is dissipated by sand dunes, grass, and trees. Commenters also offered literature they felt should be reviewed and incorporated into the FEIS regarding the impact of noise pollution on wildlife.

***Representative Quotes:*****Corr. ID:** 8495**Organization:** *Not Specified***Comment ID:** 131364**Organization Type:** Unaffiliated Individual

**Representative Quote:** Please find and read the following papers for more insight on the effects of noise pollution on wildlife - they're quite strong.

FRANCIS, C. D., ORTEGA, C. P. & CRUZ, A. (2009). Noise Pollution Changes Avian Communities and Species Interactions. *Current Biology* 19, 1415-1419.

HABIB, L., BAYNE, E. M. & BOUTIN, S. (2007). Chronic industrial noise affects pairing success and age structure of ovenbirds *Seiurus aurocapilla*. *Journal of Applied Ecology* 44, 176-184.

LIMA, S. L. (2009). Predators and the breeding bird: behavioral and reproductive flexibility under the risk of predation. *Biological Reviews* 84, 485-513.

RHEINDT, F. E. (2003). The impact of roads on birds: Does song frequency play a role in determining susceptibility to noise pollution? *Journal Fur Ornithologie* 144, 295-306.

SWADDLE, J. P. & PAGE, L. C. (2007). High levels of environmental noise erode pair preferences in zebra finches: implications for noise pollution. *Animal Behaviour* 74, 363-368.

**Corr. ID:** 13773

**Organization:** *Not Specified*

**Comment ID:** 140132

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Analysis of the soundscape was incomplete. It did not consider that the likelihood of noise pollution in the form of dueling radios, tailgate parties etc. increase with the presence of ORVs. This needs to be re-evaluated with consideration of park values based on the above mentioned park policies, executive orders as well as the Organic Act and enabling legislation.

**Corr. ID:** 14572

**Organization:** Jersey Devil's Fishing Club

**Comment ID:** 135705

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Concerning the monitoring of noise within the park, the low range of 20dBA during low activity for the locations shown does not sound feasible for an extended period of time. By definition 20dBA has been compared to whispering or rustling leaves. 30dBA is associated with a quiet nighttime in the desert. 60dBA is normal conversation and a car moving slowly (Ref: <http://www.makeitlouder.com/Decibel%20Level%20Chart.txt>) Using the rank that is quoted in the DEIS without a reference table to me is misleading to what people expect for noise levels. It also should be noted that as one moves away from the noise source the measurement drops. In this park there are two types of sound scapes. One being the natural and the other man made (i.e. Walking along the beach and talking, driving on the beach close to the ocean). As one moves away from the manmade "sound" the "natural" surrounds it and will gradually drown it out. So if one takes into account that as a "sound source" moves away by a distance of 10 meters the sound drops by approximately two fold, there is a point of a very short distance the background "Nature" sounds drown out the intruding noise. This piece should have been included in the Off Road Vehicle Management Plan. This also should include how much sound is killed by sand dunes, grass, and trees. The problem is this is all taken for granted because it relates to common sense; Alternative "A" again allows for the greatest lee way in management for adjustments.

**Response:** CEQ requires that NPS consider the impacts of reasonably expected connected actions (e.g. if we allow vehicles on the beach there will be increased noise from radios and tailgate parties), and the DEIS disclosed these potential effects. However, non-ORV users can also be a source of noise pollution at the Seashore. . Listening to radios and partying can occur anytime by anyone regardless of whether they accessed the area by motor vehicle or on foot. NPS regulation 36 CFR 2.12 (Audio disturbances) prohibits excessive noise from vehicles and radios (including portable radios) and would continue to apply at the Seashore regardless of whether the noise initiated from a motor vehicle or other non-motorized source

As a part of the DEIS analysis, NPS conducted a literature search for published surf noise levels and found there to be little published data on noise levels from surf action. The document referenced for surf noise (*Disposition of Offshore Cooling Water Conduits SONGS Unit 1 EIR*) indicated a large range of noise levels (20-55dBA) depending on surf conditions. Calculations using data collected at the Seashore by NPS and observations of park staff, suggested that the sound of surf at CAHA was close to 55dBA the high end of the published range. Based on this information NPS used 55dBA in the analysis as the sound levels from surf action at the Seashore. This is stated in the EIS as follows:

"As noise from the surf is a predominant natural sound source at the Seashore, the Natural Sounds Program also calculated estimates of surf noise levels at several distances from an ORV track. These calculations assume a surf noise level estimate of 55 dBA as measured 15 meters (49 feet) from the surf line, which is representative of the maximum value of surf noise in a range (20-55 dBA) identified in *Disposition of Offshore Cooling Water Conduits SONGS Unit 1 EIR*, as discussed in Chapter 3: Affected Environment."

Tables 33 and 34 in Chapter 3 are included in the DEIS to provide readers with a better understanding of common noise levels as expressed in dBA.

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It also should be noted that as one moves away from the noise source the measurement drops. There are two types of soundscapes at the Seashore. One being the natural and the other man made (i.e. Walking along the beach and talking, driving on the beach close to the ocean). As one moves away from the manmade "sound" the "natural" sounds (surf, wind or other background noise) surrounds it and will gradually drown it out. So if one takes into account that as one moves away from the source of the sound by a distance of 10 meters the sound drops by approximately two fold, there is a point of a very short distance the background sounds drown out the intruding noise. This is further explained on page 506 of the DEIS.

NPS determined that absorption of sound energy from topography and vegetation would have minimal effects on sound propagation due to the small distances involved in the analysis. This comment is addressed in the EIS as follows: "The Seashore contains a mixture of surfaces, therefore the extrapolated vehicular sound levels assume no significant ground or vegetation absorption. If the ground surface between the source and receiver is soft and/or vegetated, there could be a slight attenuation of noise; however, it would be insignificant due to the short distances involved."

The impacts of noise on wildlife were considered in the DEIS and are described on page 254. The following text will be added to the FEIS, Chapter 3, Soundscapes, Human and Wildlife Response to Changes in Noise Levels to elaborate on this discussion:

"Wildlife is very sensitive to sound, as animals often depend on auditory cues for hunting, predator awareness, sexual communication, defense of territory, and habitat quality assessment (Barber et al. 2010). Negative population-level, behavioral, and habitat use consequences of higher ambient sound levels from human voices, along with sound events associated with human activities (motorists, snowmobiles, hikers), have been observed in many species (Frid and Dill 2002; Landon et al 2003; Habib et al. 2007).

Birds are especially susceptible to human-associated environmental sounds as they rely heavily on auditory cues for identifying and attracting suitable mates, pair bonding, communication among and between species, and detection of predator alerts or warning signals (Francis et al. 2009). Similar to physical degradation of the habitat caused by development or other human activities, the low frequency, high-amplitude, nearly omnipresent sound produced by roads, vehicles, airports, and mechanical equipment has been found to result in a decline in species diversity, abundance, and breeding success (Rheindt 2003).

Researchers found that the presence of low-frequency mechanical noise limits communication between members of the same species, often reducing nesting success (Habib et al. 2007). For example, female zebra finches, exposed to high-amplitude, low-frequency sounds such as those produced by traffic or other motor vehicles, showed less preference for their pair-bonded male. As the amplitude of ambient, low-frequency sounds increased, the strength of pair bonds decreased. This type of behavior may reduce pairing success, disrupt the strength of sexual selection, and affect the overall genetic structure of a population of birds nesting and seeking mates in the vicinity of roadways or in other areas exposed to high-amplitude mechanical noise (Swaddle and Page 2007). Thus, nesting shorebirds on Cape Hatteras using areas exposed to low-frequency sounds from ORVs or wheeled vehicles, may exhibit all or some of these behaviors, which may change the genetic structure of a population, or limit parental care of young, resulting in decreased nesting success. Louder sounds (higher amplitude) have the greatest potential to adversely affect pair bonds of shorebirds, thus shorebirds using areas of heavier use, or with more exposure to high amplitude sounds would be most likely to be affected.

The diversity and population of man bird species decrease in locations closer to a road or other sources of mechanized sound, which is described as the 'road effect' (Francis 2009). This effect is often attributed to mechanical noise levels rather than to decreased habitat quality or direct mortality caused by vehicle collisions (Reijnen et al. 1995; Rheindt 2003). On Cape Hatteras, road effects are likely to occur both near roads used by motorized vehicles, and along shorelines open to OSVs. Certain species suffer more negative effects than others. Researchers have found this is due, in part, to a greater difference between a bird's song frequency and the low-frequency sound produced by motorized vehicles. That is, birds with higher-frequency songs may have greater density and reproductive success than those with songs in lower frequencies. This is because these high-frequency songs are not as strongly masked and are perceived more clearly by birds, thus increasing communication between bonded pairs. Some birds adapt to the presence of motorized sounds by increasing the amplitude of their song, singing earlier in the morning when motorized sound are generally lower, or using mainly higher-pitched calls (Rheindt 2003). Shorebirds generally use less complex sounds to communicate than songbirds accompanied by a decreased range of song selection and frequency. Therefore, it may be more difficult for these birds to adjust their



sound frequency by using mainly lower pitched calls, as their song repertoire may not include such calls. Therefore, shorebirds or other birds on Cape Hatteras with lower frequency, and/or lower amplitude calls may suffer more negative 'road' effects than those with higher frequency and/or louder calls. Effects may be limited by adjustments to song amplitude, timing and frequency by individual birds, depending on the flexibility, and innate song type of the species.

Predation risk for adult and nestling birds increases in areas with high-amplitude, low-frequency mechanical sounds (Lima 2009). Direct predator risk may increase because nesting birds are unable to detect auditory cues made by the predators (such as a redtail hawk scream or the cawing of a crow), and/or because they are unable to detect the warning calls of members of their own species or other birds in the area (e.g., the warning calls of a tern due to a circling hawk). These impacts are due to masking or distortion of the natural sounds in the environments by mechanical or human-associated sounds. Additionally, ORV and human sounds may themselves be considered a predation risk, and birds have been found to respond in areas of high-amplitude human-associated sounds in similar ways that they might respond in areas with high numbers of predators such as rodents or raptors (Lima 2009). Birds on Cape Hatteras may avoid such habitat, thus reducing the availability of prime nesting habitat containing the best cover and food sources. Birds may also respond by foregoing breeding altogether or reducing personal risk of predation by providing poorer quality care to fledglings (Lima 2009). These behavioral responses reduce the recruitment of young, limiting growth and sustainability of the population. Other behavioral changes include active flight, decreased foraging and increased vigilance, and a reduction in overall fitness levels. Exposure to frequent sound events, including ORV use and radios, would also likely increase the intensity of their responses to all perceived predation threats (Rabin et al. 2006). These responses by shorebirds, including both direct and perceived or indirect predator risk may decrease overall reproductive success for shorebirds using areas exposed to human associated and motorized sounds.

Researchers also found that, when all other factors (habitat quality) were equal, mechanical noise alone reduced the species diversity of nesting birds, resulting in changes to the natural bird communities in these areas. A controlled experiment provided strong evidence that noise alone, regardless of the presence of humans or moving motorized vehicles, negatively influences bird population levels and species diversity in much the same way as the physical destruction of or altering of a natural habitat (Francis 2009). This effect is likely due to the masking of natural sounds by mechanical noise, which prevents many species of birds from successfully nesting in such areas. Increased mechanical sound levels altered species interactions, along with predator-prey interactions. This observation may explain why certain bird species (pigeons, sparrows, starlings), thrive in heavily human-influenced environments, and why species diversity in heavily mechanized sound-disturbed environments is low (Francis 2009). Such effects may limit shorebird species diversity on Cape Hatteras, possibly increasing populations of human-tolerant species, while decreasing populations of species more sensitive to human-associated sounds. These effects may occur even in areas exposed to human-associated sounds, but removed from any visuals associated with such sounds, such as areas behind dunes, or where ORV travel is restricted. Effects depend on the audibility of motorized sounds in these areas, and will vary with the level of natural predation.

Nesting shorebirds at Cape Hatteras are exposed to a variety of natural and human caused sounds. Human caused sounds included motorized noise from ORVs and on-road vehicles, human voices, Such effects may be species specific, as certain factors, including a higher song frequency (Rheindt 2003) and ability to nest near mechanized sound sources without increased stress or predation risk (Francis 2009), may actually increase reproductive success of certain species. Birds have also shown ability to adapt certain behaviors, or ecological traits, when exposed to predation risk, decreasing the negative impacts of mechanized noise perceived as predator risk (Lima 2009)."

### ***TE2000 - Threatened And Endangered Species: Methodology And Assumptions***

#### **Concern ID: 24264**

**Concern Statement:** Commenters stated that there is not a correlation between increasing ORV use at the Seashore and decreasing bird populations and that excessive management is not warranted. Commenters asked the NPS to provide the data that indicates that ORV use is related to bird mortality. They further stated that the Seashore does not contain critical habitat for piping plover.

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**Representative Quotes:****Corr. ID:** 93**Organization:** *Not Specified***Comment ID:** 129734**Organization Type:** Unaffiliated Individual**Representative Quote:** I would like a count on how much wildlife is killed directly related to driving on the beach.**Corr. ID:** 175**Organization:** *Not Specified***Comment ID:** 130035**Organization Type:** Unaffiliated Individual**Representative Quote:** There has been no true scientific study connecting ORV use with bird mortality; if I am mistaken, please provide me with an article in a legitimate scientific journal. Additionally, the NPS must continue to expand any studies related to connecting the reduction of ORV access to improvements in species survival prior to implementing sweeping additions to the restriction of access, such as this.**Corr. ID:** 735**Organization:** NJBBA, UMS, OBPA, Anglers Club**Comment ID:** 130688**Organization Type:** Unaffiliated Individual**Representative Quote:** On page 1994 there is reference to a Joanna Burger paper on feeding habits of the Piping Plover when pedestrians are present and when they are not. That data was collected during two minutes of observation and should not be relied on for any purpose. I have been on beaches with Burger's interns when after 3 months of observation they still did not know where the un-hatched nest were located, not a clue.**Corr. ID:** 953**Organization:** *Not Specified***Comment ID:** 132268**Organization Type:** Unaffiliated Individual**Representative Quote:** One additional comment on you proposed restrictions: there is a growing body of evidence that anthropogenic disturbances to small birds have little impact in term of energetic costs.**Corr. ID:** 3902**Organization:** *Not Specified***Comment ID:** 132472**Organization Type:** Unaffiliated Individual**Representative Quote:** What's presented as scientific reporting throughout the DEIS is often scattered observations seasoned with the observers' preferences - instead of peer-replicated independent experimental studies that real science is made of. Page 208 describes weather and tides as a significant risk factor for piping plovers on the beach. "A strong thunderstorm was noted on the night before Nest 2 on South Beach was discovered lost; however, the loss is characterized as 'unknown' because it cannot be shown conclusively that weather was the cause." But on page 209I, we read "The impact of predation had been postulated to be greater on beaches with high human use because of the presence of pets and trash?" The relationship between humans and predators is not characterized as "unknown because it cannot be shown conclusively." Whatever happened to burden of proof?.**Corr. ID:** 12002**Organization:** *Not Specified***Comment ID:** 134162**Organization Type:** Unaffiliated Individual**Representative Quote:** One of the findings of the study titled, "GIS-based analysis of human disturbance on piping plover abundance, distribution and productivity on the barrier islands of Long Island, New York" by SK Thomsen, May 2006 was that Piping Plover productivity in areas where there were no ORV restrictions was the same as those in areas closed to ORV. The paper stated "No consistent pattern of differences in mean productivity was observed among the three levels of ORV access (Table 4). The level with the highest productivity was unrestricted access in 2003, seasonal access in 2004, and restricted access in 2005. Likewise, the level with the lowest productivity also varied from year to year. Differences were significant in 2003 (ANOVA,  $f = 5.55$   $p=0.004$ ) and 2005 ( $f = 3.17$   $p= 0.043$ ), but not 2004 ( $f =1.07$   $p= 0.344$ ). However, when all years were pooled together mean productivity was not significantly different between levels of ORV access ( $0.95 \pm 0.05$  SE in restricted access,  $1.01 \pm 0.08$  in seasonal access and  $1.06 \pm 0.15$  in unrestricted access; ANOVA  $f =0.37$   $p=0.689$ )." Table 4. Mean Productivity for each category of ORV access compared to overall year

	2003	2004	2005	Overall
restricted	$0.8 \pm 0.08$	$0.98 \pm 0.09$	$1.07 \pm 0.11$	$0.95 \pm 0.05$
seasonal	$1.29 \pm 0.16$	$1.19 \pm 0.14$	$0.66 \pm 0.12$	$1.01 \pm 0.08$
unrestricted	$1.5 \pm 0.35$	$0.8 \pm 0.25$	$1.0 \pm 0.22$	$1.06 \pm 0.15$
overall	$0.96 \pm 0.07$	$1.03 \pm 0.07$	$0.93 \pm 0.08$	

The study is important because it extends over several years; is based on the latest technological advances using GIS; is rigorous in its statistical analysis; and examines large populations so results are statistically significant.

**Corr. ID:** 12998

**Organization:** *Not Specified*

**Comment ID:** 140583

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Finally, it appears as if accurate scientific research has not been done about the true ecological impact of humans and their impact on select species in the Cape Hatteras National Seashore and surrounding areas. How is it that, in 2009, after the Consent Decree had it's first full year in effect, that the numbers of piping plover's actually declined--and yet the National Park Service has selected Alternative F (which is even more extreme than the original Consent Decree) from the DEIS as their preferred option? Until there are concrete facts that actually prove that humans are destroying the habitat of the piping plover, sea turtles, and other creatures, why is this extreme plan being put into effect which will so negatively affect local business owners, tourists, and everybody else that visits the Outer Banks?

**Corr. ID:** 13163

**Organization:** *Not Specified*

**Comment ID:** 140887

**Organization Type:** Unaffiliated Individual

**Representative Quote:** To imply that the increase in SUV popularity in the 90's and the decline of the bird population are "correlated" is an attempt to impart cause and effect where none likely exists. Many other changes occurred on Hatteras Island during that period. There was a large building boom on the island during that time, there has been significant global warming over the past two decades, there has been a very significant decline in fish populations, bay scallops have greatly declined and predatory species such as sharks have declined in ways that affect the overall ecology (Meyers RA, et al, Science 30 March 2007: Vol. 315. pp. 1846 - 1850). Thus to imply that the decline of the bird population is due to the increase in ORV popularity is unscientific and disingenuous. Nowhere in the report is there any direct data showing significant numbers of deaths, nest destruction, or failure to fledge caused by ORVs over the 1980's or 1990's in the Cape Hatteras National Seashore to support this conclusion. The data summarized on p 210 does not indicate ANY Plover deaths due to ORV's since 2000, just intrusions into enclosures, which is an enforcement problem. Thus this so called inverse "correlation" between ORV popularity and Piping Plover population cannot and should not be used as the basis for developing public policy.

**Corr. ID:** 14404

**Organization:** *Not Specified*

**Comment ID:** 139899

**Organization Type:** Unaffiliated Individual

**Representative Quote:** A larger questions is, "Why does the park service think it will help the population instead of hurt it or grow it past capacity for the region?". One example is the overpopulation of deer in Virginia, specifically southside and southeastern Virginia. The research even supports that human solutions often yield no positive results. "...current sites used by breeding plovers are protected, and reasons for the decline in recent years are difficult to elucidate." - Abby N. Powell and Francesca J. Cuthbert (1992). Habitat and Reproductive Success of Piping Plovers Nesting on Great Lakes Islands. Wilson Ornithological Society.

**Corr. ID:** 14990

**Organization:** *Not Specified*

**Comment ID:** 140147

**Organization Type:** Unaffiliated Individual

**Representative Quote:** As for the Piping Plover, the U.S. Fish and Wildlife Service has not designated any need for critical habitats for the Piping Plover within the Cape Hatteras National Seashore Recreational Area. How can the extreme measures limiting beach access be justified?

**Response:** As discussed in the response to Concern ID 24019, species numbers at the Seashore have been trending downwards. The exact cause of this downward trend is not known (see response to Concern ID 24020), but human activity, including direct and indirect effects of ORVs are considered to be one of the factors. The NPS Management Policies 2006 provide that "In cases of uncertainty as to the impacts of activities on park natural resources, the protection of natural resources will predominate." (sec. 4.1). As discussed above under Concern ID 24020, none of the applicable laws impose a burden of proof on NPS to show direct causality of ORV impacts on a species. ORV use is to be allowed only if NPS can determine that off-road vehicle use on the routes to be designated will not adversely affect the natural, aesthetic, or scenic values of the Seashore (including listed and non-listed park wildlife). Moreover, the adverse effects of ORVs and the additional people brought into remote areas by ORV on

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wildlife is amply documented in the literature cited in the DEIS. The DEIS correctly acknowledges the other factors that also adversely affect wildlife at the Seashore.

Regarding the May 2006 study by SK Thompsen, the author states that the study was based upon “proxy indicators of human disturbance” and the proxy used by Thompsen is pre-established levels of access, and not actual variation in the level of ORV activity in the three levels of access used to approximate ORV intensity. In other words, while it is true that the Thompsen study found no significant differences in mean productivity between the 3 proxy levels of ORV access – it is also true that actual levels of ORV activity within the 3 areas pre-established as restricted, seasonal, and unrestricted were unreported and perhaps unknown to Thompsen. Rather, for this geo-spatial study to have more relevance to the analysis of alternatives in the DEIS, it would need to include mean productivity correlated to actual observed ORV use rather than to the proxy of whether an area was pre-categorized as restricted, unrestricted, or seasonal with regards to ORV use designation. The lack of correlation found when the multi-year data were pooled was likely due to the fact that actual ORV use was similar within the 3 proxies and/or some other variables not considered by Thompsen were influencing mean productivity. It was also a concern that the areas categorized as unrestricted only hosted 1/3 the number of plover nests compared to the restricted and seasonal categories. If the Thompsen study were to have ignored the proxy levels and just correlated productivity back to actual variation in ORV intensity, we would have been able to address two important questions: 1) to what extent does variation in ORV access impact mean productivity? and, 2) To what extent does actual ORV use meet the intention of the 3 pre-determined levels of restricted, unrestricted and seasonal? But these kinds of data are difficult to find in one single study. Rather, they are addressed throughout the shorebird and human disturbance scientific literature used through the DEIS.

At this time, numbers of piping plover at the Seashore are too low on an annual basis and the magnitude and number of potential and actual human and natural risks to piping are too high to establish statistically and scientifically clear within-year cause-and-effect relationships. Typical sample sizes necessary to allow for scientifically and statistically valid studies of reproductive performance in birds are 12 nesting pairs at a minimum and more typically exceed 20-30 pairs, which is not occurring at the Seashore. Compounding this low sample size is the fact that when it comes to poor breeding performance of piping plover at the Seashore (that can include but not be limited to these: the unavailability of habitat due to recreational pressure, failure of Piping Plover to settle at the Seashore and establish territories, failure of piping plover pairs to build nests, failure of piping plover to hatch eggs and fledge young), it is very rare indeed to be able to establish conclusively and scientifically what natural and/or human variable may have been at the root cause of the failure. Rather, it is more typical that the cause of loss of adults, eggs and young is unknown, as noted in the Seashore’s annual reports. Therefore, it is almost impossible to assign a particular poor reproductive outcome to a single environmental issue with assurance.

The DEIS does not conclude that ORVs translate into few birds but rather that ORVs are one among many factors that contribute to the observed distribution, abundance, and reproductive behavior of plovers at the Seashore. Furthermore, the goal of management is not to grow the plover population so that it exceeds the carrying capacity of the Seashore, but rather to manage habitats and resources so that plovers have a chance to persist in this portion of their geographic range and for the numbers of plovers to be such that the Seashore contributes its reasonable and logical share to the population targets established in Piping Plover Recovery Plan. At this time, plovers are well below their historical highs at the Seashore and the Seashore itself and the region as a whole are well below the minimum targets specified in the Recovery Plan.

Regarding the question of shorebird energetics and the role of disturbance, shorebirds are some of the longest distance migratory birds and as such the energy demands of migration are extreme (Goss-Custard 1984, Harrington et. al. 1991). During migration shorebirds use a variety of habitats to find food, to rest, and to avoid predators, and their survival is in part a function of the calories that individual shorebirds add by way of efficient foraging and the calories that shorebirds preserve during resting (Kersten and Piersma 1987). High quality shorebird “stop-over” habitats are those in which individual shorebirds are free to find high-quality food quickly as well as those where shorebirds can effectively rest and avoid predators between foraging bouts. Low quality habitats are those where prey items are low in density and/or where human or natural disturbance keeps birds from feeding and resting and especially where these key activities are replaced by energy-demanding avoidance behaviors such as flying and running. Essentially, disturbance to migrating shorebirds results in a double indemnity because feeding and resting are preempted i.e., “replaced” by energetically high-cost short flight fleeing behaviors. The end result is that high

levels of disturbance means that shorebirds might not be in the condition required to survive their long migratory flights.

Critical Habitat for wintering piping plover has been designated by the U.S. Fish and Wildlife Service (USFWS) effective November 20, 2008 (73 FR 62816) (DEIS p. 189). Regardless of whether or not an area is designated as critical habitat, the area still needs to be protected for the birds that utilize the area since the habitat in which a bird is residing is essential for its survival. Management Policies 2006 states that the Seashore "will successfully maintain native plants and animals by ...minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them.

Finally, unfortunately, it can be the case where plovers do not always respond positively to particular management actions. Indeed, there are times that natural stressors such as storms, droughts, predators or low food abundance can undermine or overwhelm otherwise well intentioned management. Barrier islands are by nature, exposed to extreme conditions and in some cases, no management can counteract some natural events. In the final analysis, it is vital that the interface between plovers and humans be managed optimally, such that everything practicable is done to minimize negative impacts from human activities.

### ***TE4000 - Threatened And Endangered Species: Impact Of Proposal And Alternatives***

#### **Concern ID: 24270**

**Concern Statement:** Commenters disagreed with the DEIS findings that major adverse impacts would occur to sea turtles by allowing night driving on the beach. Commenters further stated that events associated with major impacts (e.g. nesting female being killed) have not occurred. Commenters questioned the analysis of impacts to sea turtles, noting that risk of Seashore staff missing nests would not be eliminated, as currently stated in the analysis . Commenters felt that the impact of night driving was underestimated, and that any take of a sea turtle should be considered a major impact.

#### ***Representative Quotes:***

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137745

**Organization Type:** Conservation/Preservation

**Representative Quote:** In addition, we agree with the DEIS, which notes:

"Night driving on selected routes from September 16 through November 16, erosion and sand compaction; and other adverse effects related to ORV and other recreational use would be expected to occasionally result in aborted nesting attempts, hatchling disorientation or misorientation, running over hatchlings or nests, complete or partial nest loss due to human activities, and obscuring turtle crawl tracks that Seashore staff use to locate newly laid nests so that the undetected nests are not managed."

DEIS at 395. We disagree, however, that these impacts, combined with the impacts noted above, would be "long-term minor to moderate adverse." DEIS at 395. Instead, pursuant to the Seashore's definition, DEIS at 369, we believe the impacts would be "moderate adverse." Moreover, we question whether the NPS definition of moderate adverse" and "major adverse" inappropriately undervalue the adverse impacts to the threatened (loggerhead) and endangered (leatherback and green) and endangered species. The take of federally listed species nest, hatchling, or adult in a national park service unit would be of major, not minor, significance.

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137744

**Organization Type:** Conservation/Preservation

**Representative Quote:** e. Impairment of sea turtle nesting and hatching

We acknowledge the measures proposed in Alternative F are, in certain ways, an improvement over the Consent Decree, and a clear improvement over the Interim Plan. Nevertheless, we do have some concerns about the impact analysis regarding sea turtles. The DEIS states that "the possibility that crawls would be obscured by ORV tracks - causing nests to be missed and therefore not protected as has occurred in the past - would be eliminated." DEIS at 393. While the risk would be reduced, we disagree that it would be "eliminated." Early season nesting by leatherback turtles, which could occur prior to turtle patrol starts on May 1, or late season nesting by loggerhead turtles, which could occur after September 15, or 2 weeks after the last turtle crawl is found, DEIS at 124, may be

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missed. In addition, tidal levels, combined with wind-blown sand, could obscure crawl tracks, or there could be nests that are laid in the early morning after turtle patrol has passed an area or late in the day, before ORV traffic is prohibited at 1 hour after sunset. If turtle nests are not detected, they would not be protected by the protective measures, and there could be take of nests or hatchlings.

**Corr. ID:** 15141

**Organization:** *Not Specified*

**Comment ID:** 139033

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The statement reads, "ORV and other recreational use would have long-term major impacts on sea turtles, due to the amount of seashore available for ORV use, and by allowing nighttime driving on the beach." The historical records found in the annual MPS turtle reports for the Cape Hatteras National Seashore do not support this conclusion. None of the events defined on page 369, which are required for the impact to be declared "major adverse", have occurred. Specifically, nesting females have not been killed. Complete or partial nest loss due to human activity has not occurred frequently. Hatchling disorientation or disruption due to humans have not occurred frequently. Direct hatchling mortality from human activity has not frequently occurred. These events have not occurred historically, and no pedestrian or ORV use behaviors suggest that they are likely to occur in the future.

**Response:** Individual takes under ESA do not necessarily equate to a specific intensity of impacts as defined under NEPA. Impact thresholds were defined in this EIS for sea turtles relative to effects that would be outside the natural range of variability. Under ESA, individual takes, for example harassment of an adult turtle causing a false crawl, running over a nest and destroying some eggs, or running over a hatchling etc., are things that result in a finding of may affect/are likely to adversely affect sea turtles and are analyzed as such in the Determination of Effect section under each alternative analysis. However, as noted in the DEIS (page 374), even though human activities at the Seashore cause false crawls, the average false crawl to nest ratio at the Seashore falls within the scope of that typically found under "normal undisturbed conditions" which is 1:1. Numbers of eggs and hatchlings are depredated by predators and whole nests are lost to environmental factors such as storms. Given the magnitude of impacts from natural events, the impacts of the above described types of individual takes fall within the natural range of variability and therefore do not warrant a major adverse impact determination .

The death of an individual adult nesting turtle was determined to be a major adverse impact because adult nesting turtles do not normally die from natural causes when coming ashore, nesting, or returning to the ocean during the nesting process, therefore the death of even one individual would be outside the range of natural variability. As demonstrated by the recent death of a sea turtle on Ocracoke Island as a result of being run over by an ORV illegally driving at night, determining this to be a major adverse impact is warranted and the determination that night driving could result in a major adverse impact is accurate.

As described in the response to Concern ID 24087, the NPS revised alternative F to further protect sea turtles including adjusting the hours night driving is restricted (now 9:00 pm to 7:00 am) from May 1 until November 15 and reopening ORV routes to night driving from September 16 to November 15 only in areas where there are no nests. In certain areas of the Seashore, gates would be added to the ramps to help enforce this closures. This affords greater protection from night driving impacts while also minimizing impacts to emerging hatchlings from September 16 to November 15. With the protections to nesting turtles and hatchlings afforded under the alternative F, the NPS still considers the overall impact on sea turtles from ORV use would be minor to moderate adverse.

**Concern ID: 24272**

**Concern Statement:** Commenters stated concern with the impacts that ORV use would have on piping plover populations. Commenters further stated that they did not agree that overall impacts for piping plover would be long-term beneficial and suggested the impact level be revised to major adverse and suggested that NPS and FWS establish a limit for "taking" of threatened or endangered species by ORV.

**Representative Quotes:**

**Corr. ID:** 12002      **Organization:** *Not Specified*  
**Comment ID:** 134195      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** NPS and FWS should take a hard look at establishing a take limit.

Take limits are allowed under the Endangered Species Act due to economic hardship. A "Take-limit" would set a predetermined limit for taking of Plover (and other species) by ORV. The idea would be to lower buffer zones to allow more public access, but increase buffer zones if there was a Take.

The beach going public would then have an incentive to protect shorebirds rather than harm them. To protect their own interests those who want to continue driving on the beach would become enforcers protecting shorebird interests rather than the current us vs. them mentality. Some education of the public would be required under this idea so a permit system for all beach driving would be probably be required.

**Corr. ID:** 13033      **Organization:** *Not Specified*  
**Comment ID:** 140529      **Organization Type:** Unaffiliated Individual  
**Representative Quote:** The piping plover in particular would be extremely vulnerable to ORV recreation. According to the IUCN: "This species has a small population which has declined significantly since the 1950s. However, there have been overall population increases since 1991 as a result of intensive conservation management, so the species is listed as Near Threatened. It is still dependent on intensive conservation efforts, so if these cease, or if trends reverse, then it would warrant immediate uplisting again."

Opening the beaches to this kind of destruction is exactly the kind of thing that will warrant the uplisting of this bird.

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center  
**Comment ID:** 137743      **Organization Type:** Conservation/Preservation  
**Representative Quote:** Thus, the remaining question is whether the management measures under alternative F adequately mitigate for known adverse impacts from ORV use. We conclude they do not, as under Alternative F, intensive levels of ORV use could continue at high quality habitat areas used by non-breeding piping plovers at Bodie Island Spit, Cape Point/South Beach, part of the east end of Ocracoke, and South Point. We acknowledge that alternative F proposes shoreline closures for 1 mile at South Point and 1.5 miles at South Beach, but there is no guarantee, from the vague and discretionary language in the DEIS, the closures actually will be located in what is high quality habitat in those locations, as opposed to lower value habitat. With the corridors that are proposed, there could be repeated disruption of feeding and resting behaviors of nonbreeding piping plovers. Moreover, as discussed above, the prior location of non-breeding closures on the ground - including an ORV corridor through high quality feeding habitat on Bodie Island Spit in the 2009-2010 winter - raises serious concerns whether the NPS, in making non-breeding closure decisions, will favor the concerns of ORV users over the biological needs of piping plovers.

**Corr. ID:** 15073      **Organization:** Southern Environmental Law Center  
**Comment ID:** 137742      **Organization Type:** Conservation/Preservation  
**Representative Quote:** Impairment of piping plover populations  
The DEIS states that overall impacts "would be long-term moderate and beneficial for piping plovers." DEIS at 359. We disagree with this conclusion for the following reasons. First, we are concerned that the analysis of the various alternatives is hindered by the failure of the DEIS to include a true no-action alternative that does not allow ORV use on the Seashore beaches. While a proposed alternative F may, in the analysis, be considered to have benefits that are "greater" when compared to Alternative A, it is only because there are so many problems with the permissive management approach toward ORVs, which in turn created numerous adverse, significant impacts. Almost any alternative would be considered "beneficial" when compared to such a low standard.

Second, we disagree with the accuracy of the conclusion that the benefits under alternative F would be "long term moderate and beneficial for piping plovers." DEIS at 359. But for the implementation of adequate protection measures for non-breeding piping plovers, there clearly would be major adverse impacts to non-breeding piping plovers, based on the NPS definitions. DEIS at 321-322. Adverse impacts from ORV based disturbance would be

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"detectable" and would be "outside of the natural range of viability," given existing high levels of ORV use at Bodie Island Spit, Cape Point/South Beach, Hatteras Inlet, and Ocracoke Inlet Spit. Also, "frequent responses by some individuals to disturbance to feeding ... or other factors [resting] resulting in a decrease in Seashore population levels ... " would be observable. Impacts would occur "in key habitats in the Seashore," may result in direct mortality, and would result in "loss of habitat."

**Response :** The conclusion of "long term moderate and beneficial for piping plovers" under alternative F refers to species management activities and it is not felt that species management would result in major adverse impacts. The threshold for major adverse impacts from species management was not reached for either state or federally listed species. Major adverse impacts would have meant that impacts from species management of listed/special status species, their habitats, or the natural processes sustaining them would be detectable, would be expected to be outside the natural range of variability, and would be permanent none of which was felt to be the case for species management. Furthermore, a designation of major adverse impact was not warranted because there is still ample habitat for listed species and while their populations are low, they still persist at the Seashore and periodically perform well there. More specifically, major adverse impacts would mean that impacts on listed/special status species, their habitats, or the natural processes sustaining them would be detectable, would be expected to be outside the natural range of variability, and would be permanent. It would also mean that impacts would occur during critical periods of reproduction or in key habitats in the Seashore and result in direct mortality or loss of habitat and local populations might experience large declines.

Regarding the management of wintering/nonbreeding populations of piping plover under alternative F, numerous year-round and seasonal vehicle-free areas would provide for additional areas for non-breeding species to use. These revisions to alternative F have made many of the areas of known habitat vehicle-free year-round, or during the breeding season, removing any corridors from these areas. Where corridors are permitted, Cape Point and South Point, the size of the corridor would be reduced to further increase the distance between piping plovers and ORV, and these corridors would be subject to resource closures. Also, an annual habitat assessment would be conducted at the points and spits after all birds have fledged from these areas. Prior to removing the pre-nesting closures, resource closures would be established in the most sensitive portions of nonbreeding shorebird habitat in these areas, based on habitat used by winter piping plovers in two or more of the past five years. People and pets would be prohibited within these closures.

Under alternative F, approximately 28 miles of shoreline would be designated for ORV use year-round, approximately 13 miles would be seasonally designated for ORV use from November 1 to March 31 (with two areas from September 15 to March 14), and approximately 26 miles would be designated as non-ORV year-round. Establishment of various vehicle-free areas, both year-round and seasonally, as well as the standardized monitoring and buffers in areas where ORV are permitted would reduce pressure from recreational activities on piping plover. It is believed that these measures under alternative F would provide significant mitigation for the known adverse impacts and it is believed that they would result in long-term moderate beneficial impacts to nonbreeding piping plover that would be greater than those under the other action alternatives as more area would be protected for non-breeding piping plovers.

Regarding any need or justification for an uplisting of the Atlantic population piping plover from its current status of threatened to that of an endangered species, this is a determination that is outside of the scope of the DEIS and another process entirely. If this is done, to be sure, the status and performance of plovers at the Seashore would be one of many factors to be considered. However, such a change in status would first and foremost take into account the status of the species inclusively over its entire geographic range of distribution. The Seashore represents only a very small percent of this larger area that extends north and east and into maritime Canada. Therefore, the status and management of plovers at the Seashore in and of itself is not sufficient to drive this change in determination.

**The U.S. Fish and Wildlife Service Biological Opinion for the preferred alternative includes an "incidental take statement" for "take" of listed species which is incidental to activities allowed under the preferred alternative. The incidental take statement provides for reinitiation of consultation if exceeded.** The hardship exception under ESA Section 10(b) for the taking of federally listed species applies to those individuals or organizations that entered into a contract with respect to a species prior to the species being considered for listing or subsequently listed, and who, because of the listing of the species, would be caused undue economic hardship. While ORV use on the Seashore predates the listing of the piping plover and sea turtles that inhabit the Seashore, the NPS is not engaged in any such



contracts with respect to these species and the hardship exemption does not apply to the use of ORVs at the Seashore.

**Concern ID: 24273**

**Concern Statement:** One commenter suggested that commercial fish harvesting would be beneficial to piping plovers because it would result in increased prey availability and that commercial fishermen should be allowed in corridors through resource closures.

**Corr. ID:** 15132      **Organization:** *Not Specified*  
**Comment ID:** 138120      **Organization Type:** Unaffiliated Individual

**Representative Quote:** “Commercial fish harvesting would have negligible Impact on piping plovers because plovers do not feed on any commercially important fish. However, plovers do feed all some of the same prey Items of fish species that may be harvested and, as such, harvest of fish may mean greater prey encounters for plovers. In this case, the Impact of commercial fishing could result in long-term minor to moderate Increases in prey availability that would have a beneficial impact all piping plover foraging.” This is inconsistent with commercial fishermen not being allowed corridors through resource closures.

**Response:** The impact of commercial fishing harvest would potentially have beneficial impacts. However, this impact is associated with the fishing specifically and does not include the physical impacts of commercial fishing vehicles within resource closures. The potential for harm and disturbance would outweigh the potential benefits of allowing them inside the resource closures. Allowing corridors through resource closures for commercial fishermen would have adverse impacts to breeding shorebirds . For a more detailed discussion on why corridors are not included as part of revised alternative F, please see the response to Concern ID 24192.

**Concern ID: 24653**

**Concern Statement:** Commenters suggest that locations where seabeach amaranth will occur each year cannot be reliably predicted because it is a fugitive annual. Therefore, protection areas that restrict public use of the beach should not be pre-designated before plants are found.

**Representative Quotes:**

**Corr. ID:** 14572      **Organization:** Jersey Devil's Fishing Club  
**Comment ID:** 135704      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Continuing along this line, concerning Sea Beach Amaranth, from reading all of the articles that I could find, along with my own experiences, is a plant that cannot be reliably predicted as to where it will grow from one season to the next. The life history of this plant, combined with the dynamic coastal habitat within which it evolved, give this species the ability to move within the coastal landscape as a fugitive species, colonizing habitat as it becomes available in both space and time. (Endangered Plants of New Jersey Fact Sheet). An example of this is section of beach which is continually fenced off for the Piping Plovers only had one good year where this plant appeared in close to ten years. The speculated reason for their sudden appearance is there was a series of energetic storms that could have caused seeds to be either to have washed up from the storms or exposed by the storms. Again all of the right conditions existed for that year. For the next two years there have been no plants in this area. For this reason no area should be pre-designated nor can the area be predicted for the sea beach amaranth. Only under Plan "A" could preservation be properly applied without the public being subjected to un-needed restrictions that cannot be acted upon within any of the other Alternatives.

**Response:** While seabeach amaranth is a fugitive annual, its habitat requirements are known; it is found on sandy ocean beaches, where its primary habitat consists of overwash flats at accreting ends of islands and the sparsely vegetated zone between the high-tide line and the toe of the primary dune on non-eroding beaches. This narrow habitat niche for seabeach amaranth is bounded by its relative intolerance of flooding in lower beach settings and competition with other plants in upper beach and dune settings. The seeds of seabeach amaranth are viable for long periods of time and can be dispersed long distances by wind and water, allowing it to occupy newly created habitat. Seeds may also just accumulate around the base of a plant when it dies, allowing it to continue to occupy currently available habitat. Therefore, as indicated in the New Jersey Department of Environmental Protection agency's Endangered Plants of New Jersey Fact Sheet: Sea-Beach Amaranth *Amaranthus pumilus* Rafinesque (NJDEP no

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date) and Jolls et al. 2004, to protect and maintain this species, it is necessary to protect the plants and habitat where they have occurred and potential suitable habitat where plants might occur. To balance the need to protect this federally listed species and provide for the recreational access/enjoyment of the Seashore, under the preferred alternative, the NPS would designate protection areas for the plant prior to June 1 in areas of suitable habitat on the points and spits only where the plant has occurred during the previous 5 years (i.e. those areas where the plant may be most likely to reemerge). At the Seashore plants are often not found until the annual survey conducted in early August when the plants are large enough to be readily visible. If the NPS did not pre-designate protection areas for the plant where it has previously occurred, seeds would likely be buried deeper than they can germinate and any germinating plants would likely be run over and killed, preventing them from maturing to the point where they could set seeds and contribute to the population of seabeach amaranth both at the Seashore and potentially to surrounding areas. In addition, under the preferred alternative approximately 26 miles of beach is designated as vehicle-free year-round to balance the amount of beach that is open to pedestrian use only and that which is open to ORV use. Approximately 28 miles of beach would be open to ORV use year-round, with approximately 13 miles open to ORV use seasonally. Some of the areas designated as year-round vehicle-free areas overlap with areas that are historically important to seabeach amaranth, such as the area on Cape Point 0.3 miles west of the point to approximately 1.7 miles west of the existing ramp 45. If plants are found in this area in the future, there would not be any additional impacts to ORVs since this area is already closed to ORVs.

### ***TE5000 - Threatened And Endangered Species: Cumulative Impacts***

#### **Concern ID: 24269**

**Concern Statement:** One commenter stated that the cumulative impacts of alternative F would likely prevent the re-establishment of seabeach amaranth.

#### ***Representative Quotes:***

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 137739

**Organization Type:** Conservation/Preservation

**Representative Quote:** Seabeach Amaranth

The cumulative impacts of Alternative F will likely prevent the re-establishment of this species on the Seashore where it was once abundant. If the species is re-discovered on the Seashore, it will not be able to persist or recover under Alternative F due to off-road vehicle use. While the species may be afforded some protection during germination if it occurs within shorebird-waterbird nesting areas, it is not afforded adequate protection under Alternative F during other critical stages of its life cycle. The species is not allowed to senesce naturally under this Alternative and any seeds produced from plants within shorebird-waterbird nesting areas will be subjected to extensive off-road vehicle use thereby threatening their ability to survive and germinate in the following season. In addition, providing protection for this species where it has occurred in the past 5 years will ensure that the species will likely never be allowed to recover on the Seashore.

**Response:** While the Seashore has no control over projects outside of the Seashore that contribute cumulative impacts to seabeach amaranth, management activities under revisions to alternative F will provide more protection to seabeach amaranth habitat and the species if it reappears or is reintroduced to the Seashore. Under new revisions to alternative F the amount of beach area closed to ORV use year round has increased to approximately 26 miles from 16 miles under the original alternative F. These new year-round vehicle-free areas include the area on Cape Point from approximately 0.3 mile west of the point to approximately 1.7 miles west of ramp 45 and the southern portion of the ocean beach on Hatteras Inlet Spit. Both of these areas are historically where a large percentage of seabeach amaranth was found within the Seashore, though much of the habitat on Hatteras Inlet Spit where seabeach amaranth was found no longer exists due to erosion. The increased amount and location of beach area closed to ORV use year round in conjunction with bird closures will afford greater protection of seabeach amaranth habitat and the species itself if it reappears or is reintroduced to the Seashore.

***VE2200 - Visitor Use and Experience: Methodology And Assumptions*****Concern ID: 24182**

Concern Statement: Commenters stated that overall visitor counts are inaccurate because they include Wright Brothers National Memorial and Fort Raleigh National Historic Site and may not account for all visitors. They further stated that inclusion of these sites skews the visitation statistics as many visitors at these sites do not come to the Seashore.

***Representative Quotes:*****Corr. ID:** 13461**Organization:** Park user**Comment ID:** 138669**Organization Type:** Unaffiliated Individual

**Representative Quote:** Overall Visitor Counts - Overall visitor counts appear to include visitors to Fort Raleigh National Historic Site and the Wright Brothers National Memorial. A large percentage of these visitors vacation in the Northern Beaches communities and recreate on the non-federal beaches outside of the Seashore. Visitors who patronize the Fort Raleigh National Historic Site and the Wright Brothers National Memorial but do not visit the actual seashore areas need to be factored out.

**Corr. ID:** 13891**Organization:** Ocracoke Civic & Business Association**Comment ID:** 135470**Organization Type:** Civic Groups

**Representative Quote:** The National Park Service DEIS plan recently released for public comment has used visitor demographics for Fort Raleigh and Wright Brothers Memorial in the interest of time since the economic study for Cape Hatteras Seashore is still under way. This does not take into account the true visitor demographics within the Cape Hatteras area. For example, those that vacation at Oregon Inlet are very different from those that vacation at Ocracoke. The economic study of Cape Hatteras National Seashore must be reviewed and used before the final ORV plan is released. Otherwise, this plan has the ability to cause severe adverse impacts to our local commercial and/or recreational tourist fishing industry.

**Response:** The visitor use statistics provided on pages 258 and 259 were obtained through the NPS Public Use Statistics Office, which can be found online at: <http://www.nature.nps.gov/stats/index.cfm>.

The recreational visitor counts in the DEIS were for visitors to the Seashore only and did not include Wright Brothers or Fort Raleigh. Further, visitation studies used, such as the 2003 University of Idaho study, also just looked at visitors to the Seashore and did not include visitors to Wright Brothers or Fort Raleigh.

**Concern ID: 24183**

Concern Statement: Commenters stated that the NPS does not have adequate data on the number of ORVs at the Seashore and how ORVs are being used by visitors. They also requested that data provided to the Negotiated Rulemaking Committee regarding visitor use be included in the FEIS.

***Representative Quotes:*****Corr. ID:** 12998**Organization:** Not Specified**Comment ID:** 140580**Organization Type:** Unaffiliated Individual

**Representative Quote:** For example, on page 568 the "visitation" statistics are grossly inaccurate. There is no way to know how many people are riding in a vehicle (at least not the way the study was done) or whether the driver and/or passengers are indeed visitors at all. The study also doesn't take into account the high numbers of construction vehicles in the area as well as shipping or mail service vehicles. Attempts throughout the document are often made assuming that gross occupancy tax collected can be used as a method to determine the number of visitors. That being said, this has been proven as an inaccurate way to determine the number of visitors.

**Corr. ID:** 15043**Organization:** Southern Environmental Law Center**Comment ID:** 137471**Organization Type:** Conservation/Preservation

**Representative Quote:** We are frustrated that off-road vehicle use has not been fully and consistently documented. Given the years of controversy surrounding the issue, one could reasonably assume methods would have been devised and implemented to provide accurate counts of vehicles on Seashore beaches on daily, monthly, and annual

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bases. These counts are particularly important not just for determining the economic impacts of various visitor sectors but also for designing long-range management of the Seashore for natural resources and visitors of all kinds. We look forward to learning the results of the new survey estimate alluded to in the DEIS. DEIS at 265. We find it odd that the aerial ORV counts depicted in graphs at the same page, Figure 25, show no actual count numbers, only relative percentages by sections of the Seashore.

**Corr. ID:** 15047      **Organization:** Cape Hatteras Business Alliance

**Comment ID:** 141098      **Organization Type:** Business

**Representative Quote:** The DEIS identifies visitor experience as either ORV users or non-ORV users. By not using any of the information/data presented by CHBA in the analysis, the recreational uses of the Park were not accounted for in ANY of the Alternatives presented. NPS fails to take into account that ORV use in CAHA is not an activity within itself, but a means of access to areas within the Park (particularly the ocean waterline) to engage in the desired recreational activity. By lumping activities and areas into "ORV" and "non-ORV" does not take into account the multiplicity of uses available in the Park.

**Corr. ID:** 15047      **Organization:** Cape Hatteras Business Alliance

**Comment ID:** 141060      **Organization Type:** Business

**Representative Quote:** The data and information submitted by CHBA identifies the areas used for recreation, the recreational activity(s) engaged, as well as the criteria and essential elements for recreational use. Also included was information as to why these areas are most popular for recreation, the need for ORV access to the majority of these areas and exactly what the recreational uses are. No reference or consideration of recreational use of the Park was found anywhere in the DEIS.

**Response:** As noted in the DEIS on page 561, the NPS recognized that existing data on ORV use of the Seashore could be supplemented and conducted further study of the level of ORV use at the Seashore. These new studies, and how their results are being incorporated into the FEIS, are discussed under Concern ID 24257.

Pages 258 to 269 of the DEIS recognize that a wide variety of visitor uses occur at the Seashore, including activities noted by the negotiated rule making committee (page 259, DEIS). The DEIS does not go into the same level of detail regarding these activities, as the materials provided, because the affected environment and environmental impacts (as well as the range of alternatives) are within the scope of ORV management, rather than overall recreation management. Although there are many activities at the Seashore that visitors use an ORV to access, the scope of this planning effort is to manage that means of access (ORV use) for a variety of individual recreational activities and focus the data presented and the analysis on that means of access. For this reason, the materials provided by the negotiated rulemaking committee were considered and included, at a lower level of detail.

How visitation was counted is detailed under Concern ID 24182. This estimate of visitation has an accuracy level to allow for policy decisions to be made. The table below displays the specific counts for each ramp area which were used for the 4<sup>th</sup> of July pie chart in Figure 25.

**Ramp Counts Memorial Day and 4<sup>th</sup> of July, 2008**

Memorial Day, 2008		Fourth of July, 2008	
Ramp	Count	Ramp	Count
Ramp 4	641	Ramp 4	661
Ramp 23-27	336	Ramp 23-27	353
Ramp 27-38	191	Ramp 27-38	277
Ramp 43-49	471	Ramp 43-49	758
Ramp 55	137	Ramp 55	230
Ocracoke	293	Ocracoke	300
2008 Total Count	2069	2008 Total Count	2579

**Concern ID: 24186**

Concern Statement: Commenters stated that considerations of visitor use should place a greater emphasis on pedestrian users of the Seashore and that the percentage of visitors that use ORVs at the Seashore is overstated.

**Representative Quotes:****Corr. ID:** 1339**Organization:** Teton Kiting LLC**Comment ID:** 132151**Organization Type:** Unaffiliated Individual

**Representative Quote:** More attention needs to be paid to other non-motorized activities that draw tourists - bird watching, kayaking, surfing, and especially kitesurfing. There has been a lot of local investment in these other activities in the past decade ( kitty hawk kites, Real Kites, many local surf shops,.....).

**Corr. ID:** 3916**Organization:** Cary**Comment ID:** 131103**Organization Type:** Unaffiliated Individual

**Representative Quote:** I value beaches and do not want to spend my precious beach time in the presence of ORV's, their noise, their fumes, and the tracks they leave on the beach. I think I speak for hundreds of thousands of beach goers whose voice has been silenced by intimidation. On Hatteras Island it is difficult to express this anti-driving point of view because of a small, very vocal minority of people who feel economically threatened by closing the beach to driving. When the draft plans go to the next stages, I ask you to include this aesthetic view about beach driving more explicitly.

**Corr. ID:** 15043**Organization:** Southern Environmental Law Center**Comment ID:** 137472**Organization Type:** Conservation/Preservation

**Representative Quote:** In lieu of such data from the Park Service, we must rely on best available estimates. A 2003 visitor survey at Cape Hatteras estimated that between 2.7% and 4.0% of all visits to the park included beach driving (Hans Vogelsong, "Cape Hatteras National Visitor Use Study," August 2003, as quoted in "Economic Analysis of Critical Habitat Designation for the Wintering Piping Plover," Industrial Economics, Inc., for USFWS, September 23, 2008). Even positing significant error in the survey data, and that the number is double the maximum reported, then we are still left with the estimate that under 10% of all visitors to the Seashore choose to drive on the beach during their visits.

**Response:** The DEIS recognizes that a variety of recreational uses occur at the Seashore, as described starting on page 259. The purpose of this plan is to manage ORV use at the Seashore. The NPS recognizes that many of the activities at the Seashore are accessed by ORV. Outside of the description of visitor uses found on pages 258 to 268 of the DEIS, the DEIS recognizes the importance of non-motorized activities, discussing their economic contributions on page 285 to 287 of the DEIS. The NPS recognizes that a variety of visitors come to the Seashore each year, and therefore the preferred alternative includes a range of options for users during their visit. Revised alternative F increases access for multiple recreational uses by increasing the number of vehicle-free areas in the Seashore and removing the more stringent ML1 species management procedures. The DEIS further recognizes the

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impacts of ORV use on pedestrians seeking a non-ORV experience in the impact analysis section of Visitor Use and Experience, beginning on page 527 of the DEIS. The analysis did consider data provided in the Hans Vogel song study based on a peer review of the data gathered.

The NPS provides a variety of uses for all visitors and does not necessarily provide for a greater experience depending on the size or type of the user group. As detailed on page 527 of the DEIS, the enabling legislation of the Seashore does not explicitly authorize or prohibit ORV use. NPS believes that it, as well as past planning documents, allow for ORV use, managed within the enabling legislation's context of preserving the unique flora and fauna and physiographic conditions, providing for appropriate recreational use and public access to the ocean and sound shorelines in a manner that will minimize visitor conflict, enhance visitor safety, and preserve Seashore resources. As stated above, the NPS believes that the revised range of alternatives accounts for the variety of visitor uses at the Seashore, without emphasizing one use over another.

**Concern ID: 24187**

**Concern Statement:** One commenter requested that commercial fishing vehicles not be classified as "non-essential" as they provide food for the community.

**Representative Quotes:**

**Corr. ID:** 15161

**Organization:** Hyde County Commissioner

**Comment ID:** 138839

**Organization Type:** County Government

**Representative Quote:** I take exception to commercial fishermen and commercial fishing vehicles being called "non-essential." We provide food for people and it even says in the plan that the harvest of fish may mean greater prey encounters for plovers and be beneficial to them. So, I think we should be given, in addition to the permit that we have, we should be able to stay on our tradition of being able to provide food for people here, as we've done for hundreds of years and not be closed out from the resource closures.

**Response:** According to page 647 of the DEIS, essential vehicles are defined as "vehicles used by the National Park Service, or its agents, to conduct authorized administrative activities, such as resources management, law enforcement or other park operations, related to implementation of this plan or other applicable management plan(s) or permit(s), or as needed to respond to emergency operations involving threats to life, property, or park resources, within areas that are otherwise closed to recreational ORV or visitor use." The term "non-essential" is used solely as a method to clearly indicate that the vehicles being described in the applicable sections of text are not the property of the NPS or its agents. For a discussion of why commercial fishing vehicles are not allowed in resource closures, please refer to the response to Concern ID 24273.

**Concern ID: 24188**

**Concern Statement:** Commenters requested that the FEIS include additional information about visitor use such as the importance of non-motorized water sports, updated visitation tables, correcting the status of Frisco Pier, not including areas only accessible by water in the mileage count, and better representing Cape Point.

**Representative Quotes:**

**Corr. ID:** 3904

**Organization:** Not Specified

**Comment ID:** 132470

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Cape Point needs to be represented with more respect in regards to human activities!

The Cape Point area has been a very large part of this Nation's maritime history and this island's culture. There has been a longstanding heritage of commercial and recreational fishing at the Point that has fed families and this nation for centuries. It has been a social gathering place of people for many generations. Cape Point is a Mecca for surf fishing, birding, shelling, windsurfing, surfing, and many other recreational activities. It is a destiny for many Park visitors. I understand too that it is the southern most breeding area for a very limited number of piping plovers and only when the conditions are just right!

**Corr. ID:** 10275      **Organization:** *Not Specified*  
**Comment ID:** 137227      **Organization Type:** Unaffiliated Individual

**Representative Quote:** I also have an issue with Frisco Pier being counted as a viable fishing resource. It has been closed for over a year so including it in the DEIS which came out earlier this year is unbelievable to me. It's not like it was just closed at the same time the DEIS was published. It's just another example of lies and half truths put out by NPS et al - grasping at straws and anything and everything to mislead the American public. I heard a rumor that the front end (the shop) of the pier was recently opened to counter this argument and so it could be said that the pier was open. Last time I was there (2008), I couldn't fish (or reach) the surf from the shop so please update the status of Frisco Pier being a viable place to surf fish.

**Corr. ID:** 14761      **Organization:** *Not Specified*  
**Comment ID:** 135485      **Organization Type:** Unaffiliated Individual

**Representative Quote:** Counting miles of beach open but accessible only by water...this is misleading to the general public.

**Corr. ID:** 15043      **Organization:** Southern Environmental Law Center  
**Comment ID:** 137469      **Organization Type:** Conservation/Preservation

**Representative Quote:** While additional closures are certainly affecting some visitors, they are not seemingly causing the dire losses of visitation that some have vocally predicted. Indeed, trends indicate quite the reverse. We concur with the DEIS that "the information does not support projections of decreases in visitation." DEIS at 568. A final EIS should update tables with these more recent figures.

**Response:** The DEIS acknowledges the variety of recreational activities that area available to visitors in all areas of the Seashore, including Cape Point (DEIS pp. 1, 15, 16, 17, 18, 22, 259, 260, 262). Figure 21, figure 22, and table 66 in the FEIS have all been updated to reflect the most recent visitation statistics that were available at the time of printing the final document.

The Frisco pier was closed for public safety reasons, due to deteriorating conditions. However, it is the intent of NPS that the pier will be reopened for public use and NPS is working with the owner/operator to develop a viable solution for renovating the pier so it can be reopened. An update to the status of the Frisco pier was provided on p. viii, p. 58 and p. 260 of the DEIS, or in the Executive Summary, Chapter 2 (Elements Common to All Alternatives), and Chapter 3 (Visitor Use: Recreational Opportunities and Use at Cape Hatteras National Seashore) of the FEIS.

Miles designated for a particular use (e.g., ORV or vehicle free) are different than actual miles open for a particular use at any given time in recent years under either the Interim Strategy or the Consent Decree. The mileage estimates by category (year-round ORV routes, seasonal ORV routes, and year-round vehicle free areas) reported in the DEIS (p. 101) indicate how many miles are designated for those uses in a particular alternative, not how many miles will necessarily always to be open since all areas are potentially subject to temporary resource closures. For example, for the no action alternatives A and B, there are zero (0) miles designated as year-round areas, yet historically there have been portions of the Seashore closed to ORVs for extended periods due to safety closures and resource closures. The weekly beach access summaries issued by the Seashore in recent years report the actual miles that are open or closed to use. Under the consent decree, when resource closures are in effect for bird breeding activity, access to some portions of "open beach", such as the tip of an inlet, can be blocked by a resource closure. In the weekly beach access reports, these locations are identified as "open for pedestrian shoreline access via boat" since there is no practical way to by-pass the resource closure by land. "Limited access miles" are reported separately from miles open to ORVs or miles open to pedestrians for clarity.

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**Concern ID: 24189**

Concern Statement: One commenter stated that the FEIS needs to consider the experiences of similar areas of North Carolina and along the east coast.

**Representative Quotes:**

**Corr. ID:** 585

**Organization:** NCBBA

**Comment ID:** 132038

**Organization Type:** Unaffiliated Individual

**Representative Quote:** I do not see where the NPS has aggressively considered experiences of other locations in NC, namely Carolina Beach Freeman Park or the state park at Fort Fisher not to mention other East Coast locations.

**Response:** In developing the draft plan/EIS, NPS has considered information on management and experience at a number of other areas, including Carolina Beach Freeman Park and Fort Fisher. Management at the Seashore must be responsive to federal law and policy which differs from that governing state or locally owned and managed areas. The plan/EIS also must consider the resources and habitat specific to this Seashore.

**VE4100 - Visitor Use and Experience: Impact Of Proposal And Alternatives****Concern ID: 24290**

Concern Statement: Commenters stated that closing areas of the Seashore to ORV use would create safety issues if visitors engage in a water-based activity in a permitted area and are swept by currents into a resource closure where they would not be permitted to come ashore.

**Representative Quotes:**

**Corr. ID:** 10527

**Organization:** *Not Specified*

**Comment ID:** 131766

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The proposal to close beaches to all access at times all the way to mean low tide is unsafe. The waters of the Cape Hatteras area often have high lateral currents and high winds. Swimmers, bathers, and water sportsmen may at times find they have drifted and their most direct exit from the ocean may now be a closed area. Compliance with the park rules could mean remaining in several feet of water with high surf crashing on them and their equipment as they try to return to an open beach area. Or the person may head back out to sea to try to navigate around the closure. Many drownings and tragedies develop gradually through exhaustion or hypothermia. It is rarely as simple as a decision whether or not to pay a huge fine or die. A pedestrian corridor should be maintained everywhere at all times to ensure safety of the public.

**Response:** Alternative F has been modified in Table 10-1 to allow pedestrian shoreline access in front of (i.e., seaward of) bird pre-nesting areas until breeding activity is observed, then standard buffers for breeding activity will apply. When the buffer extends past the mean low tide line (the Seashore's legal boundary), then that section of shoreline is temporarily closed to visitor access and the closure is clearly marked in the field. Visitors who comply with the posted closures are generally not at risk. Resource closures have occurred at the Seashore for years and this type of emergency situation has been extremely rare. If there were to be a life and death situation involving someone being washed ashore inside a resource closure, NPS policy is that the protection of human life takes precedence over all other management activities, and the priority would be the safety of the visitor (NPS Management Policies 2006 Section 8.2.5.1). NPS enforcement personnel would take the circumstances into consideration in the application of their discretionary law enforcement authority.

**Concern ID: 24294**

Concern Statement: Commenters requested that watersports continue to be permitted at various locations throughout the Seashore where it is currently permitted, and noted that access for surfing should have minimal conflicts with bird and turtle nesting.



**Representative Quotes:**

**Corr. ID:** 82                   **Organization:** *Not Specified*  
**Comment ID:** 129794       **Organization Type:** Unaffiliated Individual

**Representative Quote:** in short here are points for you to bring up at the public hearings to protect the fauna of the outer banks.

- 1) nesting seasons and surf seasons are not aligned.
- 2) since the season don't align it is not going to impact the enjoyment of the surfers and the protection of endangered species.

**Corr. ID:** 82                   **Organization:** *Not Specified*  
**Comment ID:** 129793       **Organization Type:** Unaffiliated Individual

**Representative Quote:** If driving is permitted in the height of the swell season (september-october) surfers should be appeased and that is an issue you should consider and raise in hearings. As long as the birds are done nesting and the sea turtles have hatched and made it to the ocean, by September with the hurricane swells, there should be minimal conflict.

**Corr. ID:** 13264               **Organization:** *Not Specified*  
**Comment ID:** 140153       **Organization Type:** Unaffiliated Individual

**Representative Quote:** Access for watersports should continue to be permitted especially at the following locations:

The Haulover (Canadian Hole) near (58) South of Avon  
 Kite Point near (59) North of Buxton  
 Frisco Day Use Area near proposed new ramp 51  
 Sandy Bay Soundside north of Hatteras Village

**Response:** Preferred alternative F in the FEIS continues to provide access points at soundside locations used by visitors for watersports mentioned by the commenter. It would also add new small parking areas at access points 59 and 60 on the soundside.

Most bird nesting activities have concluded by the beginning of September. However, some turtle nests hatch in September and October. Buffers for turtle nests are considerably smaller than for nesting shorebirds and usually do not result in a closure to the waterline until the hatch window has been reached. Alternative F has been revised in the FEIS to provide pedestrian shoreline access on the seaward side of the pre-nesting closure (i.e., below the mean high tide line) during daylight hours to increase opportunity for those engaging in watersports to access the beach on both sides of the nest. These areas would be subject to standard buffers once breeding activity is observed.

### ***WH2000 - Wildlife And Wildlife Habitat: Methodology And Assumptions***

#### **Concern ID: 24296**

**Concern Statement:** Commenters questioned the impacts of kites and kiteboards on birds and requested that these potential impacts be studied.

**Representative Quotes:**

**Corr. ID:** 1573                   **Organization:** *Not Specified*  
**Comment ID:** 132127       **Organization Type:** Unaffiliated Individual

**Representative Quote:** I would further ask that kiteboarding's effect on nesting species be studied. I have not seen birds scared off by kites flying in their proximity or overhead, but I have also mostly been kiteboarding around species that are fairly used to being around human activity.

**Corr. ID:** 3369                   **Organization:** Ontario Kiteboarding Association  
**Comment ID:** 133595       **Organization Type:** Unaffiliated Individual

**Representative Quote:** The concern about disturbance to birds by kites is in my view way overdone. As a practitioner of the sport for many years I have seen a huge variety of species co-existing with kites with apparently no ill effect whatsoever. Is there any evidence at all of long-lasting adverse effects on bird life from kites?

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**Response:** The potential for kites to disturb nesting or territorial shorebirds has been documented. The 1996 Atlantic Coast Piping Plover Recovery Plan recommends that kite flying be prohibited within 200 meters of nesting or territorial adult and unfledged juvenile piping plovers between April 1 and August 31. The kite of a kiteboarder may fly overhead inside a closure or cast a shadow on the ground that is perceived by nesting shorebirds as a predator. This can result in flushing or physiological alarm reactions that change bird behavior. Inexperienced kiteboarders may be unable to control the kite sufficiently to prevent it from landing inside closures, resulting in disturbance to nesting birds and possible damage to nests and eggs.

### ***WH4000 - Wildlife And Wildlife Habitat: Impact Of Proposal And Alternatives***

**Concern ID: 24297**

**Concern Statement:** Commenters stated that road construction on Ocracoke would cause greater impacts than allowing beach driving to the wildlife and wildlife habitat.

**Representative Quotes:**

**Corr. ID:** 2485

**Organization:** Not Specified

**Comment ID:** 133058

**Organization Type:** Unaffiliated Individual

**Representative Quote:** The new plan would eliminate all beach driving on Ocracoke island in favor of building a new road across the dunes closer to the beach to improve pedestrian access. The road construction project will create a much larger impact on the environment than the current ORV access on the beach. The road will impact the fragile dune environment and its vegetation and animal population instead of the stable and relatively barren beach zone. Birds crossing the new road are likely to be hit by vehicles traveling at a significant speed. Speed control on the new road will require constant and active enforcement, requiring the hiring of officers to enforce it. The sand provides constant passive speed control at no cost to the taxpayer - you just can't drive fast on sand even if you want to.

**Response:** Beach driving would not be completely prohibited on Ocracoke Island under alternative F, or any other alternative. To better balance the amount of ORV and vehicle-free areas and reduce the amount of proposed construction, alternative F has been revised to no longer include an interdunal road extending 0.3 miles northeast from ramp 59, eliminating any potential impacts that would have resulted from constructing and driving on that road. Alternative F has also been revised to move ramp 59 to a location just south of the existing MP 59.5 parking area so that pedestrians accessing the beach would not need to cross the ORV ramp. Revisions to alternative F also would eliminate the new ramp 62 while allowing ORV use year round from MP 59.5 to a new Ramp 63. An area of beach on either side of the Pony Pens beach access area would be vehicle-free. ORV use would be extended slightly north of MP 67 while the area in front of the Ocracoke Campground would be designated for seasonal ORV use from November 1 through March 31. Ramp 68 south to the Ocracoke Day Use Area would become a vehicle-free area, while the beach from the Day Use Area to South Point would allow ORV use. Overall, as a result of the revisions to alternative F, approximately 5.5 miles of beach on Ocracoke island would be designated as vehicle-free year-round while approximately 1 mile would be designated for seasonal ORV use for 5 to 6 months per year.

**Concern ID: 24650**

**Concern Statement:** One commenter stated that ORV use on the Seashore significantly jeopardizes invertebrate prey for shorebirds on all beaches where off-road vehicle use is heavy (>75 passes) and it jeopardizes those species that depend on this prey base for survival during breeding, migration, and winter.

**Representative Quotes:**

**Corr. ID:** 15073

**Organization:** Southern Environmental Law Center

**Comment ID:** 142353

**Organization Type:** Conservation/Preservation

**Representative Quote:** Alternative F would result in cumulative impacts to several species, including...

**Invertebrates**

Invertebrates are vital to breeding and non-breeding shorebirds. Off-road vehicle use can also jeopardize the prey base for shorebirds, as well as the availability and access to foraging habitat for shorebirds. Vehicle use on beaches

reduces wrack that harbors invertebrate prey important for shorebirds, especially Piping Plovers and others. Populations of invertebrates found on ocean beaches, which are a source of food for shorebirds like Red Knot, Piping Plover, American Oystercatcher, Whimbrel, Willet, Black-bellied Plover, Ruddy Turnstone, Sanderling and others, have been documented to be significantly reduced by off-road vehicle use. ORV use on Cape Hatteras National Seashore significantly jeopardizes invertebrate prey for shorebirds on all beaches where off-road vehicle use is heavy (>75 passes). In doing so, it jeopardizes those species that depend on this prey base for survival during breeding, migration, and winter.

**Response:** Chapter 3 of the DEIS discussed the importance of invertebrates as a food source for shorebirds and the potential for ORV impacts to beach invertebrates (DEIS p. 251-252). Language describing the potential impact of reduced invertebrate populations (as a result of ORV impact to invertebrates) use has been added to the Chapter 4 of the FEIS in the "Rare, Unique, Threatened, or Endangered Species", "State-listed and Special Status Species", and "Wildlife and Wildlife Habitats" sections.

The following language was added to Environmental Consequences, Wildlife and Wildlife Habitat, Alternative A, Impacts to Invertebrates:

“As noted in Chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative A would allow for beach driving during the day outside of resource closures, with no restrictions on night driving. This level of access would result in long-term minor to moderate impacts expected to invertebrate populations (as described below), and therefore would reduce the food source to other bird species at the Seashore, resulting in long-term moderate impacts.”

The following language was added to Environmental Consequences, Wildlife and Wildlife Habitat, Alternative B, Impacts to Invertebrates:

“As noted in Chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative B would allow for beach driving in the wrack line during the day outside of resource closures and would maintain nighttime closures. Prohibiting driving in resources closures as well as the seasonal prohibition of night driving would reduce disturbance in these areas for a portion of the year. Overall impacts to invertebrates would be long-term and minor (as described below), and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.”

The following language was added to Environmental Consequences, Wildlife and Wildlife Habitat, Alternative C, Impacts to Invertebrates:

“As noted in Chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative C would allow for beach driving in the wrack line during the day outside of SMAs, but would maintain nighttime closures and limit driving during the day where SMAs are established reducing disturbance in these areas. Overall impacts to invertebrates would be long-term and negligible to minor (as discussed below), and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.”

The following language was added to Environmental Consequences, Wildlife and Wildlife Habitat, Alternative D, Impacts to Invertebrates:

“As noted in Chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative D would allow for beach driving in the wrack line during the day in SMAs year-round and would maintain nighttime closures reducing disturbance in this area at night for a portion of the year. Compared to other alternatives, this alternative would also limit daytime ORV use in more areas of the Seashore due to the year-round SMAs. Overall impact to invertebrates would be long-term and negligible (as described below),

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and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving or greater access during the day was permitted, resulting in long-term negligible impacts.”

The following language was added to Environmental Consequences, Wildlife and Wildlife Habitat, Alternative E, Impacts to Invertebrates:

“As noted in Chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative E would allow for beach driving in the wrack line during the day outside of SMAs but would maintain nighttime closures and limit driving during the day where SMAs are established reducing disturbance in these areas. Overall impacts to invertebrates would be long-term and minor (as described below), and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.”

The following language was added to Environmental Consequences, Wildlife and Wildlife Habitat, Alternative F, Impacts to Invertebrates:

“As noted in Chapter 3, a 3-year study on Cape Cod and Fire Island, New York (Kluft and Ginsberg 2009), found that higher ORV traffic resulted in dispersal and desiccation of the wrack line, thereby reducing the population of invertebrates in that area. Alternative F would allow for beach driving in the wrack line during the day outside of SMA and would maintain nighttime closures. Prohibiting driving within SMAs year-round and seasonally and the seasonal prohibition on night driving would reduce disturbance in these areas year-round and seasonally. Overall impacts to invertebrates would be long-term and minor (as described below), and would reduce the food source available to other bird species at the Seashore, but to a lesser degree than if night driving was permitted, resulting in long-term minor impacts.”

### ***WR4000 - Wetlands and Floodplains: Impact of Proposals and Alternatives***

#### **Concern ID: 24298**

**Concern Statement:** Commenters suggested that vehicle routes not be established parallel to the sound shoreline to reduce impacts to vegetation and reduce potential erosion .

#### ***Representative Quotes:***

**Corr. ID:** 13773

**Organization:** *Not Specified*

**Comment ID:** 140113

**Organization Type:** Unaffiliated Individual

**Representative Quote:** Vehicle routes should not be established parallel to the sound shoreline as vegetation that buffer the island during storms would be killed. Also, most salt marsh shorelines in the park are retreating in the absence of ocean overwash due to artificial dune lines as well as sea level rise. ORV activity exacerbates the erosion by killing vegetation and driving on undercut shorelines.

**Response:** Alternative F does not include new soundside ORV routes parallel to the shoreline.

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## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Raleigh Field Office  
Post Office Box 33726  
Raleigh, North Carolina 27636-3726

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BY: .....

May 11, 2010

Michael B. Murray  
Superintendent, Cape Hatteras National Seashore  
National Park Service  
1401 National Park Drive  
Manteo, North Carolina 27954

Subject: Comments on Cape Hatteras National Seashore Off Road Vehicle Management Plan and Draft Environmental Impact Statement

Dear Superintendent Murray:

This provides the comments of the U. S. Fish and Wildlife Service (USFWS) on the Draft Environmental Impact Statement (DEIS) for the Cape Hatteras National Seashore Off-Road Vehicle (ORV) Management Plan, dated February 2010. At the conclusion of the decision-making process mandated by the National Environmental Policy Act (NEPA), the alternative selected for implementation will become the ORV management plan, which will guide the management and control of ORVs at Cape Hatteras National Seashore (CAHA) for the next 10 to 15 years. The management plan will also form the basis for a special regulation to manage ORV use within CAHA. These comments are provided for NPS use in meeting your requirements under NEPA. Our agencies are currently in consultation pursuant to Section 7 of the Endangered Species Act, and specific comments and determinations regarding the effects of the proposed action on federally listed species will be provided through that process.

The USFWS has actively worked with the National Park Service (NPS) and other stakeholders regarding this issue for many years. We have provided technical assistance to the NPS regarding management of federal trust fish and wildlife resources, and have rendered biological opinions and incidental take statements regarding the Interim Strategy and Consent Decree, which have been used by NPS to guide management of ORV use at CAHA over the past few years. We also participated in the Negotiated Rule-making process convened by the NPS. At the conclusion of that process, we provided a detailed set of recommendations to the NPS (through the Consensus Building Institute via a memorandum dated March 27, 2009) for your use in developing the proposed ORV Management Plan. We have used our March 27, 2009, recommendations as the basis for the following comments.

The main thrust of our March 27, 2009, recommendations was to encourage the NPS to set goals and implement management actions for the fish and wildlife resources of CAHA that would ensure that CAHA is truly contributing to the recovery of federally listed species and the long

term conservation of other priority federal trust resources. We continue to believe these steps are necessary to ensure that the natural resources of CAHA are not impaired. We also encouraged the NPS to pursue those goals through a robust adaptive management strategy that would ensure that the best science and continuous learning were fully integrated in the management process.

With respect to goals, we note that the DEIS describes a set of desired future conditions (i.e., target population levels) for beach-nest birds, sea turtles, and sea beach amaranth. We find that the desired future conditions for the federally listed species (nesting piping plovers, nesting sea turtles and sea beach amaranth) parallel recovery criteria described in the recovery plans for these species, and we support them. The desired future conditions for American Oystercatcher also appear reasonable. While we support the desired population growth rates for colonial waterbirds, we note that the baseline population levels for these species were drawn from a period during which populations of these species at CAHA were historically low. As such, the 10 and 20 year population targets described in the desired future conditions are likely lower than what could be supported at CAHA with sustained management. We anticipate that with continued implementation of management actions such as those described in Alternative F, populations of these species could easily exceed the desired future conditions as currently defined. We encourage the NPS to take another look at the historic data set to determine a more appropriate baseline, or prepare to re-calibrate the desired future conditions for these species at the first 5-year review period to reflect population levels that more closely reflect the likely ability of CAHA to support these species.

Our March 27, 2009, recommendations also emphasized the importance of modeling to the effective application of adaptive management. While the DEIS describes a number of research questions that the NPS would like to pursue as the ORV Management Plan is implemented, it does not articulate a desire on the part of NPS to develop and use species-habitat models as tools to inform management. As we have previously stated, models are important tools and essential components of an adaptive management framework. They would enable you to make better predictions about the effects of management actions relative to your desired future conditions, and would help focus research and monitoring efforts for maximum effectiveness. We continue to encourage the NPS to commit resources to the development of models for priority species, and we continue to offer our assistance toward that end.

Notwithstanding our above recommendations to strengthen the adaptive management component of the ORV Management Plan, we broadly support the identification of Alternative F as the preferred alternative. It largely embraces our March 27, 2009, recommendations and constitutes a baseline management program that is generally well grounded in our current understanding of the needs of these trust species. It also does include an adaptive component that will allow adjustment of management actions over time, based on improved knowledge and progress toward established goals. We support the ORV routes as described, the Species Management Areas and Management Levels. The buffer distances described for the protection of nesting birds and unfledged chicks reflect our current understanding of the biological needs of these species. Measures to protect nesting sea turtles are generally appropriate, including the restrictions on night driving and the nest relocation provisions. However, there are some specific issues regarding sea turtle management that we would like to explore further with you through the consultation process. They include lighting issues, fires on the beach, and the timing of

beach closures relative to sunrise and sunset. We will provide further information regarding these issues under separate cover.

We appreciate the opportunity to provide these comments. If you have any questions, please contact me at (919) 856-4520 extension 11, or via email at [Pete\\_Benjamin@fws.gov](mailto:Pete_Benjamin@fws.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Pete Benjamin", written over a circular stamp or seal.

Pete Benjamin  
Field Supervisor



## United States Department of the Interior

NATIONAL PARK SERVICE  
 Fort Raleigh National Historical Site Wright Brothers National Memorial  
 Cape Hatteras National Seashore  
 1401 National Park Drive  
 Manteo, NC 27954  
 252-473-2111



IN REPLY REFER TO:

L7615 (CAHA)

February 17, 2010

Mr. Pete Benjamin  
 U.S. Fish and Wildlife Service  
 Raleigh Field Office  
 P.O. Box 33726  
 Raleigh, NC 27636-3726

Dear Mr. Benjamin:

The purpose of this letter is to request formal consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act (ESA) on Alternative F of the draft Cape Hatteras National Seashore Off-Road Vehicle Management Plan/Environmental Impact Statement (DEIS). We are requesting consultation for the following listed species: piping plover (*Charadrius melodus*) of the Atlantic Coast, Great Lakes and Great Plains populations; seabeach amaranth (*Amaranthus pumilus*); and loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback (*Derموchelys coriacea*) sea turtles. Based on the information in the DEIS we have determined that actions that would be implemented under the NPS preferred Alternative F, may affect/are likely to adversely affect piping plover; may affect/are likely to adversely affect sea turtles, and may affect/are likely to adversely affect seabeach amaranth. We have also determined that the implementation of Alternative F may affect/is not likely to adversely affect designated critical habitat for wintering piping plover.

For this project the DEIS has been developed to also serve as the biological assessment (BA). The following BA information is contained on the pages of the DEIS as indicated below:

1. Project Description

- a) Desired future conditions for federally listed species, pp. 7-9
- b) Description of elements common to all alternatives, pp. 56 – 59
- c) Description of elements common to all action alternatives, pp. 61 – 74
- d) Text description of Alternative F, pp. 80-82
- e) Table 7 Off-Road Vehicle Routes and Areas, far right column describes routes and areas for Alternative F, pp. 97-101



- f) Table 8 Summary of Alternative Elements, far right column describes elements of Alternative F, pp. 102-115
  - g) Table 10 Species Management Strategies for Action Alternatives, pp. 121-126
  - h) Table 11 Shorebird/Waterbird Buffer Summary for Action Alternatives, p.127
  - i) Table 12 Analysis of How Alternatives Meet Objectives, far right column for alternative F, p. 129 Endangered and Other Protected Species.
  - j) Figure 2 Maps of the Alternatives, 7 maps for Alternative F, pp. 175 – 181
2. General Impact Analysis (for all topics)
- a) General methodology for establishing impact thresholds and measuring effects by resource, pp. 292 – 293, General methodology for analyzing cumulative impacts, pp. 293 – 296
3. General Impact Analysis (for listed species)
- a) Guiding regulations and policies, assumptions, methodologies and threshold definitions for ESA effects determinations, pp. 318 – 320
  - b) Table 13 Environmental Impact Summary by Alternative, the far right column summarizes impacts of Alternative F on the federally listed species, pp. 133-134
4. Piping Plover
- a) Description of species biology and current conditions, pp. 184 - 212
  - b) Cumulative effects of state and private actions in the project area, pp 358 - 359
  - c) Critical habitat, description pp. 189 – 191; effect p. 361
  - d) Effects of proposed action (Alternative F) on piping plover and critical habitat and potential for incidental take of listed species, pp. 320 – 322 describes species specific methodology and assumptions used for impact analysis; pp. 356 - 361 analyzes impacts; pp. 362 – 367 Table 52 Summary of Impacts to Piping Plover under the Alternatives, far right column summarizes impacts to piping plover of Alternative F
  - e) ESA effects determination, pp. 360 – 361
5. Sea turtles
- a) Description of species biology and current conditions, pp. 212 - 221
  - b) Cumulative effects of state and private actions in the project area, pp. 393 - 394
  - c) Critical habitat has not been designated for sea turtles and is therefore not discussed
  - d) Effects of proposed action (Alternative F) on sea turtles and critical habitat and potential for incidental take of listed species, pp. 368 – 370 describes species specific methodology and assumptions used for sea turtle impact analysis; pp. 392 -396 analyzes impacts of Alternative F on sea turtles; p. 396 Table 53 Summary of Impacts to Sea Turtles under the Alternatives, far right column, summarizes impacts to sea turtles of Alternative F
  - e) ESA effects determination, pp. 395 – 396
6. Seabeach amaranth
- a) Description of species biology and current conditions, pp. 221 - 223
  - b) Cumulative effects of state and private actions in the project area, pp. 416
  - c) Critical habitat has not been designated for seabeach amaranth and is therefore not discussed

- d) Effects of proposed action (Alternative F) on seabeach amaranth and critical habitat and potential for incidental take of listed species pp. 397 – 399 describes species specific methodology and assumptions used for impact analysis; pp. 415 – 418 analyzes impacts; p. 418 Table 54 Summary of Impacts to Seabeach Amaranth under the Alternatives, far right column, summarizes impacts to seabeach amaranth of Alternative F
- e) ESA effects determination, pp. 417 – 418

7. Conservation measures

NPS proposes to seek funding to conduct the following conservation measures described in Table 10 Species Management Strategies for Action Alternatives: p. 124 piping plover chick fledge rate study; p. 126 sea turtle study to determine ways to increase the number of hatchlings that emerge and reach the water; p. 126 seabeach amaranth study to assess the feasibility of seabeach amaranth restoration at up to four suitable sites.

8. Literature cited

pp. 657 – 685

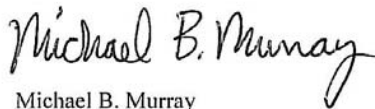
9. Preparers

pp. 641 – 642

Three compact discs (CDs), each containing an advance copy of the DEIS, are enclosed for your use. Please be aware that the Notice of Availability for the DEIS, and consequent approval to release the DEIS for public review, has not yet completed the sign-off circuit in the Washington Office. We ask you and your staff to keep the DEIS confidential until it is publicly released for review.

We look forward to receiving your Biological Opinion on Alternative F. We are available for a conference call or to meet with you as needed during the Section 7 consultation process. Please contact Cyndy Holda at 252-473-2111 ext. 148 to arrange a call or meeting.

Sincerely,



Michael B. Murray  
Superintendent

Enclosures





**United States Department of the Interior**

FISH AND WILDLIFE SERVICE  
 Raleigh Field Office  
 Post Office Box 33726  
 Raleigh, North Carolina 27636-3726  
 April 27, 2010

Michael B. Murray  
 Superintendent, Cape Hatteras National Seashore  
 National Park Service  
 1401 National Park Drive  
 Manteo, North Carolina 27954

#2297  
CAHA ORV

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	SAFETY OFFICER	
	SPEC. PARK USES	
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Dear Superintendent Murray:

This letter acknowledges the U.S. Fish and Wildlife Service's (Service) receipt of your February 17, 2010, letter requesting the initiation of formal section 7 consultation under the Endangered Species Act (ESA). Your letter was received on February 18, 2010. The consultation concerns the possible effects of Alternative F within the Cape Hatteras National Seashore Off-Road Vehicle Management Plan/Draft Environmental Impact Statement (DEIS), dated March 2010. The Service received the DEIS on March 8, 2010. The DEIS serves as the biological assessment for the purposes of section 7 consultation requirements.

You requested consultation on the piping plover (*Charadrius melodus*) of the Atlantic Coast, Great Lakes and Great Plains populations; seabeach amaranth (*Amaranthus pumilus*); and loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*) sea turtles. You have determined that actions that would be implemented under the National Park Service's preferred alternative, Alternative F, may affect and is likely to adversely affect these species. You state that implementing Alternative F may affect, but is not likely to adversely affect, designated critical habitat for wintering piping plovers which we understand to mean that the proposed actions are not likely to destroy or adversely modify such critical habitat.

All information required of you to initiate consultation was either contained in your letter or is otherwise accessible for our consideration and reference. We have assigned log number 2010-F-0157 to this consultation. Please refer to that number in future correspondence on this consultation.

Section 7 allows the Service up to 90 calendar days to conclude formal consultation with your agency and an additional 45 calendar days to prepare our biological opinion (unless we mutually agree to an extension). Therefore, we expect to provide you with our biological opinion no later than July 2, 2010.

As a reminder, the Endangered Species Act requires that after initiation of formal consultation, the Federal action agency may not make any irreversible or irretrievable commitment of resources that limits future options. This practice ensures agency actions do not preclude the formulation or implementation of reasonable and prudent alternatives that avoid jeopardizing the continued existence of endangered or threatened species or destroying or modifying their critical habitats.

If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact me or Howard Hall at 919-856-4520, ext. 27 or by e-mail at <[howard\\_hall@fws.gov](mailto:howard_hall@fws.gov)>.

Sincerely,  
  
Pete Benjamin  
Field Supervisor



## United States Department of the Interior

NATIONAL PARK SERVICE  
 Fort Raleigh National Historical Site Wright Brothers National Memorial  
 Cape Hatteras National Seashore  
 1401 National Park Drive  
 Manteo, NC 27954  
 252-473-2111



(IN REPLY REFER TO:

L7615 (CAHA)

October 14, 2010

Mr. Pete Benjamin  
 U.S. Fish and Wildlife Service  
 Raleigh Field Office  
 P.O. Box 33726  
 Raleigh, NC 27636-3726

Dear Mr. Benjamin:

The purpose of this letter is to provide updated information related to our February 17, 2010 letter requesting formal consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act (ESA) on Alternative F, the National Park Service (NPS) preferred alternative, in the draft Cape Hatteras National Seashore Off-Road Vehicle (ORV) Management Plan/Environmental Impact Statement (draft plan/EIS or DEIS). Based on public and agency comment on the DEIS, we have revised Alternative F and are hereby providing information about those revisions, so that the biological opinion (BO) can be based on the NPS preferred alternative (Alternative F), as described in the Final Cape Hatteras National Seashore ORV Management Plan/EIS (FEIS).

In our February 17, 2010 letter we requested consultation for the following listed species: piping plover (*Charadrius melodus*) of the Atlantic Coast, Great Lakes and Great Plains populations; seabeach amaranth (*Amaranthus pumilus*); and loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*) sea turtles. Based on the information in the DEIS and in the revisions we have made in the Alternative F, we have determined that actions that would be implemented by NPS may affect/are likely to adversely affect piping plover; may affect/are likely to adversely affect sea turtles, and may affect/are likely to adversely affect seabeach amaranth. We have also determined that the implementation of Alternative F may affect/is not likely to adversely affect designated critical habitat for wintering piping plover.

As noted in our letter of February 17, 2010, the DEIS was developed to also serve as the biological assessment (BA). This letter and its attachments provide an updated description of the proposed action (Alternative F).



**DESCRIPTION OF ALTERNATIVE F: NPS PREFERRED ALTERNATIVE (FEIS)**

In December 2007, the Department of the Interior established a negotiated rulemaking advisory committee (Committee) to assist the NPS in the development of an ORV regulation for the Seashore. The Committee met 11 times from January 2007 through February 2009, and conducted numerous subcommittee and work group meetings and conference calls. The Committee discussed and explored options for the full spectrum of ORV management issues covered in this plan/EIS. As a result of these discussions, the NPS considered a variety of concepts and measures that either originated from Committee members or were discussed during Committee, subcommittee, or work group sessions. Although the Committee as a whole did not reach a consensus on a recommended alternative, in creating this action alternative the NPS has made management judgments as to which combination of concepts and measures would make an effective overall ORV management strategy. The NPS has also included under Alternative E some ORV management approaches identified by the Committee that would require more intensive management (such as park-and-stay and SCV camping), in keeping with the maximum management theme of that alternative.

After reviewing public and agency comments on the DEIS, the NPS revised Alternative F for the FEIS by adopting some of the simpler approaches from the other alternatives (e.g., instead of SMAs, designating more year-round vehicle free areas and using standard buffers with prenesting and nonbreeding closures; adopting simpler and easier to understand hours for night-driving restrictions; and using more consistent seasonal closure dates among the villages). Also in response to public and agency comments, the amount of construction was decreased and pedestrian access increased. Designation of ORV routes was adjusted to provide balance between ORV areas and vehicle-free areas. The bypass provision and criteria from Alternative A was incorporated in Alternative F to mitigate effects of sea turtle closures that could block fall ORV access to Cape Point. A bypass would be instituted, if feasible, only for turtle nests (not for shorebird breeding activity) in the area between Ramp 44 and Cape Point. The existing short, interdunal route at the "narrows" has been added as an interdunal route since it has been in existence for a number of years and it could also be used to by-pass a turtle nest after bird breeding has ended in the area. Night driving (9 p.m. to 7 a.m.) would not be permitted in the vicinity of a turtle nest that has reached its hatch window of 50-55 days (see Table 10-1); however, the bypass, if feasible, would permit ORV access to the Point during daylight hours until the nest has hatched.

This Alternative F is designed to provide visitors to the Seashore with a wide variety of access opportunities for both ORV and pedestrian users, including access to the spits and points, but often with controls or restrictions in place to limit impacts on sensitive resources. This means that some areas may be kept open to ORV users for longer periods of time by reopening some ORV corridors at the spits and points sooner after shorebird breeding activity is completed than in alternatives C or E, and by improving interdunal road and ORV ramp access. Pedestrian access would be enhanced by providing increased parking capacity at various points of access to vehicle-free areas. Such areas would be provided during all seasons so non-ORV users can experience the Seashore without the presence of vehicles. Like the other action alternatives, this Alternative F would manage ORV use by identifying areas that historically do not support sensitive resources and areas of lower visitor use. Some of these areas would be designated as ORV routes year-round. Areas of high resource sensitivity and high visitor use would generally be designated as vehicle-free areas year-round or as seasonal ORV routes, with restrictions based on seasonal resource and visitor use.

The year-round designation of vehicle-free areas and ORV routes, in conjunction with the species management strategies described in Table 10-1, would provide for species protection during both the breeding season and the nonbreeding season. SMAs would not be designated under this alternative and one set of standard buffers, similar to the ML2 buffers in the other action alternatives, would be utilized. During the shorebird breeding season, pedestrian shoreline access along ocean and inlet shorelines below the high-tide line would be permitted in front of (i.e., seaward of) prenesting areas until breeding activity is observed, then standard buffers for breeding activity would apply. The NPS retains discretion at all times to enforce more proactive closures or take other measures, if considered necessary, consistent with its obligations under the law. Prenesting areas would generally be closed March 15 through July 31 (or August 15 if black skimmers are present), or until two weeks after all chicks have fledged and breeding activity has ceased, whichever comes later. For all species closures, including prenesting closures, the NPS would not reduce buffers to accommodate an ORV corridor or ORV ramp access.

Bodie Island Spit would be designated as a seasonal ORV route from September 15 through March 14 and would be vehicle-free from March 15 through September 14. Like alternative E, alternative F also involves the development of an interdunal pedestrian trail on Bodie Island. The trail would begin at a new parking area near Ramp 4 and would provide access to the inlet. This new trail would also be subject to resource-protection closures. Year-round ORV routes would be designated at Cape Point and South Point, with 35-meter-wide (115-foot-wide) ORV corridors during the breeding season. Standard resource-protection buffers would apply to these ORV corridors. When nests occur near the ORV corridor or unfledged chicks are present, the probability of being able to provide this access would decrease. The provision and criteria described in Alternative A for creation of short-term bypasses would be incorporated in Alternative F only for sea turtle nests and only between Ramp 44 and Cape Point. Alternative F would include the construction of a short seasonal ORV route to provide pedestrian access to the sound on Ocracoke Island. In addition, the NPS would consider applications for commercial use authorizations to offer beach and water shuttle services and would apply for funding to conduct an alternative transportation study to evaluate the feasibility of alternative forms of transportation to popular sites, such as inlets and Cape Point.

The variety of access methods possible under Alternative F, based on the establishment of year-round and seasonal ORV routes and vehicle-free areas, and increased interdunal roads and parking to support access, would provide the public with ORV and pedestrian access to a greater number of areas within the Seashore. This alternative would afford less predictability than alternative C or D, but more predictability than Alternative E, regarding areas available for use, and it would require a comparable level of oversight and management to Alternative E.

Areas that would be seasonally designated as vehicle free would include the areas in front of Ocracoke Campground and villages, except for Rodanthe north of the pier and Buxton, which would be vehicle free year-round. The dates for ORV use in front of the seasonally designated villages and Ocracoke Campground would be November 1 to March 31 when visitation and rental occupancy is lowest. These areas would be vehicle free April 1 to October 31 when visitation and rental occupancy is highest. When these beaches are open to ORV use, a safety closure would be implemented on portions of the beach that are not consistently at least 20 meters (66 feet) wide during normal high tides.

To facilitate access to ORV routes, Alternative F would add new Ramp 25.5 approximately 2.5 miles south of Ramp 23, relocate Ramp 59 to 59.5, and add a new Ramp 63 across from Scrag

Cedar Road. (Note: All action alternatives involve relocating Ramp 2 and building a new ramp at 32.5). New interdunal roads would facilitate access to locations that have either seasonal or year-round restrictions on ORV use. Locations for interdunal roads would include: inland of South Beach from Ramp 45 to Ramp 49, with one new ramp at 47.5 and on Hatteras Inlet Spit extending from the intersection of Pole and Spur Roads southwest toward the inlet, stopping at least 100 meters from the inlet. Existing soundside access points would remain open, with better maintenance than currently occurs. Signage/posts would be installed at the soundside parking areas and boat launch areas to prevent damage to vegetation and other soundside resources. This alternative also involves the addition of new parking areas with associated foot trails or boardwalks to facilitate pedestrian access at a number of locations.

ORV routes and vehicle-free areas under this alternative would still be subject to temporary resource closures established when protected-species breeding behavior warrants and/or if new habitat is created. Outside the breeding season, vehicle-free areas throughout the Seashore would provide relatively less-disturbed foraging, resting, and roosting habitat for migrating and wintering birds. These areas would be open to pedestrians for recreational use. In addition, resource closures at spits and points would also be established, based on an annual nonbreeding habitat assessment conducted after the breeding season, to provide areas of nonbreeding shorebird habitat with reduced human disturbance.

Designated ORV routes would be open to ORV use 24 hours a day from November 16 through April 30. From May 1 through November 15, all potential sea turtle nesting habitat (ocean intertidal zone, ocean backshore, and dunes) would be closed to non-essential ORV use from 9:00 p.m. until 7:00 a.m. to provide for sea turtle protection and allow enforcement staff to concentrate their resources during the daytime hours; however, from September 16 through November 15 selected ORV routes with no turtle nests remaining (as determined by the NPS) would reopen to night driving, subject to the terms and conditions established under the ORV permit.

ORV safety closures could be designated as conditions warrant and would be evaluated for reopening by NPS law enforcement staff on a weekly basis. ORV safety closures would be applicable only to ORV access; pedestrian and commercial fishing access would generally be maintained through safety closures. Alternative F provides specific guidelines for establishing and removing safety closures. Additional ORV-driving requirements would be implemented to provide for increased pedestrian safety in all areas open to ORV use, including the village beaches when open to ORV use. Under the carrying capacity requirement for Alternative F, the maximum number of vehicles allowed on any particular ORV route during peak use periods would be the linear distance of the route divided by 6 meters (20 feet) per vehicle (i.e., the equivalent of 260 vehicles per mile). In addition, parking within ORV routes would be allowed, but restricted to one vehicle deep. These measures would reduce safety concerns associated with overcrowding, such as at peak use periods during major summer holidays and weekends.

Alternative F would include an ORV permit system, with no limit on the number of permits issued. Permit fees would be determined based on the recovery of NPS costs incurred in implementing the ORV management plan that are not already covered by the Seashore's base operating funds. Expected permit fees would be similar to Alternative E due to the level of management required for implementation. Both annual and 7-day permits would be available under this alternative. To obtain a permit, ORV owners would be required to complete a short education program in person at an NPS facility. Vehicle owners would need to sign for their permit to acknowledge that they

understand the rules and that all drivers of the permitted vehicle will abide by the rules and regulations governing ORV use at the Seashore. A violation of the rules and regulations by the owner or driver of the ORV could result in revocation of the vehicle permit, and the owner/permittee would not be allowed to obtain another permit for any vehicle for a specified period of time. In addition to the mandatory education program for ORV users, the NPS would establish a voluntary resource-education program targeted toward non-ORV beach users.

Designated ORV routes under Alternative F are shown in the attached maps and described in Table 7-1 (attached). Details of the related ORV management actions under this alternative are described in Table 8 (attached).

The year-round designation of vehicle-free areas and ORV routes, in conjunction with the revised species management strategies described in Table 10-1 (attached) would provide for species protection during both the breeding season and the nonbreeding season. Species Management Areas (SMAs), as described for action alternatives C-E, would not be designated under Alternative F and one set of standard buffers, similar to the ML2 buffers in the other action alternatives, would be utilized. During the shorebird breeding season, pedestrian shoreline access below the high-tide line would be permitted in front of (i.e., seaward of) pre-nesting areas until breeding activity is observed, then standard buffers for breeding activity would apply. Pre-nesting areas would generally be closed March 15 through July 31 (or August 15 if black skimmers are present), or until two weeks after all chicks have fledged and breeding activity has ceased, whichever comes later.

NPS staff will follow guidance in the NCWRC handbook and FWS Loggerhead Sea Turtle Recovery Plan, which is to allow sea turtle nests to incubate at their original location if there is any reasonable likelihood of survival. Relocation of a nest would be considered only as an option of last resort. Accommodation of ORV access shall not be a factor in determining whether a nest needs to be relocated. When relocation is determined to be necessary, nests would be moved toward the dunes immediately behind the original nest location (when possible). Narrow beaches or beaches without nearby dunes (i.e. points and spits) may necessitate relocations to adjacent areas above the high tide line that are free of vegetation. If a choice for a relocation site must be made among adjacent areas that are equally suitable biologically, then accommodation of ORV access to a popular location may be considered as a factor in choosing an appropriate relocation site. An adjacent site that is less suitable biologically shall not be selected for a relocated nest to accommodate ORV access.

Every five years the NPS would conduct a systematic review of the species management measures identified in this alternative as being subject to periodic review. This could result in changes to those management actions in order to improve effectiveness.

#### **SELECTION OF ALTERNATIVE F AS THE NPS PREFERRED ALTERNATIVE (FEIS)**

To identify the preferred alternative, the planning team evaluated each alternative based on its ability to meet the plan objectives and the potential impacts on the environment. Alternative D was identified as the environmentally preferable alternative. Alternative F was identified as the NPS preferred alternative. Based on public and agency comments received on the draft plan/EIS (DEIS), the NPS has revised the Alternative F as described in the final plan/EIS (FEIS).

Both Alternatives D and F would meet most of the plan objectives either fully or to a large degree. In terms of species protection, both alternatives would provide the necessary buffers, as well as the proactive establishment of prenesting areas and protection of breeding and nonbreeding shorebird habitat. Seasonal night-driving restrictions would be similar under both of these alternatives, offering comparable protection to sea turtles and foraging bird species. However, Alternative F was chosen as the preferred alternative because it would provide not only effective resource protection but also would provide Seashore visitors with more diverse options for access and recreational use. Providing approximately 26 miles of the Seashore that are designated vehicle free areas (VFA) year-round, while 28 miles are open to ORV use year-round (subject to resources closures), would provide for a greater diversity of visitor use.

Although designation of all SMAs as year-round ORV closures under Alternative D would provide the necessary resource protection, the use of MLI buffers in all SMAs would preclude all visitor access in these areas during the breeding season. If protected species do not utilize portions of the SMAs or if conditions of the Seashore change and habitat changes, Alternative D does not provide as much flexibility for the Seashore to manage visitor access as Alternative F, which provides for designated ORV routes that would remain open unless protected species activity results in a resource closure. In addition to providing species protection both during the breeding and nonbreeding seasons, Alternative F would also provide more flexibility and range of experience for visitor use and would enhance access to both VFAs and designated ORV routes by establishing strategically located new parking areas, pedestrian trails, interdunal routes, and ORV ramps. Because Alternative F provides for a greater variety of uses throughout the Seashore, it would have less of an impact on the socioeconomics of the area as well. As detailed in the impact analysis in Chapter 4, Alternative D would have greater impacts to the economy of the villages within the Seashore. In addition, Alternative F also would mitigate the potential economic and visitor impacts by encouraging alternative forms of access (water taxi and beach shuttle) to certain popular areas during times when they may be open for pedestrian use, but the access to the area may be closed due to a resource closure. By providing an alternate means for accessing these areas, beneficial economic impacts would be expected. Alternative F is also selected as the NPS preferred alternative because it incorporates some concepts and measures that originated in or were discussed during the negotiated rulemaking process, providing more public input. For these reasons, Alternative F was selected as the preferred alternative.

Alternatives C and E would meet the objectives from a moderate to a large degree, but to a lesser degree when compared to Alternative D because of the larger areas of recreational access allowed. By allowing more access to various areas of the Seashore during the breeding season of threatened, endangered, and species of special concern, the level of protection offered to these species would be less than Alternative D.

Alternatives A and B, on the whole, would meet the objectives from some degree to a moderate degree. These alternatives would not meet key objectives (such as those related to providing protection for threatened and endangered species and minimizing impacts to other natural resources at the Seashore) as well as the action alternatives. Because these alternatives would not meet the objectives to a large degree, they were not selected as the preferred alternative.



**DETERMINATION OF EFFECT FOR ALTERNATIVE F (FEIS)**

**Piping Plover.** Under the ESA, the actions taken under Alternative F may affect / are likely to adversely affect piping plover due to the minor adverse effects from monitoring and surveying and the minor to moderate impacts from ORV and other recreational use. Under Alternative F, year-round and seasonal VFAs would provide protection for migrating piping plover and plover establishing territories early in the season. However, recreational uses would still occur in the vicinity of plovers during breeding season in areas such as Cape Point and South Point. Under Alternative F, nonessential ORV traffic would be prohibited from all areas (other than the soundside access areas), from 9:00 p.m. to 7:00 a.m. from May 1 to November 15. From November 16 to April 30, ORV access would be allowed 24 hours per day in designated ORV routes for vehicles displaying a valid ORV permit. The NPS retains the discretion to limit night driving to certain areas or routes, based on resource protection considerations. These restrictions to night driving would provide long-term minor to moderate benefits to piping plovers but could still result in long-term minor adverse impacts during the time when night driving is allowed by permit. These impacts would result in a finding of may affect / are likely to adversely affect piping plovers under the ESA because the action would result in direct or indirect impacts to the species that are not discountable, insignificant, or beneficial. And while there may be beneficial impacts from surveys and monitoring, and management of recreation, the actions under Alternative F would also likely cause some adverse effects.

Under the ESA, the actions taken under Alternative F may affect / are not likely to adversely affect designated critical habitat for wintering piping plover due to the establishment of VFAs which would result in the closure of approximately 26 miles of shoreline to ORV use year round. These closures would provide less-disturbed foraging, resting, and roosting areas for migrating and wintering shorebirds and would protect the primary constituent elements of intertidal sand beaches and ocean backshores. These year-round VFAs along the ocean shoreline would be managed to allow for pedestrian use. Nonbreeding resource closures would also be established at the points and spits based on an annual habitat assessment, which would provide protection for wintering plover habitat. There would be some benefit to the critical habitat from the implementation of seasonal night-driving restrictions although these restrictions would only apply between May 1 and November 15, which would not cover the majority of time when the wintering population of piping plover is present at the Seashore.

Although there would be construction of ORV access ramps, parking areas, and interdunal roads, none of these improvements would impact any of the primary constituent elements of designated critical habitat for wintering piping plover.

Implementation of Alternative F would result in a finding of may affect / is not likely to adversely affect designated critical habitat for wintering piping plover under the ESA because the action would result in impacts to the critical habitat for the species that are discountable, insignificant, or beneficial. Actions under Alternative F would result in greater protection of the primary constituent elements of suitable interior habitat, spits, intertidal sand beaches, and ocean backshore, primarily as a result of the establishment of nonbreeding resource closures, and approximately 26 miles of year-round VFAs.

**Sea Turtles.** Under Alternative F, resources management activities would result in long-term moderate to major benefits due to the protection provided to sea turtles from daily surveys for nests

during the sea turtle nesting season (May 1 – September 15) and installation of closures around each nest found, expanding the closures and installing light filter fencing around the nests during the hatch window, relocating nests from areas prone to erosion or frequent flooding, installing turtle friendly lighting on the Seashore and working with the USFWS, the NCWRC, and Dare County to encourage the development of a turtle friendly lighting educational program or a turtle friendly lighting ordinance. The benefits of establishing prenesting closures for birds combined with other areas that are closed to ORVs use either year-round or seasonally such as some of the village beaches and Bodie Island Spit, would close approximately 39 miles of Seashore beach to ORV use during the turtle nesting and hatching season. These closures would minimize potential impacts to nesting turtles, turtle nests and turtle hatchlings in these areas; however, the benefits would be tempered somewhat by the fact that the prenesting areas would only be closed to ORV use from March 15 through July 31, which does not encompass the entire turtle nesting season and ORV corridors would be provided seaward of the prenesting closures at Cape Point and South Point.

ORV and other recreational use would have long-term minor to moderate adverse impacts due to the earlier re-opening of prenesting closures (after shorebird breeding activity has concluded), resulting in increased recreational access throughout the Seashore during the sea turtle nesting season. ORV and other recreational use would have impacts on sea turtles by affecting the beach profile and substrate characteristics in ways that reduce suitability for nesting and hatching success and likely continued closure violations and vandalism. Prohibiting recreational ORV use from 9:00 p.m. to 7:00 a.m. would greatly reduce potential impacts to adult and hatchling turtles caused by night driving. Opening select ORV routes from September 16 through November 15, subject to terms and conditions of a permit, only in areas where there are no turtle nests, would protect turtle hatchlings. Beach fires would still be allowed, but would be prohibited year-round between the hours of 10:00 p.m. and 6:00 a.m., and during the turtle nesting season would be restricted to areas in front of Coquina Beach and Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, Hatteras Village, and the Ocracoke day use areas. While a permit would be required to have a beach fire, allowing beach fires would still cause adverse impacts to adult and hatchling turtles through light pollution. Under the ESA these impacts would result in a finding of may affect/are likely to adversely affect sea turtles because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant, or beneficial. Though there would be beneficial impacts from resources management activities and restrictions on nonessential recreational ORV nighttime driving, the actions under Alternative F would also likely cause adverse effects.

**Seabeach Amaranth.** Under Alternative F, resources management activities would result in long-term minor to moderate benefits to seabeach amaranth if plants are detected in the Seashore. Benefits would be due to the protection provided by installing closures around plants that are detected, surveying for plants in August when they are visible, installing prenesting and other closures for nesting bird species that overlap seabeach amaranth habitat, and surveying bird and turtle closures for plants prior to reopening these closures to ORV and other recreation use. Approximately 39 miles of beach would be protected by seasonal and year-round VFAs, including Bodie Island Spit. Cape Point and South Point would have an ORV corridor seaward of the prenesting closures that may be closed depending on breeding shorebird buffers. These closures would protect seabeach amaranth and its habitat during these timeframes, but the seasonal closures would allow ORV impacts to occur during the seasons when these areas are reopened.

ORV and other recreational use would have long-term minor to moderate adverse impacts on seabeach amaranth as plants may go undetected and would therefore be unprotected from recreation

use of the Seashore. Seasonal restrictions on ORV use at seabeach amaranth and shorebird prenesting closures would help protect the species from impacts in those areas. Some additional seabeach amaranth habitat would be protected, for in all areas open to ORV use that are not in front of villages, a 32.8-foot (10-meter) wide ORV-free zone would be created in the ocean backshore wherever there is sufficient beach width to allow an ORV corridor of at least 98.4 feet (30 meters) above the mean high tide line. Constructing four new beach access ramps and relocating two existing ramps would eliminate some potential habitat for the species. During seabeach amaranth's dormant season more areas of the Seashore are open to ORV use, and while there would be no plants to be impacted, seeds of the plant could be either pulverized or buried by ORVs driving over them. Under the ESA, these impacts would result in a finding of may affect / likely to adversely affect for seabeach amaranth because the actions would result in direct or indirect impacts to the species that are not discountable, insignificant or beneficial. Though there would be beneficial impacts from resources management activities, the actions under Alternative F would also likely cause adverse effects.

#### UPDATED RESOURCE INFORMATION

##### 2010 Piping Plover Breeding Summary:

Total Nests to Date	Active Nests	Total Nests Hatched	Total Nests Lost	Total Eggs Hatched	Unfledged Chicks	Lost Chicks	Fledged Chicks
16*	0	11	5	31	0	16	15

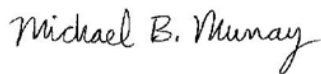
\* This counts the three egg nest on Ocracoke, found 6/29, as a separate nest, although it is believed that this nest may be a clutch continuation from Nest #15, which was predated by ghost crabs 6/23.

2010 Sea Turtle Nesting Summary: 153 nests (146 loggerhead; 7 green); 112 false crawls

2009 and 2010 Seabeach Amaranth Summary: zero (0) plants found each year

In closing, we look forward to receiving your Biological Opinion on the FEIS preferred alternative (Alternative F). We are available for a conference call or to meet with you as needed during the Section 7 consultation process. Please contact Cyndy Holda at 252-473-2111, ext. 148 to schedule a phone call or meeting.

Sincerely,



Michael B. Murray  
Superintendent

Attachments



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

REGION 4  
 SAM NUNN  
 ATLANTA FEDERAL CENTER  
 61 FORSYTH STREET  
 ATLANTA GEORGIA 30303-8960

May 10, 2010

Michael B. Murray, Superintendent  
 Cape Hatteras National Seashore  
 1401 National Park Drive  
 Manteo, North Carolina 27954

**SUBJECT:** Draft Off-Road Vehicle Management Plan/Environmental Impact Statement for the Cape Hatteras National Seashore in Manteo, North Carolina; CEQ Number 20100072

Dear Mr. Murray:

The U.S. Environmental Protection Agency (EPA) has reviewed the referenced Draft Off-Road Vehicle (ORV) Management Plan/Environmental Impact Statement (EIS) in accordance with its responsibilities under Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act. The purpose of this ORV management plan and Draft EIS is to evaluate the impacts of several alternatives for regulations and procedures that would carefully manage ORV use/access at Cape Hatteras National Seashore (CHNS) in Manteo, North Carolina, for the next 10 to 15 years. The National Park Service (NPS) is the lead federal agency for the proposed action.

NPS management plans represent the broadest level of planning conducted by the NPS and are intended to provide overall guidance for making informed decisions about future conditions in national parks. The outcome of the Draft EIS will also form the basis for a special regulation to manage ORV use at CHNS to protect and preserve natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote the safety of all visitors. The Draft EIS assesses the environmental impacts of six alternatives (A, B, C, D, E and F). Two no-action alternatives were analyzed to capture the full range of management actions that occurred and are currently occurring at CHNS. Alternative A represents continuation of management based on the 2007 Interim Protected Species Management Strategy. This management strategy was challenged in court and subsequently modified by a consent decree signed in 2008. Alternative B represents continuation of management as described in the consent decree.

Four action alternatives were evaluated. Alternative C would provide visitors to CHNS with a degree of predictability regarding areas available for ORV use, as well as vehicle-free areas, based largely on the seasonal resource and visitor use characteristics of various areas in CHNS. Under Alternative D, visitors to CHNS would have the maximum amount of predictability regarding areas available for ORV use and vehicle-free areas for pedestrian use with most areas having year-round, rather than seasonal designations. Restrictions would be

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applied to larger areas over longer periods of time to minimize changes in designated ORV and non-ORV areas over the course of the year. Alternative D is identified as the environmentally preferable alternative. Alternative E would provide for the greatest amount of flexibility in access for both ORV and pedestrian users, including allowing some level of overnight vehicle use at selected points and spits. Where greater access is permitted, often additional controls or restrictions would be in place to limit impacts on sensitive resources. Alternative F includes a similar amount of access as provided under Alternative E, but with different limitations on allowable times and dates of ORV access. Alternative F is identified as the NPS preferred alternative.

CHNS provides important habitats and plays a vital role in the survival of many wildlife species, including a number of rare, unique, threatened and endangered species. ORV use along the CHNS can disrupt habitat or cause a loss of habitat in high use areas. Habitat loss due to ORV use could also occur indirectly as a result of the noise and disturbance from this activity. A number of these species have had historically low reproductive rates. The lack of large undisturbed areas for successful breeding contributes to these low rates at CHNS. Frequent human disturbance can cause the abandonment of nest sites as well as direct loss of eggs and chicks.

Vegetated wetlands along the soundside and interior of the islands are susceptible to direct damage from ORV use. Estuarine wetlands are often denuded of vegetation when ORVs are driven and parked along the soundside shoreline. Also, many of the interior or interdunal roads are located near wetland areas that are often not noticeable to visitors. When standing water is present along these ORV routes, visitors often drive over adjacent vegetated areas in an attempt to avoid the standing water. This results in wider roads, new vehicle routes, and crushed or dead vegetation. Construction of new parking areas is also of concern for wetlands that may be located nearby.

In general, EPA strongly supports the restriction of use of ORVs to specifically-designated routes that are clearly posted as such and monitored accordingly and to eliminate the use of ORVs within ecologically sensitive areas. Therefore, EPA supports the inclusion of a number of elements common to all the action alternatives that address this interest, including: 1) the establishment of areas that allow ORV use and vehicle-free (non-ORV) areas where ORV use is prohibited; 2) a requirement that ORV operators must drive only on marked ORV routes and must comply with posted restrictions; 3) increased education and outreach to support this requirement; 4) the establishment of Species Management Areas (SMAs) for protection of threatened and endangered species during the breeding and nonbreeding seasons; 5) a requirement that ORV operators must secure vehicular permits for use of designated ORV routes; and 6) the establishment of ORV carrying capacity limits for certain sensitive locations at CHNS. All of these measures when taken together should serve to minimize impacts to a number of the sensitive resources described above. However, the primary difference between the action alternatives is the amount of access each allows for ORV use and the degree of flexibility in establishing the operating parameters associated with the designated ORV routes.

EPA's primary concern about the preferred alternative (Alternative F) is that it designates the second-highest amount of shoreline miles for ORV use and includes the greatest number of new (or relocated) access ramps, parking areas, and new roads and trails among the action alternatives. There appears to be a significant number of existing access points and roads on CHNS, and it is unclear from the Draft EIS of the need for this additional access. These trails and roads will likely lead to additional potential impacts to soils and wetlands, particularly from ORV use in and around vegetated wetlands on the soundside and along interior ORV routes. Alternative F also allows for greater flexibility in the establishment and enforcement of buffer zones during the breeding season, night-time driving restrictions, and has higher carrying capacities in certain areas than other alternatives, which could lead to the disruption to sensitive and endangered wildlife. Alternative F will also require significantly more resources and operating costs to fully manage the greater flexibility that it allows while attempting to ensure environmental resources are adequately protected. EPA has concerns that the NPS will not have the ability to fully enforce and maintain the protection of sensitive resources if Alternative F is implemented.

EPA agrees with the NPS designation of Alternative D as the environmentally preferable alternative. Alternative D includes the greatest number of shoreline miles closed to ORVs and the least number of miles designated as ORV routes. It also has the least number of new or relocated access ramps, new parking lots, and new ORV interdunal roads. It also provides the greatest level of protection for sensitive species through the establishment of SMAs that involves larger and longer species protection buffers and would not allow pedestrian access once prenesting closures are established. It employs the most restrictive seasonal night-driving regulations to be protective of sea turtle nesting and hatching during that time. It also is the least expensive of any of the action alternatives and requires the least amount of personnel to manage implementation due to its more predictable design of ORV route designation. Therefore, we recommend reconsideration of this alternative as a viable action alternative.


However, EPA understands the need of the NPS to appropriately balance access to CHNS from multiple users based on its enabling legislation and other regulations. If the impacts of implementing Alternative D are considered significantly adverse on other users and socioeconomic factors, EPA recommends implementation of Alternative C, or perhaps some other hybrid alternative, as a reasonable compromise to achieve more access and greater flexibility with regard to ORV designation than Alternative D. Alternative C would provide greater protections for sensitive species with larger seasonal buffers, lower carrying capacities, and much fewer new access ramps, parking lots, and new roads as compared to Alternative F. Alternative C also appears to have approximately similar socioeconomic impacts as the preferred alternative.

A number of mitigation measures are proposed in the Draft EIS to avoid or minimize potentially adverse impacts from implementation of the ORV management plan and to ensure that the park's natural and cultural resources are protected and preserved for future visitors. EPA supports inclusion of these mitigation measures as part of the new management plan and subsequent ORV regulations for CHNS. These measures represent significant monitoring and adaptive management activities to ensure that the increase in ORV access areas and likely

subsequent increase in recreational usage of CHNS do not negatively impact natural and cultural resources.

We rate this document EC-2 (Environmental Concerns). Enclosed is a summary of definitions for EPA ratings. We have concerns that the proposed action identifies the potential for impacts to the environment that should be avoided/minimized. EPA recommends selection of other reasonably available alternatives that are analyzed in the Draft EIS which could reduce the environmental impacts of the proposal. We appreciate the opportunity to review the proposed action. Please contact Ben West at (404) 562-9643 if you have any questions or want to discuss our comments.

Sincerely,



Heinz J. Mueller, Chief  
NEPA Program Office  
Office of Policy and Management

Enclosure

cc: National Park Service, Southeast Regional Office

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
ENVIRONMENTAL IMPACT STATEMENT (EIS) RATING SYSTEM CRITERIA**

EPA has developed a set of criteria for rating Draft EISs. The rating system provides a basis upon which EPA makes recommendations to the lead agency for improving the draft.

RATING THE ENVIRONMENTAL IMPACT OF THE ACTION

- § LO (Lack of Objections): The review has not identified any potential environmental impacts requiring substantive changes to the preferred alternative. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposed action.
- § EC (Environmental Concerns): The review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact.
- § EO (Environmental Objections): The review has identified significant environmental impacts that should be avoided in order to adequately protect the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). The basis for environmental objections can include situations:
  1. Where an action might violate or be inconsistent with achievement or maintenance of a national environmental standard;
  2. Where the Federal agency violates its own substantive environmental requirements that relate to EPA's areas of jurisdiction or expertise;
  3. Where there is a violation of an EPA policy declaration;
  4. Where there are no applicable standards or where applicable standards will not be violated but there is potential for significant environmental degradation that could be corrected by project modification or other feasible alternatives;
  5. Where proceeding with the proposed action would set a precedent for future actions that collectively could result in significant environmental impacts.
- § EU (Environmentally Unsatisfactory): The review has identified adverse environmental impacts that are of sufficient magnitude that EPA believes the proposed action must not proceed as proposed. The basis for an environmentally unsatisfactory determination consists of identification of environmentally objectionable impacts as defined above and one or more of the following conditions:
  1. The potential violation of or inconsistency with a national environmental standard is substantive and/or will occur on a long-term basis;
  2. There are no applicable standards but the severity, duration, or geographical scope of the impacts associated with the proposed action warrant special attention; or
  3. The potential environmental impacts resulting from the proposed action are of national importance because of the threat to national environmental resources or to environmental policies.

RATING THE ADEQUACY OF THE ENVIRONMENTAL IMPACT STATEMENT (EIS)

- § 1 (Adequate): The Draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.
- § 2 (Insufficient Information): The Draft EIS does not contain sufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the Draft EIS, which could reduce the environmental impacts of the proposal. The identified additional information, data, analyses, or discussion should be included in the Final EIS.
- § 3 (Inadequate): The Draft EIS does not adequately assess the potentially significant environmental impacts of the proposal, or the reviewer has identified new, reasonably available, alternatives, that are outside of the spectrum of alternatives analyzed in the Draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. The identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. This rating indicates EPA's belief that the Draft EIS does not meet the purposes of NEPA and/or the Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised Draft EIS.





North Carolina Department of Cultural Resources  
State Historic Preservation Office  
Peter B. Sandbeck, Administrator

Beverly Eaves Perdue, Governor  
Linda A. Carlisle, Secretary  
Jeffrey J. Crow, Deputy Secretary

April 6, 2010

Mike Murray  
Cape Hatteras National Seashore  
1401 National Park Drive  
Manteo, NC 27954

✓	SUPERINTENDENT	MM
	DEPUTY SUPT.	
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	RESOURCE MGMT.	
✓	Cultural Res.	
	INTERPRETATION	
	ADMINISTRATION	
	PERSONNEL	
	VISITOR SERVICES	
	Division of Historical Resources	
	David Brooks, Director	
	SPEC. PARK USES	
	MAINTENANCE	

Re: Off-Road Vehicle Management Plan at Cape Hatteras National Seashore, Dare County, ER 10-0173

Dear Superintendent Murray:

Thank you for your letter of March 4, 2010, concerning the above project.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

Sincerely,

*Renee Gledhill-Earley*  
Peter Sandbeck



North Carolina Department of Environment and Natural Resources  
Division of Coastal Management

Beverly Eaves Perdue  
Governor

James H. Gregson  
Director

Dee Freeman  
Secretary

May 7, 2010

Michael B. Murray, Superintendent  
Outer Banks Group  
National Park Service  
1401 National Park Drive  
Manteo, North Carolina 27954-9451

**SUBJECT: CD10-028** – Proposed Implementation of an Off-Road Vehicle Management Plan at the Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina (DCM#20100034)

Dear Mr. Murray:

We received your consistency determination on March 10, 2010 for the proposed implementation of Alternative "F" as the Off-Road Vehicle Management Plan (Plan) for the Cape Hatteras National Seashore (Seashore), Dare and Hyde Counties, North Carolina. Alternative "F" is detailed in the document "*Cape Hatteras National Seashore, Off Road Vehicle Management Plan/Environmental Impact Statement*" (March 2010). According to the submission, the National Park Service (NPS) proposes a variety of management measures and construction projects related to the management of off-road vehicle (ORV) usage at the Seashore. The NPS noted in its consistency submission that the NPS has not yet determined the exact location for the proposed improvements and is consequently not seeking consistency concurrence for these improvements at this time. Supplementary consistency reviews would be conducted for specific projects involving construction when final plans have been formulated. The Plan, when finalized, is intended to guide the management of ORV usage at the Seashore for the next 10 to 15 years.

North Carolina's coastal zone management program consists of, but is not limited to, the Coastal Area Management Act, the State's Dredge and Fill Law, Chapter 7 of Title 15A of the North Carolina Administrative Code, and the land use plan of the County and/or local municipality in which the proposed project is located. It is the objective of the Division of Coastal Management (DCM) to manage the State's coastal resources to ensure that proposed Federal activities would be compatible with safeguarding and perpetuating the biological, social, economic, and aesthetic values of the State's coastal waters.

To solicit public comments, DCM circulated a description of the proposed project to State agencies that would have a regulatory interest. No comments asserting that the proposed activity would be inconsistent with the State's coastal management program were received. Nevertheless, a comment

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was received from the North Carolina Division of Marine Fisheries (NCDMF) expressing concern with the Hatteras Inlet Spit and North Ocracoke Spit areas being closed to ORV use. A copy of the responses received has been attached for reference.

DCM has reviewed the submitted information pursuant to the management objectives and enforceable policies of Subchapters 7H and 7M of Chapter 7 of Title 15A of the North Carolina Administrative Code and concurs, as conditioned below, that the proposed Federal activity is consistent, to the maximum extent practicable, with the relevant enforceable policies of North Carolina's coastal management program.

In order to be found consistent with North Carolina's coastal management, the NPS (Applicant) shall comply with the following condition of concurrence.

- In the event that impacts to waters of the U.S. are proposed, the Applicant, prior to initiating any land or water disturbing activities, shall obtain a Section 401 Water Quality Certification from the NC Division of Water Quality. The Applicant shall comply with the requirements of the Section 401 Water Quality Certification. A copy of the certification shall be forwarded to DCM.
- In the event that land disturbing activities (on a per-event-basis) exceed one acre; the Applicant, prior to initiating any land disturbing activities, shall obtain the approval of the NC Division of Land Resources of an erosion and sedimentation control plan. The Applicant shall comply with the requirements of the approved erosion and sedimentation control plan. A copy of the plan approval shall be forwarded to DCM.
- The Applicant, prior to initiating any land disturbing activities that will increase or otherwise modify impervious surface area, shall contact the NC Division of Water Quality to determine whether a Stormwater Permit would be required. If a stormwater permit is required, the Applicant shall obtain a Stormwater permit before implementing construction. The Applicant shall comply with the requirements of the stormwater permit. A copy of the stormwater permit shall be forwarded to DCM.
- The Applicant (prior to initiating any construction project contemplated in the Plan) shall submit (for the review and concurrence of DCM) final site plans for supplementary consistency review. Proposed construction activities must receive a consistency concurrence from DCM before they can be implemented.
- The Applicant shall adhere to any mitigation measures described in the consistency submission and the environmental assessment "*Cape Hatteras national Seashore, Off Road Vehicle Management Plan/Environmental Impact Statement*" (March 2010) to the extent that they do not conflict with any of the conditions of concurrence stated above.

This letter of concurrence is contingent on the Federal agency agreeing with the condition stated above. In the event that the Federal agency does not agree with the condition of concurrence, this letter effectively becomes a letter of State "*Objection*". Should the Federal agency not agree with the condition stated above, a letter of non-agreement should be sent to DCM. The procedures of 15 CFR 930.43 would then need to be followed.

To address the concerns of the NCDMF regarding the planned ORV closure at the Hatteras Inlet Spit and North Ocracoke Spit areas, DCM recommends that the NPS consult with NCDMF regarding possible seasonal and/or limited access opportunities since these areas are important for recreational and commercial fishing.

Should the proposed action be modified, a revised consistency determination could be necessary. This might take the form of either a supplemental consistency determination pursuant to 15 CFR 930.46, or a new consistency determination pursuant to 15 CFR 930.36. Likewise, if further project assessments reveal environmental effects not previously considered by the proposed development, a supplemental consistency certification may be required. If you have any questions, please contact Stephen Rynas at 252-808-2808. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,



Doug Huggett  
Manager, Major Permits and Consistency Unit

Cc: Frank Jennings, Division of Coastal Management  
David Moya, Division of Coastal Management  
Megan Carfioli, National Park Service



## North Carolina Department of Environment and Natural Resources

Division of Marine Fisheries

Dr. Louis B. Daniel III

Director

Beverly Eaves Perdue  
GovernorDee Freeman  
Secretary

## MEMORANDUM

TO: Stephen Rynas, DCM

THROUGH: Anne Deaton, Chief Habitat Section

FROM: Sara E. Winslow, Northern District Manager  
Kevin Hart, Habitat Permit ReviewerSUBJECT: DCM #20100034 -Draft Cape Hatteras National Seashore Off-Road Vehicle Management  
Plan/Environmental Impact Statement

DATE: April 23, 2010

The North Carolina Division of Marine Fisheries has reviewed the DEIS – Cape Hatteras National Seashore Off-Road Vehicle Management Plan and submits the following comments pursuant to General Statute 113-131.

Alternative F – Management Based on Advisory Committee Input is the National Park Service (NPS) Preferred Alternative. Many of the actions in this alternative were from the Negotiated Rulemaking Advisory Committee's input, which the Division served on. This alternative is designed to provide visitors to the Seashore with a wide variety of access opportunities for both off road vehicle (ORV) and pedestrian users. Alternative F would re-open some Species Management Areas (SMAs) to ORV use earlier and for a longer time, once shorebird breeding was concluded, than the other alternatives. Under this alternative, Hatteras Inlet Spit and North Ocracoke Spit would be non-ORV areas year-round, with interdunal roads that allow access to the general area, but not the shoreline. SMAs would be closed to ORV use from March 15 through July 31, except South Point and Cape Point would have initial ORV access corridors and Bodie Island Spit would have an initial pedestrian access corridor at the start of the breeding season, with increased species monitoring in these areas. These access corridors would close when breeding activity is observed. All village beach closures would vary under Alternative F with the northern beaches closed to ORV use from May 15 – September 15 and southern beaches closed from March 1 – November 30. Seasonal night-driving restrictions would be established from one hour after sunset until after turtle patrol (NPS) has checked the beaches in the morning, approximately one-half hour after sunrise. There are numerous elements that are common between all alternatives. Several of the elements - commercial fishing vehicles would be exempted from some ORV restrictions, when not in conflict with resource protection; ORV permits would be required, establish a carrying capacity, ORV routes and areas would be officially designated, etc.

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The Division supports the majority of Alternative F – Management Based on Advisory Committee Input – elements. However, this agency expresses concern with the Hatteras Inlet Spit and North Ocracoke Spit area being designated non-ORV areas year round. These areas are very important to the recreational and commercial fishing public and at least a seasonal access should be considered, while still maintaining protection of these areas utilized by the various listed and species of concern.

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North Carolina Department of Environment and Natural Resources  
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Secretary

**MEMORANDUM**

March 11, 2010

**TO:** Claudia Jones  
Division of Coastal Management - Elizabeth City  
1367 US 17 South  
Elizabeth City, NC 27909-7634

**FROM:** Stephen Rynas, AICP; Federal Consistency Coordinator

**SUBJECT:** Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

**LOCATION:** Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

This document is being circulated for consistency review and comment by **April 9, 2010**. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596>. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at [stephen.rynas@ncdenr.gov](mailto:stephen.rynas@ncdenr.gov).

- REPLY:**
- No Comment.
  - This office supports the project as proposed.
  - Comments to this project are attached.
  - This office objects to the project as proposed.

Signed: M. Claudia Jones Date: 4/5/10

**CORRECTIONS:** Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM TO:**

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421

400 Commerce Ave., Morehead City, NC 28557-3421  
Phone: 252-808-2808 | FAX: 252-247-3330 Internet: [www.nccoastalmanagement.net](http://www.nccoastalmanagement.net)  
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North Carolina Department of Environment and Natural Resources  
Division of Coastal Management

Beverly Eaves Perdue  
Governor

James H. Gregson  
Director

Dee Freeman  
Secretary

TO: Stephen Rynas, Federal Consistency Coordinator

FROM: M. Claudia Jones, Coastal Management Representative, NE District *mcj*

THROUGH: Frank A. Jennings, III, District Manager, NE District *F.A.J.*

DATE: April 5, 2010

SUBJECT: DCM #20100034 Proposed Implementation of the National Park Service Off-Road Vehicle Management Plan for the Cape Hatteras Nations Seashore DEIS

Comments: The National Park Service (NPS) has submitted a draft environmental impact statement (DEIS) on the Cape Hatteras National Seashore Off-road Vehicle Management Plan. The plan evaluates the impacts six alternatives, including two no action alternatives. These comments are in response to Alternative F, the NPS preferred alternative.

Overall, I do not see any specific inconsistencies with this proposal and the State's Coastal Management Program. However, there are referenced access areas/ramps that are proposed to be created or enlarged that will need to be individually reviewed for Federal Consistency once more detailed information regarding location, size and any resource impacts are known.

Specific areas referred to in the DEIS include:

- Relocation of Ramp 2
- Pedestrian trail and new parking at Oregon Inlet Camp Ground
- Parking at Ramp 23 expanded
- New ramps with parking at 24 and 26
- New ramp with parking established at 32.5
- New Ramp 39 across from Haulover and new soundside parking at Kite Point
- NPS (or Dare County) to establish new parking at the old Buxton Coastguard Station site

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DIVISION OF NATURAL RESOURCES PLANNING & CONSERVATION  
Department of Environment and Natural Resources

April 8, 2010

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APR 8 2010

Morehead City DCM

**MEMORANDUM**

TO: Stephen Rynas, NC DCM Federal Consistency Coordinator

FROM: Linda Pearsall, Director

SUBJECT: DEIS B Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore County; Dare and Hyde counties

REFERENCE: DCM#20100034 Proposed Implementation of An Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore

The Natural Heritage Program supports the project as proposed; either Preferred Alternative D or Alternative F are acceptable to the Program. Alternative D is the Environmentally Preferred Alternative, which has a more simplified and fixed set of regulations that increase the predictability of areas for usage by the public. Alternative F is the National Park Service Preferred Alternative, which incorporates more seasonal and geographic flexibility to manage both the natural resources and the ORV/visitor usage of the seashore.

The DEIS indicates that both Alternatives D and F will have beach closures for Species Management Areas, which also includes protection for bird nesting areas as well as areas for protecting the Federally Threatened seabeach amaranth (*Amaranthus pumilus*). Additional regulations, such as regarding night driving, are proposed for the Federally Threatened loggerhead seaturtle (*Caretta caretta*) and several other seaturtles, which come ashore only at night to deposit eggs on the beaches in the summer; the turtle season is extended to November 15. Generally, these Species Management Areas will be closed starting on March 15. We endorse the establishment of these additional protection actions. Alternative F has more flexibility with the ending of the closures, depending on the lateness of the season for colonial nesting birds. Allowing NPS staff flexibility in this decision seems wise.

In summary, the DEIS addresses our concerns, and our Program supports the protection of significant resources that will result. Please do not hesitate to contact me at 919-715-8697 if you have questions or need further information.



North Carolina Department of Environment and Natural Resources  
Division of Coastal Management  
James H. Gregson  
Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

C. 10.07.12.01

**MEMORANDUM**  
March 11, 2010

**TO:** Maria Dunn  
Division of Inland Fisheries, Habitat Conservation Program  
NC Wildlife Resources Commission  
943 Washington Square Mall  
Washington, NC 27889-1638

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Morehead City DCM

**FROM:** Stephen Rynas, AICP; Federal Consistency Coordinator

**SUBJECT:** Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

**LOCATION:** Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

This document is being circulated for consistency review and comment by **April 9, 2010**. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596>. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at [stephen.rynas@ncdenr.gov](mailto:stephen.rynas@ncdenr.gov).

- REPLY:**
- No Comment.
  - This office supports the project as proposed.
  - Comments to this project are attached.
  - This office objects to the project as proposed.



Signed: *David R. G.* Date: 4/22/10

**CORRECTIONS:** Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM TO:**  
Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421

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APR 22 2010  
Morehead City DCM

## North Carolina Wildlife Resources Commission

Gordon S. Myers, Executive Director

### MEMORANDUM

**TO:** Stephen Rynas, Federal Consistency Coordinator  
Division of Coastal Management  
North Carolina Department of Environment and Natural Resources

**FROM:** David R. Cox, Technical Guidance Supervisor  
Habitat Conservation Program *David R. Cox*

**DATE:** April 22, 2010

**SUBJECT:** Federal Consistency Review for the Draft Environmental Impact Statement (DEIS) for the proposed Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore, Dare and Hyde counties, North Carolina (DCM#20100034)

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) reviewed the consistency determination with regard to impacts on fish and wildlife resources. Our comments are provided in accordance with provisions of the Coastal Area Management Act (G.S. 113A-100 through 113A-128), as amended, and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

The NCWRC reviewed the DEIS and the preferred alternative F in consultation with our non-game biologists. We have substantial comments on the DEIS but do not find alternative F inconsistent with NCWRC policies and guidelines.

We appreciate the opportunity to comment on this project. If you have questions or need further information please contact me at (919) 528-9886.

cc: Kevin Hart, NCDMF  
Maria Dunn, NCWRC

**Mailing Address:** Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721  
**Telephone:** (919) 707-0220 • **Fax:** (919) 707-0028



North Carolina Department of Environment and Natural Resources
Division of Coastal Management
James H. Gregson
Director

Beverly Eaves Perdue
Governor

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Morehead City DCM
Dee Freeman
Secretary

MEMORANDUM

March 11, 2010

TO: Vivian Christy (401 Water Quality)
DWQ - 401 Water Quality Certification (Washington)
NC DENR - Division of Water Quality
943 Washington Square Mall
Washington, NC 27889-1638
FROM: Stephen Rynas, AICP; Federal Consistency Coordinator
SUBJECT: Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)
LOCATION: Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

MAR 12 2010

This document is being circulated for consistency review and comment by April 9, 2010. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at stephen.rynas@ncdenr.gov.

- REPLY: [X] No Comment.
This office supports the project as proposed.
Comments to this project are attached.
This office objects to the project as proposed.

Signed: [Signature] Date: March 30, 2010

CORRECTIONS: Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM TO:

Stephen Rynas, Federal Consistency Coordinator
NC Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557-3421

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North Carolina Department of Environment and Natural Resources

Division of Water Quality

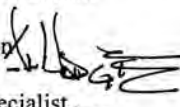
Coleen H. Sullins  
Director


Beverly Eaves Perdue  
Governor

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Morehead City DCM  
Dee Freeman  
Secretary

**MEMO**

**To:** Stephen Rynas, AICP; Federal Consistency Coordinator

**Through:** Al Hodge, Supervisor Surface Water Protection 

**From:** Roberto L. Scheller, Senior Environmental Specialist 

**Subject:** **Consistency Review for Alternative "F" Off-Road Vehicle Management Plan for Cape Hatteras National Seashore, Dare and Hyde Counties**

**Date:** March 30, 2010

Review of the subject project found that the proposed project would not have any anticipated impacts directly on wetlands or surface waters. Should this change during the implementation of the proposed project this Office should be contacted immediately. If you should have any questions or require additional information you may e-mail me at [roberto.scheller@ncdenr.gov](mailto:roberto.scheller@ncdenr.gov) or contact me by phone at 252-948-3940.

North Carolina Division of Water Quality  
943 Washington Square Mall  
Washington, NC 27889  
Phone: 252-946-6481 | FAX: 252-946-9215  
Internet: [www.ncwaterquality.org](http://www.ncwaterquality.org)

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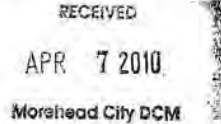
James H. Gregson  
Director

Dee Freeman  
Secretary



**MEMORANDUM**

March 11, 2010



**TO:** Jim Mead  
DWR - Water Projects Section  
NCDENR - Division of Water Resources  
1611 Mail Service Center  
Raleigh, NC 27699-1611

**FROM:** Stephen Rynas, AICP; Federal Consistency Coordinator

**SUBJECT:** Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

**LOCATION:** Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

This document is being circulated for consistency review and comment by **April 9, 2010**. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596>. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at [stephen.rynas@ncdenr.gov](mailto:stephen.rynas@ncdenr.gov).

- REPLY:**
- No Comment.
  - This office supports the project as proposed.
  - Comments to this project are attached.
  - This office objects to the project as proposed.

Signed: Jim Mead Date: 4/5/10

**CORRECTIONS:** Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM TO:**

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421

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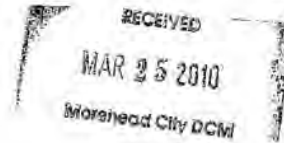
James H. Gregson  
Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

**MEMORANDUM**

March 11, 2010



**TO:** Steve Trowell  
Division of Coastal Management - Washington  
943 Washington Square Mall  
Washington, NC 27889-1638

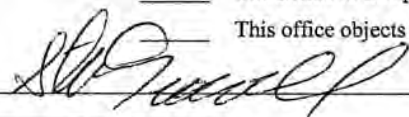
**FROM:** Stephen Rynas, AICP; Federal Consistency Coordinator

**SUBJECT:** Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

**LOCATION:** Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

This document is being circulated for **consistency** review and comment by **April 9, 2010**. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596>. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at [stephen.rynas@ncdenr.gov](mailto:stephen.rynas@ncdenr.gov).

- REPLY:**
- No Comment.
  - This office supports the project as proposed.
  - Comments to this project are attached.
  - This office objects to the project as proposed.

Signed:  Date: 3/22/10

**CORRECTIONS:** Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM TO:**

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421

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North Carolina Department of Environment and Natural Resources  
Division of Coastal Management  
James H. Gregson  
Director

Beverly Eaves Perdue  
Governor

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MAR 16 2010  
Morehead City DCM

Dee Freeman  
Secretary

**MEMORANDUM**

March 11, 2010

**TO:**

County of Hyde  
PO Box 95  
Swan Quarter, NC 27885-0095

**FROM:**

Stephen Rynas, AICP; Federal Consistency Coordinator

**SUBJECT:**

Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

**LOCATION:**

Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

This document is being circulated for consistency review and comment by **April 9, 2010**. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596>. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at [stephen.rynas@ncdenr.gov](mailto:stephen.rynas@ncdenr.gov).

**REPLY:**

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed:

*Jenny Anderson*

Date:

*3-12-2010*

**CORRECTIONS:**

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM TO:**

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421

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Beverly Eaves Perdue  
Governor

James H. Gregson  
Director

Dee Freeman  
Secretary

**MEMORANDUM**

March 11, 2010

**TO:** John Fear  
Coastal Reserve Program - Beaufort  
101 Pivers Island Road  
Beaufort, NC 28516-9701

**FROM:** Stephen Rynas, AICP; Federal Consistency Coordinator

**SUBJECT:** Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

**LOCATION:** Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

This document is being circulated for **consistency** review and comment by **April 9, 2010**. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596>. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at [stephen.rynas@ncdenr.gov](mailto:stephen.rynas@ncdenr.gov).

**REPLY:**  No Comment.  
 This office supports the project as proposed.  
 Comments to this project are attached.  
 This office objects to the project as proposed.

Signed: John Fear Date: 3-18-10

**CORRECTIONS:** Please identify any corrections, additions, or deletions that should be made in terms of contact information.

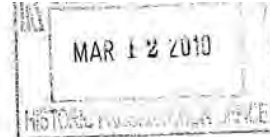
**RETURN COMPLETED FORM TO:**

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421

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North Carolina Department of Environment and Natural Resources  
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James H. Gregson  
Director

Dee Freeman  
Secretary

**MEMORANDUM**

March 11, 2010

TO: Renee Gledhill-Early  
State Historic Preservation Office  
4617 Mail Service Center  
Raleigh, NC 27699-4617

FROM: Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT: Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

LOCATION: Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

ER 10-0173  
 (NC) Terrestrial LEA 3/17/10  
 A (NC) meets consistency requirements  
 RWL Eff 3-29-10  
 S - NAE  
 RQ45K  
 Due 3/29/10

This document is being circulated for consistency review and comment by **April 9, 2010**. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596>. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at [stephen.rynas@ncdenr.gov](mailto:stephen.rynas@ncdenr.gov).

- REPLY:**
- K No Comment.
  - This office supports the project as proposed.
  - Comments to this project are attached.
  - This office objects to the project as proposed.

Signed: Renee Gledhill-Early Date: 4.6.10

**CORRECTIONS:** Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM TO:**

Stephen Rynas, Federal Consistency Coordinator  
 NC Division of Coastal Management  
 400 Commerce Avenue  
 Morehead City, NC 28557-3421

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MAR 15 2010



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North Carolina Department of Environment and Natural Resources  
Division of Coastal Management

Beverly Eaves Perdue  
Governor

James H. Gregson  
Director

Dee Freeman  
Secretary

**MEMORANDUM**

March 11, 2010

**TO:** Pat McClain  
NCDENR - Division of Land Resources  
943 Washington Square Mall  
Washington, NC 27889-1638

**FROM:** Stephen Rynas, AICP; Federal Consistency Coordinator

**SUBJECT:** Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

**LOCATION:** Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

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- REPLY:**
- No Comment.
  - This office supports the project as proposed.
  - Comments to this project are attached.
  - This office objects to the project as proposed:

Signed: [Signature] Date: 4/12/2010

**CORRECTIONS:** Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM TO:**

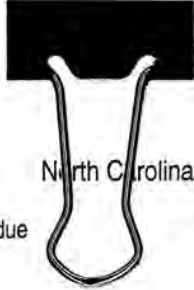
Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
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Morehead City, NC 28557-3421

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Division of Coastal Management

Beverly Eaves Perdue  
Governor

James H. Gregson  
Director

Dee Freeman  
Secretary

**MEMORANDUM**

March 11, 2010



**TO:** Patti Fowler  
Shellfish Sanitation and Recreational Water Quality Section  
NCDENR - Division of Environmental Health  
PO Box 769  
Morehead City, NC 28557-0769

RECEIVED

MAR 18 2010

**FROM:** Stephen Rynas, AICP; Federal Consistency Coordinator

Morehead City DCM

**SUBJECT:** Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

**LOCATION:** Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

This document is being circulated for **consistency** review and comment by **April 9, 2010**. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596>. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at [stephen.rynas@ncdenr.gov](mailto:stephen.rynas@ncdenr.gov).

**REPLY:**

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed:  Dr. P. H. Baker Date: 3/17/10

**CORRECTIONS:** Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM TO:**

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421

400 Commerce Ave., Morehead City, NC 28557-3421  
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North Carolina Department of Environment and Natural Resources  
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Beverly Eaves Perdue  
Governor

James H. Gregson  
Director

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APR 22 2010  
Morehead City, NC  
Dee Freeman  
Secretary

**MEMORANDUM**  
March 11, 2010

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MAR 12 2010  
COASTAL MANAGEMENT  
ELIZABETH CITY

**TO:** Charlan Owens  
Division of Coastal Management - Elizabeth City  
1367 US 17 South  
Elizabeth City, NC 27909-7634


**FROM:** Stephen Rynas, AICP; Federal Consistency Coordinator

**SUBJECT:** Proposed Implementation of an Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore (DCM#20100034)

**LOCATION:** Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina

This document is being circulated for consistency review and comment by **April 9, 2010**. The National Park Service (NPS) is proposing to implement Alternative "F" in the attached DEIS as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore. The NPS has established the following webpage for this project: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=10641&documentID=32596>. Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or email me at [stephen.rynas@ncdenr.gov](mailto:stephen.rynas@ncdenr.gov).

**REPLY:**  No Comment.  
 This office supports the project as proposed.  
 Comments to this project are attached.  
 This office objects to the project as proposed.

Signed:  Date: 4-20-10

**CORRECTIONS:** Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM TO:**

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
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**MEMORANDUM**

**TO:** Stephen Rynas, AICP, DCM Federal Consistency Coordinator

**FROM:** Charlan Owens, AICP, NE DCM District Planner

**SUBJECT:** Federal Consistency Review request submitted by the National Park Service (NPS) for the Cape Hatteras National Seashore Off Road Vehicle (ORV) Management Plan Draft Environmental Impact Statement (DEIS) implementing Alternative "F" as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore, located in Dare County and Hyde County.

**Date:** April 20, 2010

**Consistency Determination:** The request is consistent with/not in conflict with the Dare County 1994 Land Use Plan, approved April 30, 1999 and the Hyde County 1992 Land Use Plan.

Overview: The Cape Hatteras National Seashore (Seashore) consists of more than 30,000 acres distributed along 62 miles of shoreline. Federal ownership in the seashore extends from ocean to sound across three (3) barrier islands-Ocracoke, Hatteras, and Bodie. Hatteras and Bodie Islands are located in Dare County and Ocracoke Island is located in Hyde County. In Dare County, the U. S. Coast Guard Property and seven (7) village enclaves (Rodanthe, Waves, Salvo, Avon, Buxton, Frisco, and Hatteras) are excluded from the Seashore boundaries. On Ocracoke Island, Ocracoke village is outside of the Seashore boundaries. The 5,990 acre Pea Island National Wildlife Refuge, located at the northern end of Hatteras Island, is part of the Seashore, but is administered for refuge purposes by the U. S. Fish and Wildlife Service (USFWS).

Due to low topography, nearly the entire Seashore is located within the 100-year floodplain and is subject to inundation during severe storm events. Remaining areas within the 500-year (Shaded X) zone include the Navy Tower Site on Bodie Island and a large area near Buxton, with AE zones in areas not directly adjacent to the ocean or sound. Additionally, land along the ocean beach and adjacent to some areas of the sound are in floodzone "VE", which have hazards associated with storm waves. The Seashore is also subject to high water table conditions. The high water table and location within flood plain and high wave action areas make the Seashore subject to drainage and flooding problems that often result from storm events.

Dynamic environmental processes within the Seashore provide a variety of important habitats. The majority of undeveloped acreage within the Seashore consists of tidal wetlands. Areas of non-tidal wetlands are located primarily on Hatteras Island near the village of Buxton and

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Buxton Woods Coastal Reserve. Marshes, tidal flats, and riparian areas provide habitats that support the federally listed piping plover; sea turtles; and one (1) listed plant species, the seabeach amaranth; as well as North Carolina Wildlife Resources Commission (NCWRC) listed species of special concern which include colonial waterbirds (least terns, common terns, and black skimmers), American oystercatcher, and Wilson's plover; and the gull-billed tern that is listed by the NCWRC as threatened.

Prehistoric and historic cultural resources are also found at the Seashore. As of 2007, the Seashore contains thirty-six (36) historic structures and (28) archaeological sites. Ongoing research by the Underwater Archaeology Branch of the NC Office of State Archaeology has also cataloged sixty-three (63) historic shipwreck remains on the beaches of the Seashore as of January 2008. There are also five (5) cultural landscapes within the Seashore: the Bodie Island Light Station, Little Kinnakeet Life Saving Station, Cape Hatters Light Station, Hatteras Weather Bureau Station, and Ocracoke Light Station. The Hatteras Weather Bureau Station and Ocracoke Light Station are listed on the National Register. The Bodie Island Light Station, Bodie Island Lifesaving/Coast Guard Station, and Cape Hatteras Light Station are listed in the National Register as historic districts.

The economy of the area is largely driven by tourism, mainly during the summer months, and the Seashore is a primary attraction. The Seashore is a popular recreation destination with more than 2.1 million visitors in 2008. Recreational activities include beach recreation (sunbathing, swimming, shell collecting, etc.), fishing (surf and boat), hiking, hunting, motorized boating, non-motorized boating (sailing, kayaking, canoeing), nature study, photography, ORV use (beach driving), shellfishing, sightseeing, watersports (surfing, windsurfing, kiteboarding, etc.), and wildlife viewing. Improvements for public access are included throughout the Seashore on Bodie and Hatteras islands in Dare County, and Ocracoke Island in Hyde County. Improvements in Dare County include twelve (12) oceanside vehicle access ramps, three (3) ocean fishing piers, two (2) bathhouses, one (1) marina, a boat ramp, three (3) campgrounds, thirteen (13) soundside access points, two (2) day use areas, and two (2) visitor centers. Improvements on Ocracoke Island include five (5) oceanside vehicle access ramps, one (1) bathhouse, one (1) marina, a boat ramp, one (1) campground, a pony pen, five (5) soundside access points, two (2) soundside commercial fishing access points, (1) day use area, and one (1) visitor center. Information stations, parking lots totaling approximately 1,000 spaces, and nature trails are found throughout the Seashore.

Seashore visitors often use off-road vehicles (ORVs) for traveling to and from swimming, fishing, and surfing areas and for pleasure driving. Some popular beach sites, particularly those near inlets and Cape Point, are a distance from established parking areas. Visitors who come for surf fishing and picnicking are accustomed to using large amounts of recreational equipment that cannot be practically hauled over these distances without motorized access. Commercial fishermen with large amounts of fishing gear also use ORVs to access the Seashore. As a result, ORVs are considered to be the primary and most practical form of access for many areas of the Seashore. Currently ORV users are allowed to drive on the beach seaward of the primary dune line, with 10 meter backshore areas seaward of the primary dune line protected seasonally. Designated vehicle access ramps are used to access the beach from NC Highway 12, which runs behind the primary dune.

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Improved access to the Seashore, increased population, and the popularity of 4-wheel drive Sport Utility Vehicles (SUVs)/ORVs has resulted in a dramatic increase in vehicle use on Seashore beaches. There has also been a decline in most beach nesting bird populations on the Seashore since the 1990s. ORV use at the Seashore has historically been managed since the 1970s through draft or proposed plans, though none were ever finalized or published. NPS issued an Interim Protected Species Management Strategy (Interim Strategy) in 2006 to provide resource protection guidance until the long-term ORV management plan and regulation could be completed. Following a Finding of No Significant Impact (FONSI) for the Interim Strategy in July of 2007, a lawsuit was filed by the Defenders of Wildlife and the National Audubon Society, represented by the Southern Environmental Law Center, claiming the Interim Strategy violated the Endangered Species Act (ESA) and other laws, failed to protect species at the Seashore, and failed to comply with requirements for ORV use. The lawsuit resulted in a consent decree with court ordered deadlines for completion of an ORV management plan/Environmental Impact Statement (EIS) and special regulation.

The submitted Cape Hatteras National Seashore Off-Road Vehicle Management Plan Draft Environmental Impact Statement (DEIS) evaluates the impacts of a range of alternatives for regulations and procedures to manage ORV use and access at the Seashore to protect and preserve natural and cultural resources and natural processes, to provide a variety of visitor use experiences while minimizing conflicts among various users, and to promote safety of all visitors. The DEIS evaluates the impacts of two (2) no-action alternatives (A and B) and four (4) action alternatives (C, D, E, and F).

- Alternative A: No Action – Continuation of Management under the Interim Protected Species Management Strategy
- Alternative B: No Action – Continuation of Management under Terms of the Consent Decree
- Alternative C: Seasonal Management
- Alternative D: Increased Predictability and Simplified Management (Environmentally Preferred Alternative)
- Alternative E: Variable Access and Maximum Management
- Alternative F: Management Based on Advisory Committee Input

The DEIS analyzes impacts of these alternatives in detail for floodplains, wetlands, federally listed threatened or endangered species, state-listed and special status species, wildlife and wildlife habitat, visitor use and experience, soundscapes, socioeconomics, and Seashore operations. The alternative selected for implementation will become the ORV management plan and will form the basis of special regulation, guiding the management and control of ORVs at the Seashore for the next 10 to 15 years. Alternative F is the NPS Preferred Alternative.

Alternative F was created through input by the Negotiated Rulemaking Advisory Committee and is designed to provide visitors to the Seashore with a wide variety of access opportunities for both ORV and pedestrian use. Under this alternative, approximately 16 miles of ocean

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shoreline that is currently open to ORV use under the Interim Species Management Strategy and the consent decree would be designated as closed to ORVs, 23 miles would be designated for seasonal ORV use, and 29 miles would be designated as year round routes. Hatteras Inlet Spit and North Ocracoke Spit would be non-ORV areas year-round, with interdunal roads that allow access to the general area, but not the shoreline. Species Management Areas (SMAs) would be closed to ORV use from March 15 through July 31; except South Point and Cape Point would have initial ORV access corridors and Bodie Island Spit would have an initial pedestrian access corridor at the start of the breeding season. These access corridor(s) would close when breeding activity is observed. Village beach closures would vary, with the northern beaches closed to ORV use from May 15 through September 15 and southern beaches closed from March 1 through November 30. Seasonal and night-driving restrictions would be established one hour after sunset until after a turtle patrol has checked the beaches in the morning, which is approximately one-half hour after sunrise. "Vehicle Carrying Capacity" would be established, setting a "peak use limit" for all areas based on the linear feet of beachfront and physical space requirements. NPS would also consider applications for commercial use authorization to offer beach shuttle services. Specific to accessibility for the disabled, special permits would be issued for areas in front of the villages to allow ORVs to transport disabled visitors to the beach and then return the vehicle back to the street; and ADA compliant beach access points and boardwalks would be available at Coquina Beach, the Frisco Bathhouse, the Ocracoke Pony Pen, and the Ocracoke Day Use Area.

Implementation of alternative F would result in the construction or replacement of nine (9) ORV access ramps, twelve (12) new or expanded parking lots, relocation or extension of four (4) interdunal roads, and the establishment of two (2) pedestrian trails. Proposed oceanside improvements in Dare County include relocation of Ramp 2 approximately .5 mile south of Coquina Beach; installation of a pedestrian trail to the inlet connecting to a new parking area near the campground just south of Ramp 4; newly established Ramp 24, Ramp 26, and Ramp 32.5 and associated parking; expanded parking at Ramp 38 south of Avon village; installation of a new Ramp 39 across from Haulover; establishment of a new parking area at the old Coast Guard Station site near Buxton village; installation of a new Ramp 47 along with an interdunal road extending west of new Ramp 47 to Ramp 49; installation of new Ramp 48 near the Frisco Campground; and installation of a new interdunal road extending southwest and northeast of the south end of Pole Road to provide parking for pedestrian access to False Point and Hatteras Inlet. If the Bonner Bridge construction closes Ramp 4, a new Ramp 3 would be constructed north of the Oregon Inlet campground and day-use parking would be provided. Soundside improvements in Dare County would include the establishment of parking at Kite Point and rerouting of Pole Road to the sound. Proposed improvements on Ocracoke Island include installation of a new interdunal road parallel to the beach extending from Ramp 59 for .2 mile northeast toward the inlet with parking at the terminus; newly established Ramp 62 and Ramp 64, with new parking to be installed at Ramp 64; expansion of parking at the pony pen; and installation of a new road and parking lot with a pedestrian trail to the sound .65 mile south of Ramp 72.

Anticipated impacts: under Alternative F are expected to include the following:

Construction within the Seashore has the potential to impact the floodplain. Some of the parking areas would be within the "VE" zone, others would be within the "AE" zone, and all of the parking lots would be within the 100-year floodplain. New or expanded parking, however,

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would be located outside of coastal high hazard areas subject to flooding when possible. Construction or expansion of ten (10) of the twelve (12) proposed parking lots would result in the placement of hardened surface within the floodplain, and would have a limited effect on the ability of the floodplain to convey floodwaters from storm surge. Ramps and parking areas would be constructed using environmentally sensitive standards to minimize stormwater runoff.

Impairment of wildlife habitat is not anticipated, since sufficient population numbers and functional habitat would remain to maintain sustainable populations of invertebrates and other bird species in the Seashore.

New access ramps and parking lots would be located exclusively in upland areas, avoiding direct impacts to wetlands, although heavy use of the roads could result in inadvertent wetland damage if vehicles were to leave the road surface. Proposed pedestrian trail and interdunal road extensions would not require any formal surfacing or removal of vegetation and would avoid wetland areas. Protective signage would be installed along all soundside access points to reduce the potential for wetland area impacts.

Historic and cultural resources are not in immediate danger of damage from ORV users and are not anticipated to be impacted. There should be no cultural landscape viewshed impacts, since oceanside ORV use areas are close to a mile from the Cape Hatteras Lighthouse Station and ORV use does not occur in areas surrounding other historic structures. None of the archaeological remains associated with structures are in immediate danger of damage from ORV users.

Designation of ORV areas would help minimize conflicts, and implementation of a permit system would provide additional education and the ability to increase compliance with ORV use regulations. ORV users, however, would experience adverse impacts, as the designation of non-ORV areas and the establishment of SMAs would preclude ORV use, either seasonally or year round, from some areas of the Seashore that are popular visitor use areas. Non-ORV users would experience benefits, through the establishment of year-round non-ORV areas and seasonal ORV closures and new pedestrian trails. Pedestrian based activities would be allowed outside of any resource closed areas. Additional access to soundside areas would be provided.

Commercial fishermen using ORVs would be less impacted than recreational ORV users. Commercial fishermen would have access to the Seashore beaches except during full resource closures for breeding and at lifeguard beaches, so they would not be affected by longer seasonal closures. Commercial fishermen would not be required to obtain an ORV permit and would continue to be managed by the commercial fishing special use permit.

Specific to socioeconomic impacts, the seashore village areas are expected to experience impacts to specific businesses that cater to ORV users, since less access by ORVs to the beach is proposed. Variation in the nesting patterns and subsequent beach area closures make the socioeconomic impacts difficult to forecast. Impacts would be low when beach closures are minimal and high if beach closures are widespread and long lasting.

See ATTACHMENT for policy statements that may be applicable to this request.

cc: John Thayer, AICP, Manager, CAMA Local Planning and Access Programs

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## ATTACHMENT

### Policy Review:

The Cape Hatteras National Seashore is located within Dare County and Hyde County.

The Dare County 1994 LUP and the Hyde County 1992 LUP are the applicable LUPs for this review. While not the most recent LUPs state certified by the Coastal Resources Commission (CRC), the Dare County 1994 LUP and the Hyde County 1992 LUP are the most recent LUPs federally approved by the Office of Oceans & Resource Management (OCRM) and are to be used in determining federal consistency.

A general review of policy statements in the most recent state certified Dare County 2003 LUP and Hyde County 2008 LUP indicates no apparent conflict with the request. As indicated in the Hyde County 2008 LUP (Policy 42, Page 193), Hyde County does not oppose the use of off-road vehicles. While Dare County provides specific policy concerning four-wheel drive access to the beaches (Dare 2003 LUP, Policy #40, Page 73) and does not support efforts to prohibit beach driving, the County prefers to review proposals to impose additional driving restrictions on a case-by-case basis with support or opposition to depend on potential impacts to the local tourist economy.

**As of April 20, 2010**, the following policies from the Dare County 1994 LUP are applicable to this request:

The Dare County 1994 Land Use Plan Land Classification Map identifies the Cape Hatteras National Seashore as "Conservation". The following LUP policies may be applicable to this request:

### Topographic Conditions and/or Proximity to Surface Water Bodies:

#### Policy 2.1.1 (b), Page 50:

"Dare County supports, as minimum standards, the administration and enforcement of all applicable floodplain management regulations, and the national flood insurance program."

### Coastal Wetlands:

#### Policy 2.1.2 (a), Page 52:

"Dare County advocates the use of existing state and federal regulatory programs as adequate measures for protecting and preserving coastal wetland areas of environmental concern."

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## ATTACHMENT

### Estuarine Waters:

Policy 2.1.2 (b), Page 53:

"Estuarine Shoreline development should continue to be managed to protect and preserve the natural resources of the Estuarine Waters. In addition, development located in Estuarine Waters shall be water-dependent, related to developed on the Estuarine Shoreline, or an accessory use to a structure located on the Estuarine Shoreline."

### Public Trust Areas:

Policy 2.1.2 (c-1), Page 54:

"Dare County supports the preservation and protection of the public's right to access and use of the Public Trust Areas and Waters."

### Estuarine Shorelines:

Policy 2.1.2 (d-1), Page 55:

"Estuarine shoreline development should continue to be managed to protect and preserve the natural resources along the estuarine shoreline."

### Ocean Hazard Areas:

Policy 2.1.2 (e), Page 57:

"Oceanfront shoreline development should continue to be managed to protect and preserve the natural resources along the oceanfront."

### Freshwater Swamps and Marshes:

Policy 2.1.2 (h-1), Page 60:

"Dare County supports the Coastal Resources Commission's policy to mitigate losses of coastal resources for those projects shown to be in the public interest as defined by the standards in 15NCAC7M.0700 et. seq. and only after all other means of avoiding or minimizing such losses have been exhausted."

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## ATTACHMENT

(Implementation Strategy)

1. In instances when improvements to publicly-owned or managed facilities conflict with freshwater wetland protection programs, an alternatives analysis should be conducted in an effort to avoid wetland loss or alteration... However, should the analysis determine that there is no practicable alternative, a mitigation permit proposal shall be implemented. Mitigation activities and improvements designed as compensation for wetland loss occurring in Dare County shall be located, whenever possible, in Dare County and in proximity to the loss.")

## Policy 2.1.2 (h-2), Page 61:

"Dare County supports the U. S. Army Corps of Engineers Nationwide Permit Program."

Cultural, Historical, and Archaeologically Significant Lands and Structures:

## Policy 2.1.3 (a), Page 62:

"The Dare County Board of Commissioners supports the protection of structures, lands, and artifacts that have been identified by the NC Department of Cultural Resources Division of Archives and History as archaeologically or historically significant. On a case by case basis, individual protection/management strategies should be implemented to ensure archaeological and/or historical resources are not destroyed."

Stormwater Management:

## Policy 2.1.5 (b), Page 65:

"Stormwater runoff should be managed to the greatest possible degree to protect the quality of water in all water bodies surrounding Dare County."

Fisheries Resources:

## Policy 2.2.4-a, Page 72:

"The continued productivity of commercial and recreational fisheries shall be fostered through restoration and protection of the unique coastal ecosystems upon which they depend."

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Policy 2.2.4-d, Page 73:

"State and Federal agencies with the authority to manage fisheries resources should be the responsible parties for the resolution of conflicts involving fisheries resources in Dare County. However, Dare County reserves the right to review, comment, advocate or oppose any proposed regulations or programs that may affect the fisheries resources or management."

### Shoreline Resources:

Policy 2.2.5 (a), Page 74:

"Efforts to properly balance and control the use of off-road vehicles along the County's beaches, dune areas, and Estuarine Shorelines shall continue to receive support from County government."

### Wildlife Resources:

Policy 2.2.6, Page 74:

"Dare County supports the maintenance of several preserve areas for wildlife habitat and access by the public to these areas for managed wildlife harvesting and observation."

### Tourism:

Policy 2.3.9-b, Page 87:

"Dare County supports the concept of combining natural resources and tourism to promote the area's ecological values, also known as 'eco-tourism'."

### Shoreline Access:

Policy 2.3.10, Page 89:

"Dare County supports North Carolina's shoreline access policies as stated in 15NCAC7H, Section .300. Dare County recognizes shoreline access to both ocean and estuarine shorelines as a key component in the local tourist economy."

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Bikeways/Walkways/Greenways:

Policy 2.3.13, Page 92:

"Dare County supports the development of sidewalks, bike paths, greenways, and walking/jogging trails to provide a safe setting for these types of outdoor recreation in unincorporated Dare County."

**As of April 20, 2010**, the following policies from the Hyde County 1992 LUP are applicable to this request:

The Hyde County 1992 Land Use Plan Land Classification Map identifies the Cape Hatteras National Seashore on Ocracoke Island, but does not provide a land use classification. As indicated on Page V-1, the "Conservation" classification includes the following areas of environmental concern: Coastal Wetlands, Section 404 Wetlands, Estuarine Shoreline, and Estuarine and Public Trust Waters. The following LUP policies may be applicable to this request:

Physical Limitations

Policy (d), Page IV-4

"...Within 404 wetlands, the only development will be docks, piers, pilings, and pedestrian walkways as allowed by this plan."

Flood Hazard Areas

Policy (a), Page IV-4

"Hyde County will continue to coordinate all development within flood hazard areas with the Hyde County Inspections Department, North Carolina Division of Coastal Management, FEMA, and the U. S. Corps of Engineers."

Stormwater Runoff

Policy (a), Page IV-7

"Hyde County recognizes the value of water quality maintenance to the protection of fragile areas and to the provision of clean water for recreational purposes. The county will support existing state regulations relating to stormwater runoff resulting from development..."

## ATTACHMENT

404 Wetlands

Policy, Page IV-7

"Hyde County recognizes the value of water quality maintenance to the protection of fragile areas and to the provision of clean water for recreational purposes. The county will support existing state regulations relating to stormwater runoff resulting from development..."

Ocean Hazard AECs

Policy, Page IV-11

"All ocean hazard AECs are located on the ocean side of Ocracoke Island, which is under federal control as part of the Cape Hatteras National Seashore. State and federal agencies are requested to comply with specific use standards for ocean shoreline erosion control activities as specified in 15A NCAC 7H.0308 dated March 1, 1990."

Estuarine Shorelines

Policy (a), Page IV-11

"Setback: The top priority of Ocracoke is for the 75 foot estuarine shoreline AEC to be maintained in its natural state. No clear cutting of vegetation, or filling or draining of wetlands, shall occur within the estuarine shoreline AEC. Land uses associated with water dependent activities that are consistent with this section shall be allowed in the estuarine shoreline AEC. The following are considered water dependent activities:

- ...6) Recreational and commercial fishing and aquaculture which are consistent with all federal and state regulations.
- 7) Publicly-owned regulatory signage."

Coastal Wetlands

Policy, Pages IV-12 and IV-13

"A top priority of Ocracoke is to preserve coastal wetlands. These wetlands are important to the maintenance of the water quality of the estuarine waters and afford protective habitat and nursery areas in the life cycles of fish, crabs and shellfish. They also provide an important habitat for many different shorebirds. Another priority of Ocracoke is to allow use of coastal wetlands which require water access and which are consistent with other policy statements in this section. Any proposed land uses in coastal wetlands must demonstrate that the proposed project requires water access



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## ATTACHMENT

and that there is no alternative location with less impact on wetlands. Only the following development shall be allowed in coastal wetlands:

...g)All signs, except publicly-owned regulatory signs, shall be prohibited in coastal wetlands."

### Estuarine Waters and Public Trust Areas

Policy, Pages IV-12 and IV-13

"...Hyde County desires to prevent further deterioration of estuarine water quality and loss of public trust uses in Ocracoke. A second concern is to restore degraded water quality and lost uses of public trust areas. Hyde County desires to allow uses of estuarine waters and public trust areas in Ocracoke that provide public benefits to Ocracoke Village, and which satisfy the riparian access needs of private property owners. Only the following uses shall be allowed in estuarine water and public trust areas; all other uses shall be prohibited:

- ...c)Boat ramps as allowed by the policies of this plan
- ...f)Recreational and commercial fishing and aquaculture which are consistent with all federal and state regulations
- g) Publicly-owned regulatory signage."

### Recreational Resources

Policy (a), Page IV-14

"All lands classified as coastal wetlands, 404 wetlands, estuarine waters, and public trust areas are considered valuable passive recreation areas...Except as otherwise provided for in these policy statements, these areas will be protected in their natural state, and development will not be allowed except for public shoreline access including dune crossovers structures and boardwalks in ocean hazard areas..."

Policy (b), Page IV-14

"The National Park Service provides an extremely important recreational resource to Ocracoke and the nation. The National Seashore is vital to the economy of Ocracoke. There exists a high degree of interdependence between Ocracoke and the Park Service with a high degree of cooperation. In keeping with this spirit of cooperation, Hyde County adopts the following policies in regard to the Cape Hatteras National Seashore:

- ...2. Pump Out Facility at NPS Marina: A sewage pump out facility for boats is needed at the National Park Service marina.

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North Carolina Department of Environment and Natural Resources  
Division of Coastal Management

MEMORANDUM  
Page 13 of 13

#### ATTACHMENT

...5. Hyde County requests that the National Park Service not issue any commercial leases or permits for retail sales and food concessions on National Park Service property."

#### Off-Road Vehicles

Policy, Page IV-16

"Outside of the Cape Hatteras National Seashore, Hyde County supports the responsible use of off-road vehicles on Ocracoke Island."

#### Estuarine Access

Policy (a), Page IV-19

"The National Park Service boat ramp provides adequate boating access for the public. To prevent more traffic congestion and the destruction of natural resources, no new commercial boat ramps shall be constructed in Ocracoke. Private boat ramps for individual residents should comply with all state and federal regulations and the policies contained in this plan."

Policy (c), Page IV-19

"Pedestrian access which is consistent with the policies contained in this plan will be supported."

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North Carolina Department of Environment and Natural Resources  
Division of Coastal Management

Beverly Eaves Perdue  
Governor

James H. Gregson  
Director

Dee Freeman  
Secretary

March 12, 2010

Michael B. Murray, Superintendent  
Outer Banks Group  
National Park Service  
1401 National Park Drive  
Manteo, North Carolina 27954-9451

**SUBJECT:** Status of Consistency Determination Submission for Implementation of an Off-Road Vehicle Management Plan at the Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina (DCM#20100034)

Dear Mr. Murray:

We received your consistency determination on March 10, 2010 for the proposed implementation of Alternative "F" as the Off-Road Vehicle Management Plan for the Cape Hatteras National Seashore, Dare and Hyde Counties, North Carolina. The project has been distributed to State agencies that would have a regulatory interest in the proposed activity for review and comment. The public review period will close on April 9, 2010. Please be aware that as we continue to review this submission that we may request additional information. We intend to make a decision regarding whether the proposed activity would be consistent with the State's coastal program soon after.

The State of North Carolina has sixty (60) days from the receipt of the consistency determination to either "concur" or "object" to your consistency determination unless an extension is agreed to. The sixtieth day is May 9, 2010. Furthermore, the State is entitled to an extension of up to fifteen (15) days if additional review time is necessary. Final Federal agency action cannot be taken sooner than ninety (90) days from the State's receipt of the consistency determination unless State concurrence is obtained. Please feel free to contact me at 252-808-2808 if you have any questions. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,

Stephen Rynas, AICP  
Federal Consistency Coordinator

Cc: Doug Huggett, Division of Coastal Management  
Frank Jennings, Division of Coastal Management  
David Moye, Division of Coastal Management  
Megan Carlioli, National Park Service

400 Commerce Ave., Morehead City, NC 28557-3421  
Phone: 252-808-2808 \ FAX: 252-247-3330 Internet: [www.nccoastalmanagement.net](http://www.nccoastalmanagement.net)

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North Carolina  
Department of Administration

RECEIVED  
MAY 12 2010  
BY:.....

Beverly Eaves Perdue, Governor

Moses Carey, Jr., Secretary

May 11, 2010

**CERTIFIED MAIL #7008 1300 0000 1133 9637**

**RETURN RECEIPT REQUESTED**

Mr. Michael Murray, Superintendent  
Cape Hatteras National Seashore  
U.S. Dept. of the Interior  
National Park Service  
1401 National Park Drive  
Manteo, NC 27954

**Re: SCH File # 10-E-0000-0331; DEIS; Off-road vehicle (ORV) Management Plan at Cape Hatteras National Seashore. DEIS is available at <http://parkplanning.nps.gov/caha>**

Dear Mr. Murray:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

Ms. Chrys Baggett  
State Environmental Review Clearinghouse

Attachments

cc: Region R

Mailing Address:  
1301 Mail Service Center  
Raleigh, NC 27699-1301

Telephone: (919)807-2425  
Fax (919)733-9571  
State Courier #51-01-00  
e-mail [state.clearinghouse@doa.nc.gov](mailto:state.clearinghouse@doa.nc.gov)

Location Address:  
116 West Jones Street  
Raleigh, North Carolina

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*mm*



North Carolina Department of Environment and Natural Resources  
Division of Marine Fisheries

Beverly Eaves Perdue  
Governor

Dr. Louis B. Daniel III  
Director

Dee Freeman  
Secretary

May 7, 2010



Mr. Mike Murray, Superintendent  
Cape Hatteras National Seashore  
1401 National Park Drive  
Manteo, NC 27954

Dear Mr. Murray,

The North Carolina Division of Marine Fisheries has reviewed the DEIS – Cape Hatteras National Seashore Off-Road Vehicle Management Plan and submits the following comments pursuant to N. C. General Statute 113-131.

Alternative F – Management Based on Advisory Committee Input is the National Park Service (NPS) Preferred Alternative. Many of the actions in this alternative were from the Negotiated Rulemaking Advisory Committee’s input, which the Division served on. This alternative is designed to provide visitors to the Seashore with a wide variety of access opportunities for both off road vehicle (ORV) and pedestrian users. Alternative F would re-open some Species Management Areas (SMAs) to ORV use earlier and for a longer time, once shorebird breeding was concluded, than the other alternatives. Under this alternative, Hatteras Inlet Spit and North Ocracoke Spit would be non-ORV areas year-round, with interdunal roads that allow access to the general area, but not the shoreline. SMAs would be closed to ORV use from March 15 through July 31, except South Point and Cape Point would have initial ORV access corridors and Bodie Island Spit would have an initial pedestrian access corridor at the start of the breeding season, with increased species monitoring in these areas. These access corridors would close when breeding activity is observed. All village beach closures would vary under Alternative F with the northern beaches closed to ORV use from May 15 – September 15 and southern beaches closed from March 1 – November 30. Seasonal night-driving restrictions would be established from one hour after sunset until after turtle patrol (NPS) has checked the beaches in the morning, approximately one-half hour after sunrise. There are numerous elements that are common between all alternatives. Several of the elements - commercial fishing vehicles would be exempted from some ORV restrictions, when not in conflict with resource protection; ORV permits would be required, establish a carrying capacity, ORV routes and areas would be officially designated, etc.

The DMF can support parts of Alternative F – Management Based on Advisory Committee Input – elements. We believe it is appropriate that we emphasize our specific concerns regarding access. While the DMF has no jurisdiction over birds and turtles on the beach, we do pay close attention to best management practices that may impact our stakeholders, the recreational and commercial fishermen of North Carolina. It is with this understanding that we support any comments or suggestions from our partners with the Wildlife Resources Commission that support alternatives to modify buffers and permanent closures to provide more fair and open access.

3441 Arendell Street, P.O. Box 769, Morehead City, North Carolina 28557  
Phone: 252-726-7021 | FAX: 252-726-0254 | Internet: www.ncdmf.net

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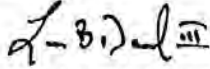
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Mike Murray Letter  
May 7, 2010  
Page Two

The Division of Marine Fisheries believes it is critical to maintain the cultural and historical traditions of access on the North Carolina Outer Banks. We remain very concerned about any permanent closures, particularly with the Hatteras Inlet, North Ocracoke, and Oregon Inlet Spits, Cape Point, South Beach, and the South Point on Ocracoke areas being designated non-ORV areas year round. These areas are very important to the recreational and commercial fishing public. We are convinced that flexibility in regards to these closures is critically important and that the use of corridors and modified buffers that protect species of concern and provide year-round access to the greatest extent practicable are critical.

Thank you for the opportunity to comment on this very important issue.

Sincerely,



Louis B. Daniel III, Director  
N.C. Division of Marine Fisheries

cc: Melba McGee, DENR  
Anne Deaton, DMF  
Nancy Fish, DMF  
Dee Lupton, DMF  
Sara Winslow, DMF

LBD/cb



## North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary

May 5, 2010

MEMORANDUM

TO: Melba McGee, DENR Environmental Coordinator

FROM: Harry LeGrand, Natural Heritage Program

SUBJECT: DEIS – Off-road Vehicle (ORV) Management Plan at Cape Hatteras National Seashore; Dare and Hyde counties

REFERENCE: Project No. 10-0331

The Natural Heritage Program supports the project as proposed; either Preferred Alternative D or Alternative F are acceptable to the Program. Alternative D is the Environmentally Preferred Alternative, which has a more simplified and fixed set of regulations that increase the predictability of areas for usage by the public. Alternative F is the National Park Service Preferred Alternative, which incorporates more seasonal and geographic flexibility to manage both the natural resources and the ORV/visitor usage of the seashore.

The DEIS indicates that both Alternatives D and F will have beach closures for "Species Management Areas", which also includes protection for bird nesting areas as well as areas for protecting the Federally Threatened seabeach amaranth (*Amaranthus pumilus*). Additional regulations, such as regarding night driving, are proposed for the Federally Threatened loggerhead scaturtle (*Caretta caretta*) and several other seaturtles, which come ashore only at night to deposit eggs on the beaches in the summer; the turtle season is extended to November 15. Generally, these Species Management Areas will be closed starting on March 15. We endorse the establishment of these additional protection actions. Alternative F has more flexibility with the ending of the closures, depending on the lateness of the season for colonial nesting birds. Allowing NPS staff flexibility in this decision seems wise.

In summary, the DEIS addresses our concerns, and our Program supports the protection of significant resources that will result.

Please do not hesitate to contact me at 919-715-8697 if you have questions or need further information.

M. 6/1



North Carolina Department of Environment and Natural Resources

Division of Water Quality  
Coleen H. Sullins  
Director

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary



MEMO

To: Melba McGee, Environmental Coordinator  
Through: Al Hodge, Supervisor Surface Water Protection  
From: Roberto L. Scheller, Senior Environmental Specialist  
Subject: Environmental Impact Statement Review for Off-Road Vehicle (ORV) Management Plan for Cape Hatteras National Seashore, Dare and Hyde Counties

Date: April 19, 2010

Review of the subject project found that the proposed project impacts would not have anticipated impacts directly on wetlands or surface waters from beach traffic. It is this Offices' understanding that impacts would be to beach areas as a result of ORV traffic. Current management practices at the Seashore allow ORV users to drive on the beach seaward of the primary dune line, with a 10-meter backshore area seaward of the primary dune line protected seasonally. Drivers must use designated ramps to cross between the beach and NC-12 that runs behind the primary dune line.

It was noted that wetland impacts are occurring on the sound side from drivers deviating from designated drive paths. It is recommended that access roads on the sound side should be improved enough to allow reasonable access during high water to help reduce wetland impacts from off road traffic and/or closed until vegetation can reestablish. Any impacts to wetlands or surface waters from the implementation of the proposed management plans should be reported to this Office immediately. If you should have any questions or require additional information you may e-mail me at [roberto.scheller@ncdenr.gov](mailto:roberto.scheller@ncdenr.gov) or contact me by phone at 252-948-3940.

North Carolina Division of Water Quality  
943 Washington Square Mall  
Washington, NC 27689  
Phone: 252-946-6481 | FAX: 252-946-9215  
Internet: [www.ncwaterquality.org](http://www.ncwaterquality.org)  
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M. H.



North Carolina Wildlife Resources Commission

Gordon S. Myers, Executive Director

May 10, 2010



Mike Murray, Superintendent  
Cape Hatteras National Seashore  
1404 National Park Drive  
Manteo, NC 27954

Melba McGee  
DENR-Environmental Review  
1601 Mail Service Center  
Raleigh, NC 27699-1601

Dear Superintendent Murray:

The United States Department of the Interior National Park Service (NPS) is proposing an off-road vehicle (ORV) management plan for the Cape Hatteras National Seashore (CHNS) located in Dare and Hyde counties, North Carolina. Comments on the Draft Environmental Impact Statement (DEIS) from the North Carolina Wildlife Resources Commission (Commission) are provided under provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d) and the National Environmental Policy Act (42 U.S.C. 4332(2)(e)).

The CHNS provides numerous recreational opportunities, some of which have a historical and traditional association with ORV use. In addition to important recreational opportunities, the CHNS features several significant and unique habitats formed and maintained by the dynamic environmental processes found along this portion of North Carolina's outer banks region. These habitats support numerous species of management emphasis, including the federally-listed piping plover and five species of federally-listed sea turtles, three of which nest on the beaches within CHNS.

The Commission has reviewed the proposed alternatives and generally supports the NPS preferred alternative (Alternative F). We recognize the inherent difficulty in attaining the much needed equilibrium between allowable recreational uses, access to public trust resources and natural resource protection. In effort to help attain a fair and sustainable balance, we request the NPS address the following issues in the Final EIS:

Mailing Address: Director's Office • 1701 Mail Service Center • Raleigh, NC 27699-1701  
Telephone: (919) 707-0010 • Fax: (919) 707-0020

**1. State listed species of concern:** Page 419 of the DEIS states “The NPS *Management Policies 2006* state that NPS will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible.” The Commission has statutory authority and responsibility to adopt, publish, reconsider, and revise a list of species of special concern (G.S. 113-333), and by definition, a species of special concern means “any species of wild animal ... which is determined to require monitoring but which may be taken under regulations adopted under the provisions of this Article” (G.S. 113-331). The treatment of state-listed species of special concern as if those species were federally listed is inconsistent with the letter and intent of the statutes that authorize the state-listing process. Therefore we request the NPS not use state listing of species of special concern as justification for recommending actions required by federal listing, or in lieu of federal listing. Rather, we request the NPS consult with WRC biologists to understand specific monitoring and other conservation actions warranted by state listing.

**2. Drive-through corridors for SMA closures:** In order to accommodate balanced wildlife conservation objectives and recreational use, we request the NPS examine the applicability of allowing drive-through corridors (no pedestrian access) in the event that a resource closure eliminates ORV access to a segment of beach not otherwise subject to closure and having no other public access.

*Example: American Oystercatcher*

Observed behavior in a recent study conducted within CHNS and Cape Lookout National Seashore indicated little or no association between ORV traffic and the rate at which incubating American Oystercatchers made trips to and from their nests (McGowan and Simons 2006). Another study conducted at Cumberland Island National Seashore showed that vehicles passing occupied American Oystercatcher nests at a distance approximately 50m seaward of an occupied nest did not negatively impact reproductive behavior during incubation, suggesting little effect on hatching success (Sabine 2005). We believe these findings provide a basis to implement drive-through corridors past oystercatcher nests during the incubation phase.

In the same study, observations during brood rearing revealed that foraging behavior decreased in the presence of vehicles. As a result, we recommend additional study to determine feasibility and optimal location for drive-through corridors in the vicinity of unfledged chicks.

**3. Buffer distances for shorebird/waterbird protection:** The shorebird/waterbird protection buffers associated with Management Level 1 (ML1) specified on page 127 of the DEIS are based upon results of research appropriate for determining buffer distances (Erwin 1989, Sabine 2005, Rodgers and Smith 1995); however, the additional buffer distances associated with Management Level 2 (ML2) exceed the empirically derived distances associated with ML1. Given the competing demands for the seashore and the importance of balancing human and wildlife uses of CHNS, we recommend using only the buffer distances listed under ML1.

**4. Sea turtle nest protection:** Sea turtle nesting activity and success at CHNS is variable over years, and some nests are lost to erosion and repeated inundation. Considerations of nest relocation can be contentious and based on inexact science. To reduce the level of subjectivity in decision making, we recommend the NPS evaluate the applicability of sea turtle nest relocation criteria, similar to those used at Pea Island National Wildlife Refuge, that quantify geomorphologic characteristics of beach width, beach slope and distance from mean high tide.

Page 3 of 4

WRC biologists have worked with CHNS biologists to verify the sea turtle data in their database as compared to the Commission sea turtle database. As a result, we were able to correct the annual values for 4 years that were presented in Figure 13 on page 214. We recommend that the following corrected values be incorporated into the Final EIS:

2002 = 94 loggerhead nests total  
2005 = 63 loggerhead nests total  
2007 = 73 loggerhead nests total  
2009 = 101 loggerhead nests total

**5. Species to be surveyed during the non-breeding season:** The DEIS states piping plovers, Wilson's plovers, American oystercatchers, red knots and some colonial nesting birds will be included in surveys conducted during the non-breeding season. Because colonial nesting birds do not depend on the land portion of the seashore for foraging, we recommend deleting these species from the list of surveyed birds during the non-breeding season. However, there are many shorebirds that are dependent on the seashore during this time period for foraging, so if bird surveyors have the expertise to differentiate species of shorebirds, we suggest they count all shorebirds using the International Shorebird Survey (ISS) protocol. We also recommend continued and enhanced coordination among federal, state, local and nongovernmental partners to ensure that future bird surveys are conducted in a seamless manner. This coordinated approach will better enable the Commission and the NPS to assess overall breeding success as well as species status and distribution within a system boundary larger than CHNS leading to better informed decisions about future species management needs.

The DEIS indicates that the NPS will conduct a systematic review of the ORV and species management measures every 5 years. WRC requests that this review allow for agency input.

The North Carolina Wildlife Resources Commission supports the NPS in its attempt to implement an ORV management plan that balances protection of the diverse wildlife and habitats on CHNS with the varied recreational uses of this popular destination. Those goals are consistent with our mission to conserve North Carolina's wildlife resources and their habitats and provide programs and opportunities that allow hunters, anglers, boaters and other outdoor enthusiasts to enjoy wildlife-associated recreation. We appreciate your efforts and the opportunity to provide input to the DEIS for this project. If you have questions or need additional information please contact Shannon Deaton at 919-707-0222.

Sincerely,



Gordon Myers  
Executive Director

Page 4 of 4

#### References

- Erwin, R.M. 1989. Responses to human intruders by birds nesting in colonies: experimental results and management guidelines. *Colonial Waterbirds* 12:104-108.
- McGowan, C.P. and T.R. Simons. 2006. Effects of human recreation on the incubation behavior of American oystercatchers. *Wilson Journal of Ornithology* 118:485-493.
- Rodgers, J.A., Jr., and H.T. Smith. 1995. Set-back distances to protect nesting bird colonies from human disturbance in Florida. *Conservation Biology* 9:89-99
- Sabine, J.B., III. 2005. Effects of human activity and predation on breeding American Oystercatchers. Thesis, University of Georgia, Athens, GA.



North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue  
Governor

Dee Freeman  
Secretary



MEMORANDUM

TO: Valerie McMillan  
State Clearinghouse

FROM: Melba McGee *✍*  
Environmental Review Coordinator

RE: 10-0331 DEIS Off-road Vehicle (ORV) Management Plan at Cape  
Hatteras National Seashore in Dare and Hyde Counties

DATE: May 10, 2010

The Department of Environment and Natural Resources has reviewed the proposed Draft Environmental Impact Statement. The attached comments are for the applicant's information.

Thank you for the opportunity to review. Please let me know if you have any questions.

Attachments

1601 Mail Service Center, Raleigh, North Carolina 27699-1601  
 Phone: 919-733-4984 \ FAX: 919-715-3060 Internet: [www.enr.state.nc.us](http://www.enr.state.nc.us)  
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NORTH CAROLINA STATE CLEARINGHOUSE  
DEPARTMENT OF ADMINISTRATION  
INTERGOVERNMENTAL REVIEW

m m

COUNTY: DARE

G04: RECREATION FACILITIES/PARKS

STATE NUMBER: 10-E-0000-0331  
DATE RECEIVED: 03/10/2010  
AGENCY RESPONSE: 05/05/2010  
REVIEW CLOSED: 05/10/2010



MS RENEE GLEDHILL-EARLEY  
CLEARINGHOUSE COORDINATOR  
DEPT OF CULTURAL RESOURCES  
STATE HISTORIC PRESERVATION OFFICE  
MSC 4617 - ARCHIVES BUILDING  
RALEIGH NC

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DENR LEGISLATIVE AFFAIRS  
DEPT OF CULTURAL RESOURCES  
DEPT OF TRANSPORTATION

PROJECT INFORMATION

APPLICANT: U.S. Dept. of the Interior  
TYPE: National Environmental Policy Act  
Draft Environmental Impact Statement

Due 3/29/10

DESC: Off-road vehicle (ORV) Management Plan at Cape Hatteras National Seashore. DEIS is available at <http://parkplanning.nps.gov/caha>

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED:  NO COMMENT  COMMENTS ATTACHED

SIGNED BY: Renee Gledhill-Earley

DATE: 4-6-10



ER 10-0173 LEM  
TERES MALC 3/17/10  
Underwater RWL/IFR 3-29-10

S. NAE RLS 4-5-2010

MAR 19 2010



United States Department of the Interior  
NATIONAL PARK SERVICE  
OUTER BANKS GROUP



Fort Raleigh National Historic Site      Wright Brothers National Memorial  
Cape Hatteras National Seashore  
1401 National Park Drive  
Manteo, North Carolina 27954

H4217 CAHA

AUG 27 2010

Mr. Neil Patterson, Jr.  
Director, Tuscarora Environmental Program  
2045 Upper Mountain Road  
Sanborn, NY 14132

Dear Mr. Patterson:

RE: Compliance with Section 106 of the National Historic Preservation Act and National Environmental Policy Act (NEPA), Cape Hatteras National Seashore (CAHA)

The National Park Service (NPS), CAHA, is developing an Off-Road Vehicle Management Plan/Environmental Impact Statement (Plan/EIS) to manage off-road vehicle (ORV) use. The Plan/EIS provides relevant information and impact analysis of alternatives for managing ORV's on seashore beaches. CAHA will also develop a special regulation for the management of ORV's within its boundaries. The target date for the completion of the Plan/EIS is December 31, 2010. The target date for completion of the associated regulation is April 1, 2011. The draft Plan/EIS is enclosed. A proposed rule has not been published yet.

In accordance with section 106 regulations, 36 CFR 800, the NPS is asking for your help in gathering information about historic properties. We are not aware of any historic properties that may be of religious and cultural significance to the Tuscarora Nation that would potentially be affected by the management alternatives described in the draft Plan/EIS. Please let us know if you have any information regarding historic properties that may be located in the potentially affected area. We have notified the North Carolina State Historic Preservation Officer and the Advisory Council on Historic Preservation of our intent to use the NEPA process for associated compliance with Section 106 of the National Historic Preservation Act.

If you have any questions, please contact Doug Stover, Cultural Resource Manager at 252-473-2111 x 153. We look forward to hearing from you. Thank you for your assistance.

Sincerely,

Michael B. Murray  
Superintendent

Enclosure

TAKE PRIDE  
IN AMERICA 

MM



NORTH CAROLINA GENERAL ASSEMBLY  
RALEIGH

May 4, 2010

RECEIVED

MAY 10 2010

Outer Banks Group

Mike Murray, Superintendent  
Cape Hatteras National Seashore  
1401 National Park Drive  
Manteo, NC 27954

Superintendent Murray:

We are writing you today to make formal comments on the Cape Hatteras National Seashore Recreational Area Off-Road Vehicle Management Plan Draft Environmental Impact Statement, specifically Alternative F, created by the National Park Service with input from the negotiated rulemaking advisory committee.

Before commenting on the contents of the document, we would like to call attention to the shocking exclusion of useful data to determine the potential economic impact of Alternative F. The DEIS suggests "F" will have revenue impacts on small businesses "at the low end of the estimated range rather than the high end." From our conversations with small business owners on Hatteras Island, any restriction in access will have severe economic impacts to their families, as the closures in the past years have. In an already disastrous economy, the actions taken by the Court and the Service have proved devastating to all businesses and residents on Hatteras Island. For anyone to claim differently would be either a misguided statement of ignorance or just a pure falsification of the truth. The last names of the original settlers of Hatteras Island can be found in the phonebook to this day. These families have been rooted in this community even before the founding of our nation. Today, their livelihoods are being threatened by that government.

After consulting with the elected leaders of Dare County, we would like to comment on the four critical aspects of the DEIS, the first being the vitally important management tool of corridors. In the past during a closure, our offices were able to work with you and your staff to create corridors around resource closures. These alternative paths are indispensable to the continued movement of pedestrians and vehicles. Also, the corridors allow visitors to access an open area that may be sandwiched between two closed areas. These corridors have limited negative impacts to the protected species, but they are crucial to providing access during closure periods. We stand with Dare County in requesting that corridors be maintained for pedestrians and vehicles in all areas of the Cape Hatteras National Seashore Recreational Area throughout the entire breeding and nesting season.



Page 2  
May 4, 2010

When reviewing the management of any wildlife species by the state of North Carolina, anyone can see our management plans are based on reliable and reputable science and data. Political whims are not entered into the formula for the management of species by our State. We are concerned that political inclination is the reason for and basis of the management buffers within the DEIS. A 1,000-meter buffer in all directions of an unfledged piping plover chick represents 771 acres of closed beach. This seems a bit arbitrary and capricious when managing a species. We have yet to read any scientific reasoning behind this management strategy. We would argue a buffer of 200 meters would be just as effective for the survival of a piping plover chick without the extreme penalization of the residents and visitors of Hatteras Island.

Another confusing issue in the buffers listed in the DEIS is the equal and even more protective status given to species not on the endangered species list. Birds listed as North Carolina species of concern should not be given protected status under the Endangered Species Act. We have spoken with both the Chairman and Executive Director of the North Carolina Wildlife Resources Commission regarding this matter. Both have informed us that these unnecessary protections were never the intent of the Commission's participation in this process, nor a requested outcome. They have also informed us that other species of concern are not given ESA status on other federal lands. Pre-nesting closures should be exclusively for the piping plover, the only federally listed threatened bird species. Also, non-ESA listed birds should not have buffers of 300 meters. The county feels a more appropriate buffer would be 30 meters. We also spoke with NCWRC regarding the inclusion of all birds in the ecosystem being counted when doing any type of management plan. Currently, birds on dredge spoil islands located adjacent to the Park are not being included in the population figures. They agree these islands have no predation and are ideal locations for nesting. To not include the populations of these islands is disingenuous to the intent of this process.

The last technical portion of our comments centers on the treatment of the nests of endangered sea turtles within the Seashore. We would urge the Park Service to allow for the relocation of nests to higher beach elevations. The United States Fish and Wildlife Service practices this management tool in Pea Island National Wildlife Refuge, as do other management agencies on state and federal lands. The Seashore has lost over 46% of the nests laid in the last 11 years, while South Carolina relocated 40.1% of their nests during 2009, finishing the year with only a 7.7% loss of nests. To not allow for the relocation of nests puts both the users of the parks and the turtle hatchlings at competitive disadvantages.

The key to any management plan is flexibility. Without the ability to change user patterns while keeping access open, the Cape Hatteras National Seashore Recreational Area will become but a memory to generations of users from across the globe. We would say that nowhere in our great nation can individuals enjoy the beauty and serenity of our coast as in the Seashore. For decades, families have been coming to Hatteras and Ocracoke Islands to utilize this area as President Roosevelt envisioned.

NORTH CAROLINA GENERAL ASSEMBLY • RALEIGH, NORTH CAROLINA

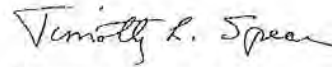
Page 2  
May 4, 2010

As you move forward with your plan, you must remember the promises made by previous directors and superintendents and protect the access for residents and visitors alike.

Sincerely,



Senator Marc Basnight



Representative Tim Spear

0038807

Federal, State, and Local Agencies Comments on the Draft EIS

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MAY 13 2010

Outer Banks Group

STATE OF NORTH CAROLINA  
OFFICE OF THE GOVERNOR  
20301 MAIL SERVICE CENTER • RALEIGH, NC 27699-0301

BEVERLY EAVES PERDUE  
GOVERNOR

May 11, 2010

Mr. Mike Murray  
Superintendent, Cape Hatteras National Seashore  
1401 National Park Drive  
Manteo, North Carolina 27954

Dear Mr. Murray:

I would like to take this opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the Cape Hatteras National Seashore Off-road Vehicle Management Plan. The Cape Hatteras National Seashore is truly one of the treasures of our State, and I take very seriously the need for a balanced management approach for this important resource.

Based on the analysis provided in the DEIS, I believe you and your staff are working to include the economic, social, cultural, recreational and environmental dimensions of this complex issue in the new Management Plan. However, I also believe there are a number of local concerns related to Alternative F that need to be fully addressed. In particular, the Dare County analysis of Alternative F raises several key points, including how corridors, buffers and other practices can be better used to address species management issues and how local businesses are adversely affected by limiting beach access. The history of managing this beautiful Seashore shows that local support and buy-in is crucial to the success of any management approach. I strongly encourage you to take these local concerns seriously and develop appropriate responses to them as you continue working on the new Management Plan.

Any plan that is adopted by the National Park Service must provide an open and accessible beach for the public while also protecting this fragile environment. An effective and sustainable plan must also address Seashore's vital role in the local economy and in the social and cultural lives of local communities. I appreciate the opportunity to comment on the DEIS and I thank you for your continued attention to these issues as the process moves forward.

Sincerely,

Bey Perdue

LOCATION: 116 WEST JONES STREET • RALEIGH, NC • TELEPHONE: (919) 733-5811  
WWW.GOVERNOR.STATE.NC.US

*1/1/10*



COUNTY OF DARE

Office of the Board of Commissioners  
P.O. Box 1000, Manteo, North Carolina 27954

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MAY 11 2010

Outer Banks Group

(252) 475-5700  
Fax (252) 473-6312  
Katie V. VanLear  
Clerk to the Board  
Robert L. Outten  
County Attorney

Warren Judge  
Chairman  
Allen Burrus  
Vice-Chairman  
Virginia Tillett  
Mike Johnson  
Richard Johnson  
Max Dulton  
Jack Shea

May 10, 2010

Mike Murray, Superintendent  
Cape Hatteras National Seashore  
1401 National Park Drive  
Manteo, NC 27954

RE: Dare County Comments on the Draft Environmental Impact Statement (DEIS)

Dear Superintendent Murray,

On behalf of the Dare County Board of Commissioners, following are our written public comments on the Draft Environmental Impact Statement (DEIS) for the Cape Hatteras National Seashore Recreational Area.

It is our longstanding position that the beaches of America's first national seashore should be open to the people consistent with the promises of the enabling legislation.

Our residents and visitors have been faithful stewards of wildlife and for generations have proven that people and nature can live in harmony. Our people have labored tirelessly to help shorebirds and sea turtles through a variety of volunteer programs. We support science-based resource protection that balances the need for reasonable recreational access.

We respectfully request that you make substantive changes to Alternative F in the Final Environmental Impact Statement as are outlined in the following written public comments. Timely changes to the DEIS are crucial not only for the survival of wildlife in the seashore, but also for the survival of our people.

Sincerely,

Warren Judge, Chairman

LAND OF BEGINNINGS



**Dare County  
DEIS  
Written Public Comments**



### SUMMARY

The Dare County Board of Commissioners strongly supports open and accessible beaches for the Cape Hatteras National Seashore Recreational Area. We believe in open access for everyone consistent with the enabling legislation that created America's first National Seashore.

Our residents and visitors have always been faithful stewards of wildlife. For generations they have proven that people and nature can live in harmony. Following in the sacred tradition of the Native Americans, they have consistently demonstrated a reverence for nature and have labored diligently to preserve it for future generations.

We support resource protection for shorebirds and sea turtles based on peer reviewed science. Who better to advocate preservation of area wildlife than the people whose lives and futures are intertwined to the success of each species? For this reason, Dare County is committed to balancing resource protection and providing reasonable access for recreation.

Dare County supports the work done by the Coalition for Beach Access. They have produced a well-researched position statement representing thousands of hours of effort by a dedicated and diverse group of community volunteers. We support their endeavor 100% and ask that you give it your attention.

Dare County has identified four (4) major items that we believe should be modified in the Final Environmental Impact Statement. These are not the only issues worthy of public comment, but represent core principles that we believe are vital for the future of the Cape Hatteras National Seashore Recreational Area. These include –

- **CORRIDORS** as a vital tool in providing access without impairment of resources
- **MANAGEMENT BUFFERS** based on transparent and peer-reviewed science
- **NON-ENDANGERED BIRDS** should not have same protection as if endangered
- **TURTLE MANAGEMENT** that would benefit from more proactive nest relocation

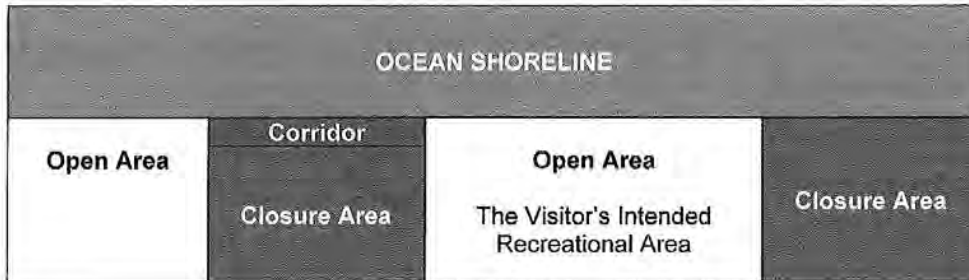
LAND OF BEGINNINGS  
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**CORRIDORS**

Corridors are a vital tool in providing access while managing resources. Corridors provide a small path around temporary resource closures in order to provide access to open areas that would otherwise be blocked. Corridors allow visitor access to an open area that may be sandwiched between two closed areas. These corridors have limited negative impacts to the protected species, but they are crucial to providing access during closures periods.

In some instances, corridors can be made through or around closure areas. In other places corridors can be established below the high tide line. Since unfledged chicks are not found in nests between the ocean and the high tide line, this type of pass through corridor would have no negative effect on wildlife and should be established throughout the seashore.

In the example below, the visitor's intended recreational area would be accessible through a small pass through corridor. Without this corridor, the area marked "Open" would actually be closed because it would otherwise be impossible to get there.



As outlined on pages xii, xvii, and 468 of the DEIS, corridors would only be permitted in Management Level 2 portions (ML2) of Species Management Areas (SMA). In more restrictive Management Level 1 portions (ML1) corridors would not be permitted at all.

Corridors are vital to providing access in a way that does not hinder resource protection. Therefore, Dare County believes pass through corridors should be maintained for pedestrians and ORVs in **all areas** of the Cape Hatteras National Seashore Recreational Area throughout the entire breeding and nesting season.

Page 3

## MANAGEMENT BUFFERS

Buffers, or closures, are important management practices for species recovery. However, in order to have long-term benefit for the protected species and the visiting public, the buffers must be based on peer-reviewed science. Once established, buffers must be routinely monitored throughout the breeding season to ensure that resources are effectively protected and public access is provided.

The extreme buffers outlined in DEIS pages 121 to 127 should be modified to substantially reduce the minimum 1,000 meter buffer in all directions required in Alternative F for unfledged Piping Plover chicks.

Dare County believes a more appropriate and yet effective buffer would be 200 meters. This is consistent with distances currently used at other National Seashores on the Atlantic coast including the following federal facilities –

- Cape Cod National Seashore 200 meters first week, 100 meters thereafter
- Cape Lookout Nat. Seashore 183 meters
- Assateague Island, Maryland 200 meters

Dare County formally requests as part of the NEPA process that the National Park Service provide peer-reviewed science that justifies a 1,000 meter closure in all directions as is currently outlined in the DEIS.

Additionally, buffers for other species, including American Oystercatchers, Least Terns and Colonial Waterbirds should also be changed in the Final Environmental Impact Statement. An effective 30 meter buffer should be established for these species rather than the 300 meter closure as outlined in the DEIS.

## NON-ENDANGERED BIRDS

Under the Endangered Species Act (ESA), all endangered species must be protected. However, there is no requirement in the ESA to give non-endangered species the same level of protection.

Dare County believes the National Park Service should change its position of giving birds designated as a North Carolina "species of concern", the same protection as those that are truly endangered.

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Page 4

The purpose of individual states establishing these lists is to designate certain birds for statewide monitoring and tracking, not to impose unnecessary protections. The North Carolina Wildlife Resources Commission never requested that their participation in this process should result in additional closures. Additionally, they have stated that birds on their species of concern list are not given ESA status at other federal lands.

Dare County's position is supported by Gordon Myers, the Executive Director of the North Carolina Wildlife Resources Commission. He says the state designation is supposed to be more of a call to action for a species. The North Carolina wildlife Resources Commission has voiced its objections to the use of state species of concern lists to trigger ORV management strategies under the federal Endangered Species Act.

Pre-nesting closures, outlined on pages 121 to 127 of the DEIS should be modified to include only endangered or threatened species. This important modification would result in establishing pre-nesting closures exclusively for the Piping Plover, the only threatened bird species in the seashore.

Accordingly, pre-nesting closures are not warranted for the non-endangered and non-threatened American Oystercatchers. Because Colonial Waterbirds do not return to the exact same place for nesting each year, establishing pre-nesting closures for these birds is both unpredictable and unnecessary.

In monitoring and tracking birds for purposes of determining resource viability, all birds in the same ecosystem of the seashore should be counted. When conducting a bird census of the Cape Hatteras National Seashore Recreational Area, it is imperative to count the many birds on the nearby dredge and spoil islands that are located just yards away and within sight of the seashore. These birds are part of the same ecosystem and should be included. To not include the bird populations of these islands is disingenuous to the intent of this process.

The following photo taken of Cora June Island, just off Hatteras Village, shows a huge population of birds in early June of 2009. The large birds with black backs are Black Skimmers. The smaller birds to the left are mostly Royal Terns. Cora June Island, a man-made dredge island just 500 meters west of Hatteras Village, is an ideal nesting site as a sheltered island with no predators.

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Photo by Donny Bowers

**TURTLE MANAGEMENT**

Dare County believes endangered sea turtles would benefit from management practices now in use at other federal seashores that are more proactive in efforts to achieve nesting success. This includes relocating nests to more desirable locations as is done in other state and federally controlled areas.

The Cape Hatteras National Seashore Recreational Area is on the northernmost fringe of turtle nesting locations for the southeast. In this area, weather and predators represent the greatest threat to sea turtles.



Nesting in the United States occurs primarily in four southeastern states as detailed in the USFWS & NMFS species "Recovery Plan"

<b>North Carolina</b>	<b>1.0 %</b>	The northernmost area with the fewest nests
<b>South Carolina</b>	<b>6.5 %</b>	
<b>Georgia</b>	<b>1.5 %</b>	
<b>Florida</b>	<b>91.0 %</b>	Primary area where the most nesting occurs

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Page 6

The Loggerhead Recovery Plan recognizes that, "*Historically, relocation of sea turtle nests to higher beach elevations or into hatcheries was a regularly recommended conservation management activity throughout the southeast U.S.*" (2009, Second Revision, page 52) while the North Carolina Wildlife Resources Commission (NCWRC) sea turtle program currently recommends relocation only as "*as a last resort.*"

The National Park Service in page 125 of the DEIS relies upon the approach used by North Carolina Wildlife Resources Commissioner (NCWRC). This contradicts the U.S. Fish and Wildlife Service (USFWS) practice of relocating nests on the Pea Island Wildlife Refuge, located on the north end of Hatteras Island, North Carolina.

By not supporting nest relocation, the Cape Hatteras National Seashore Recreational Area has lost over 46% of the nests laid in the last 11 years. Meanwhile, South Carolina relocated 40.1% of its nests during 2009, resulting in an incredibly low lost nest rate of only 7.7% making a strong case for the relocation of nests.

The turtle management practices outlined on DEIS pages 125, and 392 to 396 should be modified to allow nest relocation as a tool for species recovery. See attached appendix B.

## CONCLUSION

Dare County urges the National Park Service to make these changes in their preferred alternative F and incorporate the provisions outlined in these public comments. In doing so, we believe it will be beneficial to the long-range success for wildlife, enhance the visitor experience and improve the lives of those living near the Cape Hatteras National Seashore Recreational Area. Without these changes, people will suffer harm.

On the subject of harm, we conclude these comments with our statement about the economic harm that is described in the DEIS. On page xviii, Alternative F is characterized as having a "negligible to moderate" adverse impact on small businesses.

We believe the negligible to moderate projection is inaccurate and relies on economic surveys that have not yet been published. Furthermore, this material is not expected to be added to the DEIS until after the public comment period has ended. This concern has been echoed by the Outer Banks Chamber of Commerce on behalf of its 1,000 business members, in their public comments on the DEIS, dated May 6, 2010.

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Page 7

Based upon the economic harm we have already experienced under the consent decree, Dare County projects the economic impact of Alternative F to be substantial.

We have seen how unemployment has disproportionately impacted the villages within the Cape Hatteras National Seashore Recreational Area. In September 2009, Dare County as a whole experienced an unemployment rate of 6.8%, one of the lowest in the state. However, during the same period Hatteras Island had 12.8% unemployment with the village of Salvo at 28%, Buxton 16.5% and Rodanthe at 12.4%.

Beach closures have already had a devastating and unfair impact on many Dare County businesses causing foreclosures, bankruptcies, lay-offs, cutbacks, expensive refinancing, and depleted college funds and savings accounts.

Even businesses whose revenue has stayed level or showed a modest increase have accomplished this at a costly price. Many have had to cut back employee hours, forego much-needed capital improvements, and sacrifice profits.

Family-owned businesses are the backbone of Dare County. Hard working, local families have for generations provided employment opportunities for the community, and offered outstanding service and hospitality to Outer Banks visitors.

Attached as Appendix C, are notarized affidavits from a representative cross section of business owners. These hard-working people have already suffered greatly because of beach closures. It is unfair and inaccurate for the National Park Service to simply write off these people and describe their pain under Alternative F as "negligible to moderate." Our small business owners do not ask for special favors or government handouts, just a fair opportunity to earn their part of the American dream. In good faith, they established businesses and built a way of life based on solemn promises that were made by the federal government when creating the Cape Hatteras National Seashore Recreational Area. They look to you today to honor those promises.

On behalf of the residents and visitors of Dare County, the Board of Commissioners respectfully submits these public comments and urges the National Park Service to incorporate them into the Final Environmental Impact Statement as practical solutions that will benefit both wildlife and people.

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## Appendix A

## Summary Chart of Dare County Position

Issue	DEIS Page #	Alternative F Park Service Preferred	Dare County Position
Corridors	xii xviii 468	Corridors are only allowed in ML-2 portions of SMA's and are subject to resource closures at any time	<p>Corridors are a vital tool in providing access while managing resources. They provide a small path around temporary resource closures in order to provide access to open area that would otherwise be blocked.</p> <p>Corridors should be permitted throughout the seashore during the entire breeding and nesting season including ML-1 portions of SMA's.</p> <p>These corridors would provide valuable access without impairment or damage to protected resources</p>
Management Buffers	121-127	<p>Buffers (closures) are larger than required by species recovery plans.</p> <p>For example, Piping Plover unfledged chicks, are given a protective buffer of a minimum of 1,000 meters in all directions.</p>	<p>Buffers, or closures, are important management practices for species recovery. However, to have long term benefit for the wildlife and the visiting public, buffers must be based on peer-reviewed science</p> <p>For example, the Piping Plover, a species classified as threatened and not endangered, is given a level of unprecedented protection in Alternative F.</p> <p>A 1,000 meter buffer in all directions represents over 771 acres. The DEIS does not cite any peer-reviewed science in supporting such closure. A more appropriate &amp; effective buffer would be 200 meters</p>
Non-Endangered Birds	121-127	<p>Non-endangered species, such as American Oystercatchers, Least Terns and Colonial Waterbirds are given Pre-Nesting closures and buffers up to 300 meters</p>	<p>Birds that are not listed as endangered should not be afforded the level of protection given to ESA (Endangered Species Act) protected species. Instead of 300 meter buffers for these birds, a more appropriate buffer would be 30 meters</p> <p>Also, all birds in the same ecosystem of the seashore should be counted. This includes all the many birds on the dredge and spoil islands located just yards away and within sight of the seashore.</p>
Turtle Management	125 392-396	<p>DEIS claims North Carolina Wildlife Resources Commission turtle guidelines will be followed.</p>	<p>The National Park Service should consider turtle management practices successfully used in other federal and state areas to achieve nesting success.</p> <p>More proactive measures include relocating nests to more desirable locations, which is routinely and successfully done in other areas.</p>

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Appendix B



Sea Turtle Management Practices In the Southeast Coastal Region



All sea turtles are classified as threatened or endangered and protected by the Endangered Species Act. Two Federal agencies divide jurisdiction over sea turtles. U.S. Fish & Wildlife Service (USFWS) has authority when sea turtles are on the beach. The National Marine Fisheries Service (NMFS) has jurisdiction when sea turtles are in the water.



Section 6 of the Endangered Species Act requires states to show they have an "adequate and active" program for the conservation of endangered sea turtles. The most common sea turtle to nest on the beaches of the southeast coastal region is the threatened Loggerhead sea turtle (Caretta caretta).



Nesting in the United States occurs primarily in four southeastern states as detailed in the USFWS & NMFS species "Recovery Plan"

<b>North Carolina</b>	<b>1.0 %</b>	The northernmost area with the fewest nests
<b>South Carolina</b>	<b>6.5 %</b>	
<b>Georgia</b>	<b>1.5 %</b>	
<b>Florida</b>	<b>91.0 %</b>	Primary area where the most nesting occurs

Throughout these southeastern states, there are regional differences in how sea turtles are protected. Some areas make an effort to identify and mark all nests. Others do not.

In the Cape Hatteras National Seashore Recreational Area, nests are marked with stakes and string. As the hatch date approaches, the buffer is expanded closing access between the nest and the ocean, and often prevents access behind the nest as well.

In Florida, where the most sea turtle nesting occurs, it is a different story. Some nests are marked only with a single stake. Others have a small triangular string enclosure, with or without a warning sign. And, some nests are not marked in any way. Most noticeable is the fact that people in Florida are permitted responsible recreational access in close proximity to sea turtle nests buried beneath the sand.



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Unlike Florida, people in Cape Hatteras National Seashore Recreational Area are fined \$150.00 for even walking in the wet sand in front of a sea turtle nest like the one shown in the above photograph.

According to the Florida Fish & Wildlife Conservation Commission, "**Not every sea turtle nest needs to be marked**" and many are not. (Marine Turtle Conservation Guidelines, revised 2007) Each year, Florida has up to 1,000 sea turtle nests per mile compared to a peak level of 1.7 nests per mile in the Cape Hatteras National Seashore Recreational Area.



In this photo of a busy Florida beach, the two buried turtle nests shown are only marked with a small triangle of sticks, without a warning sign, while surrounded by nearby beachgoers.

October 23, 2009, the Island Free Press featured an in-depth report on sea turtle nests. The article (attached) contrasted differences in sea turtle management between Florida and North Carolina.

Florida beach photo showing people and umbrellas near nests

#### Sea Turtle Nesting Facts –

Sea turtles live in the ocean and come ashore only for the female to lay eggs which are buried in the sand, at night, at a depth of 18 to 22 inches. One female will bury approximately 112 eggs the size of ping-pong balls. The eggs remain buried until hatching, at night, approximately 55 to 80 days later.

*Important* – It is not the number of nests laid, but whether they survive to hatch. Successful recovery depends on solutions to the real problems – Loss of nests due to high tides from weather events, failure to relocate nests, and predation

#### Nest Relocation –

The Loggerhead Recovery Plan recognizes that, "**Historically, relocation of sea turtle nests to higher beach elevations or into hatcheries was a regularly recommended conservation management activity throughout the southeast U.S.**" (2009, Second Revision, page 52)

The sea turtle program of the North Carolina Wildlife Resources Commission (NCWRC) currently recommends relocation only as "**as a last resort.**" As outlined in their protocol, "**Nests in heavy foot traffic areas should not be relocated. These nests should be fenced off and marked, so that pedestrians will avoid them.**"

North Carolina's approach is contrary to the USFWS practice of relocating nests on the Pea Island Wildlife Refuge, located on the north end of Hatteras Island, North Carolina.

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The nearby Cape Hatteras National Seashore Recreational Area does not support moving nests and has lost over 46% of the nests laid on Cape Hatteras beaches in the last 11 years.

Meanwhile, South Carolina relocated 40.1% of its nests during 2009 resulting in an incredibly low lost nest rate of only 7.7% making a strong case for the relocation of nests as a tool for species recovery.

**Unanswered Questions –**

Sea turtle volunteer Larry Hardham who was also a participant in the negotiated rule making proceeding for the Cape Hatteras National Seashore Recreational Area, has repeatedly asked for science-based answers to a series of pertinent questions about sea turtle nests.

USFWS has been asked, in writing, the following questions –

- Do vibrations in the sand affect incubation or hatchlings?
- At what distance can emerging hatchlings hear a passing car?
- At what distance can emerging hatchlings feel a car pass at 15 mph?
- And, does either of these events alter their activity?
- How far away does a stationary light source have to be disorienting (We were told a moving light is not as disorienting as stationary light)

*None of these questions have yet been answered*



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Appendix C

Notarized Affidavits from Business Owners

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared Frank Folb, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

I am the owner of Frank & Fran's, The Fisherman's Best Friend, a fishing tackle retail business in Avon, North Carolina on Hatteras Island. I have served fishermen from this shop for the last 22 years.

Before the consent decree, in 2007, my business experienced its best year ever. Since the implementation of the consent decree, I have suffered a decline in business. In 2008, during the first year of consent decree closures, revenue had a 20% drop. So far, through July 2009, I have seen an additional 10% decrease from the previous year.

The decline in my business is directly related to closures and restricted beach access under the consent decree. Over the past 22 years, every economic downturn has resulted in an increase of business for me. I have witnessed first-hand that when the national economy suffers, people turn to inexpensive, short-distance vacations. That is why during bad economic times, my business has always prospered.

The impact of beach closures on my business is further verified by the fact that since access to Cape Point was re-opened on July 28, 2009, I have seen a dramatic, sudden increase in business because of the return of fishermen to the area.

The decline in my business because of the consent decree has also taken a toll on my employees and their families. I employ a staff of 5 people. For the first time in the 22 year history of my business, I have been unable for the past two years to give cost of living increases to my employees. Additionally, I have had to eliminate 8 hours from each employee's work-week, causing financial hardship for each one of their families.

*[Handwritten signature of Frank Folb]*  
[signature of affiant]

Frank Folb  
40210 Hwy 12  
Avon, NC 27915

*[Handwritten signature of Janice E. Williams]*  
[signature of Notary]

Janice E. Williams

Subscribed and sworn to before me  
this 24th day of August, 2009

NOTARY PUBLIC  
My commission expires: November 27, 2013



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AFFIDAVIT

State of North Carolina  
County of Dare

**BEFORE ME**, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared **Hal Lester**, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

I own and operate Finnegan's Restaurant on Hatteras Island in Buxton, North Carolina. We are directly across the street from Lighthouse Road, which is the entrance to Cape Point and the Cape Hatteras Lighthouse. We moved to Hatteras Island 5½ years ago to fulfill our dream of operating a business here and becoming part of this wonderful community.

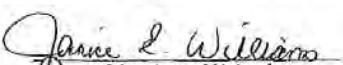
We have worked hard and built a good business. Our close proximity to Cape Point attracted those who came to here for world-class fishing and other recreational opportunities. The ambience of Finnegan's is such that everyone feels comfortable. Families with small children feel right at home, as well as anglers coming directly from the beach. These people were a significant portion of our business. Before the consent decree went into effect in May 2008, our business was healthy and strong.

Since the consent decree was implemented in 2008, it has been very hard for us. We experienced a devastating 25% decline in business for the year. This tragedy then repeated itself for 2009, resulting in a total loss of 50% for our business since the consent decree. The closures have also changed the way we operate. Previously I provided general supervision and had a staff of up to 12 people. Now our workforce is half that size and I labor in the kitchen every day as we struggle to survive.

We know our loss is directly related to beach closures because whenever access is restored and the barricades are removed, hungry fishermen and families return to our restaurant. When Cape Point is closed, my business pays the price. When Cape Point is open, we are able to earn a living. Sadly, the revenue lost while the beaches are closed is gone forever.

Because of our close proximity to the Cape Point entrance, we are on the front lines of hearing angry comments from frustrated visitors turned away from their favorite recreational area. Many have told us with Cape Point closed they "are not coming back." We need help.

  
[signature of affiant]

  
[signature of Notary]

Hal Lester  
4694B Highway 12  
Buxton, NC 27920

Janice E. Williams  
Subscribed and sworn to before me  
this 24th day of August, 2009

[Notary Seal:]



NOTARY PUBLIC  
My commission expires: November 27, 2013

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AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared **Jaki Gray**, known to me to be a credible person and of lawful age, who being by me first duly sworn, on her oath, deposes and says:

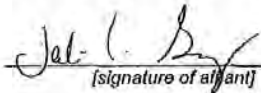
For 53 years my family has owned and operated the Tower Circle Motel in Buxton, North Carolina on Hatteras Island. I am the owner and manager. My motel caters to fishermen and their families. Most of our business is from surf fishermen who are repeat customers. They select our motel, because of its close proximity to the famous Cape Point fishing location in the Cape Hatteras National Seashore Recreational Area.

My business has suffered greatly since the consent decree started in 2008. During the first year under the consent decree, we experienced a sudden 50% drop in business from the preceding year. This year, for 2009, my business is down an additional 65%.

I have witnessed this decline in business and can track it directly to the closures at Cape Point. We regularly hear from our long-time customers who call the motel to ask, "Is Cape Point Open?" When they learn it is closed, they say, "If I can't fish the Point, I am not coming."

Regardless of the national economic condition, we know that our customers are still taking their traditional fishing vacations. Unfortunately, since the consent decree has closed Cape Point for extensive periods, my customers are forced to go elsewhere.

In 2007, before the consent decree, my business employed 6 people. Because of the closures, we now have only 2 employees. I have sadly had to let go of 4 people because of the consent decree closures. Our 53-year-old business is now in jeopardy.

  
[signature of affiant]

Jaki Gray  
46243 Old Lighthouse Road  
Buxton, NC 27920

  
[signature of Notary]

Janice E. Williams  
Subscribed and sworn to before me  
this 24th day of August, 2009

NOTARY PUBLIC  
My commission expires: November 27, 2013



LAND OF BEGINNINGS  
PRINTED ON RECYCLED PAPER

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared **Bob Eakes**, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

I am the owner of Red Drum Tackle, in Buxton, North Carolina on Hatteras Island. My business is located in close proximity to the entrance of Cape Point, one of the top surf fishing spot in the world. Since 1976, Red Drum Tackle has been a landmark to generations of surf fishermen.

Since the implementation of the consent decree, my business has sustained a 35% loss for each of the last 2 years. I have seen a decline in weekly sales and witnessed a severe drop in business during weekends. I attribute this unparalleled loss of business directly to the closures of the consent decree. Immediately after the consent decree was implemented in May 2008, our business had an abrupt drop when people were unable to fish at Cape Point. We experienced this sudden revenue plunge long before the nationwide economic recession occurred later in the fall of 2008.

My business has weathered previous economic recessions because we cater to surf fishing, a sport with a relatively low cost of participation. However, for the past two years, whenever Cape Point was closed, business was down. On the other hand, when Cape Point was open, revenue immediately surged. I have witnessed first-hand this direct, cause and effect correlation between revenue and access to Cape Point.

My employees and my family have suffered because of the consent decree. I was forced to lay-off one third of my workforce. These were hard-working employees who depended on the success of Red Drum Tackle in order to feed their families. In order to survive, I have also had to use funds set aside for my son's education. Sadly, this year the decline in revenue caused by the consent decree will also consume the funds remaining in my 401k. We have had the rug pulled out from beneath us.

*Robert A. Eakes*  
[signature of affiant]

*Janice E. Williams*  
[signature of Notary]

Bob Eakes  
P.O. Box 1364  
Buxton, NC 27920

Janice E. Williams

Subscribed and sworn to before me  
this 24th day of August, 2009

[Notary Seal]



NOTARY PUBLIC  
My commission expires: November 27, 2013

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared John Couch, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

I am the President and Owner of Lighthouse Service Center, Inc. and Lighthouse Auto Parts, often referred to as Carquest Auto Parts. My businesses are located on Hatteras Island in Buxton, North Carolina near the entrance to the Cape Hatteras Lighthouse and the popular Cape Point fishing destination. We perform automobile and truck repairs and sell replacement parts.

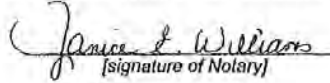
Prior to the consent decree, 2007 was the best year for my businesses. This was when the National Park Service Interim Management Strategy governed access to the beach. In contrast, since the implementation of the consent decree in May of 2008, I have suffered a decline in revenue in both of my business operations with a crushing loss of 30,000.00 in first 3 months of the consent decree. Since then we have tracked a decline in revenue that directly correlates to the times of closure periods at Cape Point. When access is denied, business goes down. After the beaches re-open, business goes back up.

I am confident the losses sustained by my businesses are due to the closures and not the general economy. Not only do we see the direct correlation to closure periods, but also my business has historically not been adversely affected by previous recessions. In fact, during economic downturns, automotive repair and parts businesses generally benefit from people retaining their cars longer and performing more of their own maintenance.

The impact of beach access restrictions has not only hurt me, it has also harmed others. Because of the consent decree, I was forced to eliminate 3 job positions. This involved a bookkeeper, a mechanic and a parts worker. These were all innocent people who did not deserve to lose their livelihoods because of unreasonable beach access restrictions.

  
[signature of affiant]

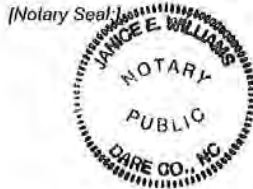
John Couch  
46813 Highway 12  
Buxton, NC 27920

  
[signature of Notary]

Janice E. Williams

Subscribed and sworn to before me  
this 24th day of August, 2009.

NOTARY PUBLIC  
My commission expires: November 27, 2013



AFFIDAVIT

State of North Carolina  
County of Dare


BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared Earl Younce Jr, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

Since 1954 our family has owned and operated the Avon Cottages and Avon Motel. Both businesses are located on Hatteras Island in Avon, North Carolina. For 55 years, we have provided lodging for generations of surf fishermen. Our regular customers depend on open and accessible beaches for recreational fishing.

Immediately following the implementation of the consent decree in 2008, our business abruptly declined. We experienced a 31 to 33% loss of revenue. Based upon direct feedback from our regular customers, we know that the loss we sustained was linked to beach closures.


During periods when Cape Point or large portions of the beach were closed, our business would drop-off. When access was restored, revenue would immediately start to pick-up. If our loss was caused by the economic recession, our revenue would not rebound as soon as beach access was restored for surf fishing.

The restrictive closures under the consent decree have put a stranglehold on our family business. We have had to undergo costly refinancing in order to survive. We have also had to reduce our employee workforce from 16 down to 8. This drastic cutback has hurt those who depended upon us for a job to provide for their families.

  
*[signature of affiant]*

Earl Younce Jr.  
40279 Younce Road  
Avon, NC 27915

[Notary Seal]

  
*[signature of Notary]*

Janice E. Williams

Subscribed and sworn to before me  
this 24th day of August, 2009

NOTARY PUBLIC  
My commission expires: November 27, 2013



LAND OF BEGINNINGS  
PRINTED ON RECYCLED PAPER

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, NORMAN J. DEFRAGO  
(name of Notary before whom affidavit is sworn), on this 15 day of September, 2009,  
personally appeared **Fred Sawyer**, known to me to be a credible person and of lawful age,  
who being by me first duly sworn, on his oath, deposes and says:

My wife Denise and I have owned the Froggy Dog Restaurant for 14 years. We are located on Hatteras Island in Avon, North Carolina. The Froggy Dog is a family restaurant that has built a loyal following of regular customers for breakfast, lunch and dinner.

We depend on open and accessible beaches to attract fisherman, surfers and others to our area for recreation. Since implementation of the consent decree in 2008, I have witnessed a direct correlation in business revenue depending on whether beaches are opened or closed.

Our restaurant has struggled to survive whenever the Avon access ramp or Cape Point are closed. When these areas are shut down, revenue suffers. On the other hand, when these areas are re-opened for recreation, we see a sudden increase in business. This confirms for me the fact that regardless of the economy, people are willing to come to our area when the beaches are open. For us, and many other businesses, the beach is our industry.

In order to combat the negative impact of beach closures, we have had to work even longer hours and spend money on costly promotions and improvements. For example, we added a porch and offered music in an effort to help gain business. As the universe of potential customers dwindled because of the consent decree closures, we faced unprecedented competition in attracting each guest.

My wife and I have direct contact with our customers on a daily basis. We have listened to their frustration and anger about beach closures. Many tell us they are physically unable to hike over steep sand dunes in order to enjoy the ocean. I recall one older customer with bad knees saying, "If the beaches are closed, I'll never come back."

[Signature]  
[signature of affiant]

Fred Sawyer  
40050 NC Highway 12  
Avon, NC 27915

[Signature]  
[signature of Notary]

NORMAN J. DEFRAGO  
[printed name of Notary]



Subscribed and sworn to before me  
this 15 day of September, 2009

NOTARY PUBLIC  
My commission expires: 8-8, 2010

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, KAREN KOLMEIER  
[name of Notary before whom affidavit is sworn], on this 24 day of September, 2009,  
personally appeared Anne C. Bowers, known to me to be a credible person and of lawful  
age, who being by me first duly sworn, on her oath, deposes and says:

I have owned and operated Indian Town Gallery on Hatteras Island in Frisco, North Carolina  
since April of 2000. We also lease retail space to 2 other businesses and rent 2 apartments.

2008 started out as a good year until the effect of the consent decree closures hit in early  
summer. For example, in June 2008 revenue declined 20%. The subsequent months of the  
year were even worse. June was followed with a decline of 27% in July, 25% in August 25%,  
38% in September, 24% in October, and 38% in November. December was the only month  
with an increase, a meager 200 dollars.

The decline in our business revenue was directly related to the restrictive closures of the  
consent decree. This was confirmed by the comments of many of our regular customers.  
They repeatedly said they would not be making their traditional trip to Hatteras Island,  
because the most popular recreational areas, including Cape Point, were closed.

The impact of the consent decree has changed the way my business operates. We have had  
to add the expense and effort of educational features and launch special promotions.  
Tragically, one of my key employees lost her home to foreclosure and had to leave the area  
to seek other opportunities. Since I was unable to immediately fund a replacement for her, I  
found myself having to work 70-hour weeks on a routine basis

Not only did my gallery business drop, but my leasing income diminished as well. As area  
businesses experienced declines because of closures, many could not pay their rent. We  
who lease space were put into difficult dilemmas as property managers. When our tenants  
suffered, we suffered. In fact, I lost one of mine completely when they went out of business  
in September 2008. This caused a hardship on me and my family that created a do-or-die  
struggle to survive that has continued to exist since the consent decree was implemented.

*[Handwritten signature of Anne C. Bowers]*

[signature of affiant]

Anne C. Bowers  
50840 Highway 12  
Frisco, NC 27938

*[Handwritten signature of Karen Kolmeier]*

[signature of Notary]

KAREN KOLMEIER  
[printed name of Notary]



Subscribed and sworn to before me  
this 24 day of September, 2009

NOTARY PUBLIC  
My commission expires: March 14, 2012

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared Steve Hissey, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

I am the Co-Manager of Teach's Lair Marina. We are located in the village of Hatteras, North Carolina. We are a full service marina and carry a wide range of products and services for the many who travel to Hatteras Island for surf fishing. The bait and tackle portion of Teach's Lair Marina is known as "The Roost" which is named in honor of the "Pelican's Roost" our former tackle shop which closed in 2004 as the result of hurricane Isabel.

After the implementation of the consent decree in 2008, we experienced a significant decline because of restrictive closures. Our revenue is down 30 to 40% since 2007, the year before the consent decree. Each and every time access to Hatteras Inlet was closed for surf fishing, our business suffered. We lost 300 to 600 dollars for every day that access was restricted.

Our long-time customers are very frustrated by the beach closures and express their dissatisfaction to us on a regular basis. This has caused many to abandon the relatively inexpensive sport of surf fishing and invest in more costly boats in order to continue fishing. Even during a national recession, our regular customers are reporting to us that they are still fishing on a regular basis, just not here. As they complain, "Why travel to Hatteras if they won't let you fish?"

The aftermath of the consent decree has created a very fragile existence for Hatteras Island unlike anything I have ever seen before. It has made it extremely difficult for hard-working people to earn a living. During this time, our business has been forced to lay-off 2 people solely related to the closures.

*Steve Hissey*  
[signature of affiant]

Steve Hissey  
58646 Highway 12  
Hatteras, NC 27943

*Janice E. Williams*  
[signature of Notary]

Janice E. Williams  
Subscribed and sworn to before me  
this 24th day of August, 2009

NOTARY PUBLIC  
My commission expires: November 27, 2013



LAND OF BEGINNINGS  
PRINTED ON RECYCLED PAPER



AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Jody L. Midgett  
[name of Notary before whom affidavit is sworn], on this 13 day of Oct, 2009,  
personally appeared Kim Mosher, known to me to be a credible person and of lawful age,  
who being by me first duly sworn, on her oath, deposes and says:

I am a professional artist and conduct business as Kim Mosher Designs on Hatteras Island in Buxton, North Carolina. My artwork encompasses several mediums featuring depictions of wildlife offering a unique view of nature available for discovery on Hatteras Island.

I am passionate about wildlife and enjoy helping others experience a special connection with nature through my art. There is nothing more gratifying than knowing that my artwork has inspired in someone an appreciation and respect for wildlife.

My business has been hit hard by the consent decree closures. After implementation of the consent decree in May 2008, my business was forced to scramble. Revenue declined from the sale of my fish drawings that are reproduced on t-shirts and distributed to tackle shops. Over the years, my depictions of in-shore fish species have been well received by the fishing community. However, as the consent decree closures forced away many fishermen, my income started a downward spiral culminating in 2009 with being down 30%.

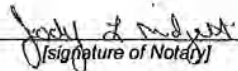
I am also active in the Hatteras Island Arts and Crafts Guild, which conducts public art shows to raise scholarship money for local students. Because this event occurs during the summer when many of the most popular portions of the beach are closed, attendance has suffered. This has caused a decrease in the amount of money we have been able to raise for student scholarships as compared to before the consent decree.

It is easy to get mad watching scholarship money decline and people suffer. Like many other businesses, the consent decree has forced me to work harder to make less.

  
[signature of affiant]

Kim Mosher  
46427 Flowers Ridge Road  
Buxton, NC 27920

[Notary Seal:]

  
[signature of Notary]

Jody L. Midgett  
[printed name of Notary]

Subscribed and sworn to before me  
this 13 day of Oct, 2009

NOTARY PUBLIC  
My commission expires: 6-15, 2013

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared Brian Jones, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

I own and operate "My Mechanic at the Beach," providing a mobile repair service for cars and trucks. Previously I operated a repair shop on Hatteras Island in Buxton, North Carolina known as "My Mechanic." After 2½ years, I was forced out of my repair shop because of the consent decree closures and now work as a mobile mechanic.

Prior to the consent decree implementation in 2008, my business was thriving. The majority of my customers were fishermen who frequented the Cape Point area in Buxton, North Carolina. Business was good and I invested a substantial sum in tools, equipment and a specialized four-wheel drive wrecker truck. I worked hard and made a good, honest living.

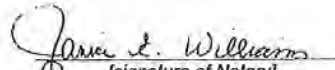
Things changed overnight after the consent decree. With Cape Point and other popular fishing areas closed during the most important times of the year, my regular customers stopped coming to Hatteras Island. I heard from many who told me they were going elsewhere to fish because of the closures. Without fishermen coming to Hatteras Island, the foundation of my business disappeared.

Revenue in my repair shop dropped over 50% after implementation of the consent decree. In order to survive, I had to liquidate for cash my four-wheel drive wrecker truck. It was sad to sacrifice one of the tools of my trade and suffer a tremendous financial loss in the transaction.

I held on to the repair shop for as long as possible, but eventually had to close the doors of the business for which I had worked so hard. Because of the consent decree I was forced out of my shop and now struggle to get by as a mobile mechanic. This has severely hampered my ability to earn a living and provide for my family.

  
[signature of affiant]

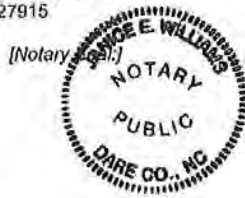
Brian Jones  
40083 Williams Road  
Avon, NC 27915

  
[signature of Notary]

Janice E. Williams

Subscribed and sworn to before me  
this 24th day of August, 2009

NOTARY PUBLIC  
My commission expires: November 27, 2013



LAND OF BEGINNINGS  
PRINTED ON RECYCLED PAPER

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared **Walton Fulcher**, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

I am the President of the Cape Hatteras United Methodist Men. We serve the community through the Cape Hatteras Emergency Assistance program and Food Pantry. We provide aid to individuals and families in need. We are located at the Buxton United Methodist Church in the village of Buxton, North Carolina on Hatteras Island.

We have seen a tremendous increase in the number of families needing our assistance. In the past year, this number has more than doubled. These people, many of whom have been impacted by the closures of popular fishing areas on the Cape Hatteras National Seashore Recreational Area, rely on us for food and emergency assistance.

In the past year, we have paid out more than \$66,800 in assistance to 160 families. During the same time, our Food Pantry has been utilized 730 times. This has provided provisions to 2,475 people with enough food to feed 60,000 meals.

Volunteers run our program completely with 100% of our budget spent directly on services for people on Hatteras Island.

*Walton Fulcher*  
[signature of affiant]

*Janice E. Williams*  
[signature of Notary]

Walton Fulcher  
P.O. Box 1591  
Buxton, NC 27920

Janice E. Williams

Subscribed and sworn to before me  
this 24th day of August, 2009

[Notary Seal:]

NOTARY PUBLIC  
My commission expires: November 27, 2013



LAND OF BEGINNINGS  
PRINTED ON RECYCLED PAPER

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared Lee Ann Quidley-Canning, known to me to be a credible person and of lawful age, who being by me first duly sworn, on her oath, deposes and says:

My family has owned and operated Sonny's Waterfront Restaurant for 34 years. We are located in the village of Hatteras, North Carolina.

Since the implementation of the consent decree, our business has experienced a substantial loss of income. I have witnessed an overall reduction of 20% since 2007, the year prior to the consent decree.

As a small business owner, I have the opportunity to talk with our customers on a daily basis. I hear their frustrations about the beach closures. Many of them are discouraged about restricted access and say they will never return to Hatteras.

*[Handwritten signature of Lee Ann Quidley-Canning]*  
[signature of affiant]      *[Handwritten signature of Janice E. Williams]*  
[signature of Notary]

Lee Ann Quidley-Canning  
57947 Highway 12  
Hatteras, NC 27943

Janice E. Williams

Subscribed and sworn to before me  
this 24th day of August, 2009

[Notary Seal.]

NOTARY PUBLIC  
My commission expires: November 27, 2013



LAND OF BEGINNINGS  
PRINTED ON RECYCLED PAPER

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared Mike Harrell, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

I have owned and operated Cape Woods Resorts since 1997. We are a campground with 70 sites located at 47646 Buxton Back Road in the village of Buxton on Hatteras Island, North Carolina. My campground is very close to the entrance of Cape Point.

Since implementation of the consent decree, I have witnessed a 10% drop-off in business. My customers have repeatedly told me that their cancellations are because of the consent decree closures. People express to me that they come here to fish on Cape Point and take their grand children to the beach. My business depends on access to the world class fishing of Cape Point.

*Mike Harrell*  
[signature of affiant]

Mike Harrell  
47646 Buxton Back Road  
Buxton, NC 27920

[Notary Seal:]



*Janice E. Williams*  
[signature of Notary]

Janice E. Williams

Subscribed and sworn to before me  
this 24th day of August, 2009

NOTARY PUBLIC  
My commission expires: November 27, 2013

AFFIDAVIT

State of North Carolina  
County of Dare

BEFORE ME, the undersigned Notary, Janice E. Williams, on this 24th day of August, 2009, personally appeared John A. Mortensen, known to me to be a credible person and of lawful age, who being by me first duly sworn, on his oath, deposes and says:

I have worked in the recreational fishing industry since moving to Hatteras Island in 2003 following my career in the United States Air Force. I am a builder of custom fishing rods, and have been an employee of area bait and tackle shops.

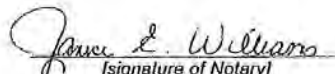
The consent decree closures have taken a severe toll on me. I have personally been victimized by the restrictive closures that have denied access to the most popular fishing locations in the Cape Hatteras National Seashore Recreational Area.

Ever since the 2008 consent decree, my ability to earn a living has been severely damaged. I have had to endure 40 difficult weeks of unemployment since the consent decree was implemented. During this time, employment opportunities have not been available because of the general decline in area business caused by the closures.

As a custom fishing rod builder, I have seen my income nearly vanish. Before the consent decree, I was building over 300 custom fishing rods each year for the many fishermen travelling to Hatteras Island. In the past year, I have only built 8 rods. This is how severely and dramatically the closures have crushed my business.

  
\_\_\_\_\_  
(signature of affiant)

John A. Mortensen  
46750 Buxton Back Road  
Buxton, NC 27920

  
\_\_\_\_\_  
(signature of Notary)

Janice E. Williams

Subscribed and sworn to before me  
this 24th day of August, 2009

NOTARY PUBLIC  
My commission expires: November 27, 2013

(Notary Seal:)



AFFIDAVIT

State of North Carolina  
County of Hyde

BEFORE ME, the undersigned Notary, Judith G. Garrish  
*[name of Notary before whom affidavit is sworn]*, on this 22 day of SEPTEMBER, 2009,  
personally appeared David Esham, known to me to be a credible person and of lawful age,  
who being by me first duly sworn, on his oath, deposes and says:

Since 1973 my family has owned and operated the Pony Island Motel on Ocracoke Island.  
This 50-room facility is popular with fishermen, families and others coming to the Cape  
Hatteras National Seashore Recreational Area.

Since the closures of the consent decree began in 2008, our business has suffered. We  
witnessed an abrupt decline in business as soon as the closures began. During 2008, we  
were off by an average of 14%. The impact of these closures has forced us to cut back  
employee hours causing a financial hardship for them. The drop in business we experienced  
parallels the periods of beach closures and occurred long before the national economic  
recession at the end of 2008.

The consent decree closures have made it harder for us, and other businesses, to plan for  
the future. Our customers depend upon recreational access to the beach. They frequently  
express their frustration to us that there is no way for them to effectively plan a family  
vacation to our area, because of the unpredictable way the closures are implemented under  
terms of the consent decree.

Our base of regular customers includes many fishermen and families. These frequent  
travelers have been the sustaining force for our family business over the years. Ever since  
the consent decree closures were implemented, they have told us over and over again, "if the  
beaches are closed, there is no reason to come back."

[Signature]  
*[signature of affiant]*

David Esham  
785 Irvin Garrish Highway  
Ocracoke, NC 27960

[Signature]  
*[signature of Notary]*

Judith G. Garrish  
*[printed name of Notary]*

Subscribed and sworn to before me  
this 22 day of SEPTEMBER, 2009

NOTARY PUBLIC  
My commission expires: 6/20/2013



Mm

# COUNTY OF HYDE

**Board of Commissioners**  
Tom Davis, Chair  
Sharon Spencer, Vice-chair  
Gene Ballance  
Anson Byrd  
Ken Collier

30 Oyster Creek Road  
PO Box 188  
SWAN QUARTER, NORTH CAROLINA 27885  
252-926-4400  
252-926-3701 Fax

Lols Stotesberry  
Interim County Manager  
Sid Hassell  
County Attorney



May 11, 2010

RECEIVED

MAY 12 2010

Outer Banks Group

Mike Murray, Superintendent  
Cape Hatteras National Seashore  
1401 National Park Drive  
Manteo, NC 27954

**RE: Coalition Position Statement**

Dear Superintendent Murray:

The Hyde County Board of Commissioners disagrees with the validity of the economic impact analysis included in the Draft Environmental Impact Statement (DEIS) proposing new rules for access to the Cape Hatteras National Seashore. Economic data provided is outdated, incorrect, and in addition you draw conclusions from the bad data that are unwarranted.

Hyde County strongly supports open and accessible beaches for the Cape Hatteras National Seashore Recreational Area. Consistent with legislation that created America's first National Seashore, we support open access for all citizens and visitors of Hyde County.

Hyde County is very unique in that Ocracoke Village is both a small fishing village and a busy tourism site from May 31 to September 6, with the peak season being July. Ocracoke Island is 16 miles long with Ocracoke Village situated on approximately 600 acres of buildable land. Ocracoke Village provides approximately 50 percent of Hyde County tax revenue although it is home to only 15 percent of the County's population. Limited access to Ocracoke Island beach areas would cause Hyde County economic hardship.

Hyde County has identified four (4) major themes which represent the core of our beliefs on the Draft Environmental Impact Statement (DEIS) for the Cape Hatteras National Seashore Recreational Area, Alternative F. These four issues are by no means the only issues worthy of comment, but do represent the County's main concerns. (see attached)

The four major themes are:

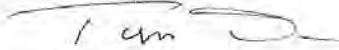
- 1) **CORRIDORS** are a vital tool in providing access while managing resources
- 2) **MANAGEMENT BUFFERS** must be based on peer-reviewed science
- 3) **NON-ENDANGERED BIRDS** should not have same protection as if endangered
- 4) **TURTLE MANAGEMENT** would benefit from nest relocation and other practices



Based upon the economic harm felt by Ocracoke Village and Mainland Hyde County under the consent decree, Hyde County believes the economic impact of Alternative F will be substantial.

In conclusion, Hyde County urges the National Park Service to incorporate the provisions outlined in its Position Statement. It is our belief that incorporation of the outlined provisions citizens and visitors of Hyde County will benefit from the long range success for wildlife, and the enhanced visitor experience for those living near the Cape Hatteras National Seashore Recreation Area.

Sincerely,



Tom Davis  
Chairman

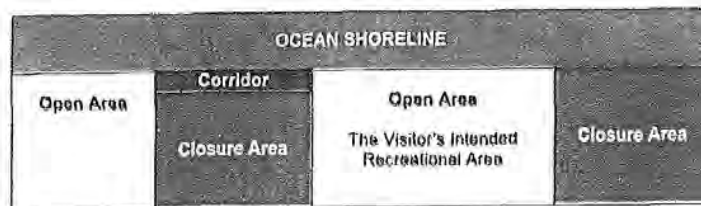
cc: Board of Commissioners

## CORRIDORS

Corridors are a vital tool in providing access while managing resources. Corridors provide a small path around temporary resource closures in order to provide access to open areas that would otherwise be blocked.

In some instances, corridors can be made through or around closure areas. In other places corridors can be established below the high tide line. Since unfledged chicks are not found in nests between the ocean and the high tide line, this type of pass through corridor would have no negative effect on wildlife and should be established throughout the seashore.

In the example below, the visitor's intended recreational area would be accessible only through the small pass through corridor. Without this corridor, the area marked "Open" would, in actuality, be closed, because it is impossible to get there without the corridor.



As outlined on pages xii, xvii, and 468 of the DEIS, corridors would only be permitted in Management Level 2 portions (ML2) of Species Management Areas (SMA). In more restrictive Management Level 1 portions (ML1) corridors would not be permitted at all.

Corridors are vital to providing access in a way that does not hinder resource protection. Therefore, Hyde County believes pass through corridors should be maintained for pedestrians and ORVs in all areas of the Cape Hatteras National Seashore Recreational Area throughout the entire breeding and nesting season.

## MANAGEMENT BUFFERS

Buffers, or closures, are important management practices for species recovery. However, in order to have long term benefit for the protected species and the visiting public, the buffers must be based on peer-reviewed science. Once established, buffers must be routinely monitored throughout the breeding season to ensure that resources are effectively protected and public access is provided.

The extreme buffers outlined in DEIS pages 121 to 127 must be modified to substantially reduce the minimum 1,000 meter buffer in all directions required in Alternative F for unfledged Piping Plover chicks. Hyde County believes a more appropriate and yet effective buffer is 200 meters. Ample scientific evidence and precedent exists to support a 200 meter buffer. As part of the NEPA process, Hyde County formally requests the National Park Service to provide peer-reviewed science that justifies a 1,000 meter closure in all directions.

Buffers for other species, including American Oystercatchers, Least Terns and Colonial Waterbirds must also be changed. An effective 30 meter buffer should be established for these species rather than the 300 meter closure outlined in the DEIS.

### NON-ENDANGERED BIRDS

Under the Endangered Species Act (ESA), all endangered species must be protected. However, there is no requirement in the ESA to give non-endangered species the same level of protection.

Hyde County believes the National Park Service should re-evaluate its position of giving birds designated only as a North Carolina species of concern, the same protection as those truly endangered. This request is consistent with management practices in other federal parks. The purpose of individual states establishing lists of species of concern is to earmark those for special statewide monitoring and tracking.

The management buffers described in pages 121 to 127 of the DEIS should be modified to allow pre-nesting closures for only endangered or threatened species. This important modification would result in establishing pre-nesting closures exclusively for the Piping Plover, the only threatened bird species in the seashore.

Accordingly, pre-nesting closures are not warranted for the non-endangered and non-threatened American Oystercatchers. Because Colonial Waterbirds do not return to the exact same place for nesting each year, establishing pre-nesting closures for these birds is both unpredictable and unnecessary.

Additionally, in monitoring and tracking birds for purposes of determining resource viability, all birds in the same ecosystem of the seashore should be counted. When conducting a bird census of the Cape Hatteras National Seashore Recreational Area, it is imperative to count the many birds on the nearby dredge and spoil islands that are located just yards away and within sight of the seashore. These birds are part of the same ecosystem and should be included.

The following photo taken of Cora June Island, just off Hatteras Village, shows a huge population of birds in early June of 2009. The large birds with black backs are Black Skimmers. The smaller birds to the left are mostly Royal Terns. Cora June Island, a man-made dredge island just 500 meters west of Hatteras Village, is an ideal nesting site as a sheltered island with no predators.



Photo by Donny Bowers

## TURTLE MANAGEMENT

Hyde County believes endangered sea turtles would benefit from management practices now in use at other federal seashores that are more proactive in efforts to achieve nesting success. This includes relocating nests to more desirable locations as is done in other state and federally controlled areas.

The Cape Hatteras National Seashore Recreational Area is on the northernmost fringe of turtle nesting locations for the southeast. In this area, weather and predators represent the greatest threat to sea turtles.



Nesting in the United States occurs primarily in four southeastern states as detailed in the USFWS & NMFS species "Recovery Plan"

North Carolina 1.0 % The northernmost area with the fewest nests  
 South Carolina 6.5 %  
 Georgia 1.5 %  
 Florida 91.0 % Primary area where the most nesting occurs

The Loggerhead Recovery Plan recognizes that, "Historically, relocation of sea turtle nests to higher beach elevations or into hatcheries was a regularly recommended conservation management activity throughout the southeast U.S." (2009, Second Revision, page 52) while the North Carolina Wildlife Resources Commission (NCWRC) sea turtle program currently recommends relocation only "as a last resort."

The National Park Service in page 125 of the DEIS relies upon the approach used by North Carolina Wildlife Resources Commissioner (NCWRC). This contradicts the U.S. Fish and Wildlife Service (USFWS) practice of relocating nests on the Pea Island Wildlife Refuge, located on the north end of Hatteras Island, North Carolina.

By not supporting nest relocation, the Cape Hatteras National Seashore Recreational Area has lost over 46% of the nests laid in the last 11 years. Meanwhile, South Carolina relocated 40.1% of its nests during 2009, resulting in an incredibly low lost nest rate of only 7.7% making a strong case for the relocation of nests.

The turtle management practices outlined on DEIS pages 125, and 392 to 396 should be modified to allow nest relocation as a tool for species recovery. Statistics compiled Dare County DEIS Position Statement materials – Appendix B – Sea Turtle Management Practices in The Southeast Coastal Region. (attached)

**Appendix B**



**Sea Turtle  
Management Practices  
in the Southeast Coastal Region**



All sea turtles are classified as threatened or endangered and protected by the Endangered Species Act. Two Federal agencies divide jurisdiction over sea turtles. U.S. Fish & Wildlife Service (USFWS) has authority when sea turtles are on the beach. The National Marine Fisheries Service (NMFS) has jurisdiction when sea turtles are in the water.



Section 6 of the Endangered Species Act requires states to show they have an "adequate and active" program for the conservation of endangered sea turtles. The most common sea turtle to nest on the beaches of the southeast coastal region is the threatened Loggerhead sea turtle (*Caretta caretta*).



Nesting in the United States occurs primarily in four southeastern states as detailed in the USFWS & NMFS species "Recovery Plan"

<b>North Carolina</b>	<b>1.0 %</b>	The northernmost area with the fewest nests
<b>South Carolina</b>	<b>6.5 %</b>	
<b>Georgia</b>	<b>1.5 %</b>	
<b>Florida</b>	<b>91.0 %</b>	Primary area where the most nesting occurs

Throughout these southeastern states, there are regional differences in how sea turtles are protected. Some areas make an effort to identify and mark all nests. Others do not.

In the Cape Hatteras National Seashore Recreational Area, nests are marked with stakes and string. As the hatch date approaches, the buffer is expanded closing access between the nest and the ocean, and often prevents access behind the nest as well.

In Florida, where the most sea turtle nesting occurs, it is a different story. Some nests are marked only with a single stake. Others have a small triangular string enclosure, with or without a warning sign. And, some nests are not marked in any way. Most noticeable is the fact that people in Florida are permitted responsible recreational access in close proximity to sea turtle nests buried beneath the sand.



Unlike Florida, people in Cape Hatteras National Seashore Recreational Area are fined \$150.00 for even walking in the wet sand in front of a sea turtle nest like the one shown in the above photograph.

According to the Florida Fish & Wildlife Conservation Commission, "**Not every sea turtle nest needs to be marked**" and many are not. (Marine Turtle Conservation Guidelines, revised 2007) Each year, Florida has up to 1,000 sea turtle nests per mile compared to a peak level of 1.7 nests per mile in the Cape Hatteras National Seashore Recreational Area.



In this photo of a busy Florida beach, the two buried turtle nests shown are only marked with a small triangle of sticks, without a warning sign, while surrounded by nearby beachgoers.

October 23, 2009, the Island Free Press featured an in-depth report on sea turtle nests. The article (attached) contrasted differences in sea turtle management between Florida and North Carolina.

Florida beach photo showing people and umbrellas near nests

#### Sea Turtle Nesting Facts –

Sea turtles live in the ocean and come ashore only for the female to lay eggs which are buried in the sand, at night, at a depth of 18 to 22 inches. One female will bury approximately 112 eggs the size of ping-pong balls. The eggs remain buried until hatching, at night, approximately 55 to 80 days later.

*Important* – It is not the number of nests laid, but whether they survive to hatch. Successful recovery depends on solutions to the real problems – Loss of nests due to high tides from weather events, failure to relocate nests, and predation

#### Nest Relocation –

The Loggerhead Recovery Plan recognizes that, "**Historically, relocation of sea turtle nests to higher beach elevations or into hatcheries was a regularly recommended conservation management activity throughout the southeast U.S.**" (2009, Second Revision, page 52)

The sea turtle program of the North Carolina Wildlife Resources Commission (NCWRC) currently recommends relocation only as "**as a last resort.**" As outlined in their protocol, "**Nests in heavy foot traffic areas should not be relocated. These nests should be fenced off and marked, so that pedestrians will avoid them.**"

North Carolina's approach is contrary to the USFWS practice of relocating nests on the Pea Island Wildlife Refuge, located on the north end of Hatteras Island, North Carolina.

The nearby Cape Hatteras National Seashore Recreational Area does not support moving nests and has lost over 46% of the nests laid on Cape Hatteras beaches in the last 11 years.

Meanwhile, South Carolina relocated 40.1% of its nests during 2009 resulting in an incredibly low lost nest rate of only 7.7% making a strong case for the relocation of nests as a tool for species recovery.

**Unanswered Questions –**

Sea turtle volunteer Larry Hardham who was also a participant in the negotiated rule making proceeding for the Cape Hatteras National Seashore Recreational Area, has repeatedly asked for science-based answers to a series of pertinent questions about sea turtle nests.

USFWS has been asked, in writing, the following questions –

- Do vibrations in the sand affect incubation or hatchlings?
- At what distance can emerging hatchlings hear a passing car?
- At what distance can emerging hatchlings feel a car pass at 15 mph?
- And, does either of these events alter their activity?
- How far away does a stationary light source have to be disorienting (We were told a moving light is not as disorienting as stationary light)

*None of these questions have yet been answered*



May 11, 2010  
 Gene Ballance, 81 Marks Path  
 PO Box 704  
 Ocracoke, NC 27960

Mr. Mike Murray, Superintendent  
 Cape Hatteras National Seashore

Following are my suggested improvements to the ORV DEIS.

1. Commercial fishing vehicles have already their own permits (xxx, 325), and given their long history on the ocean beach (19), I believe they should be give corridors through resource closures.(viii,xi) The ramps were originally created for them (20). That commercial fishermen are not given corridors through resource closures is inconsistent with their being allowed through safety closures (xxi) and having more night driving time (xxx). Some might say this is special treatment, and I agree (53). I disagree with the statement that they are *non-essential vehicles* (xxx). They provide food for our people. There could at least have been a definition of *essential vehicle* given in the DEIS, instead of referring the reader to a piping plover document. That definitely shows that plovers are rated above the descendants of the original people that settled these islands (325). Even the BSA recognizes that a long history of species coexisting together is evidence that one is no great harm to the other. This is why Alaskan natives are exempt. The piping plover is not even endangered. Moreover, page 327 of the DEIS says:

*Commercial fish harvesting would have negligible impact on piping plovers because plovers do not feed on any commercially important fish. However, plovers do feed on some of the same prey items of fish species that may be harvested and, as such, harvest of fish may mean greater prey encounters for plovers. In this case, the impact of commercial fishing could result in long-term minor to moderate increases in prey availability that would have a beneficial impact on piping plover foraging.*

This is inconsistent with commercial fishermen not being allowed corridors through resource closures.

2. A buffer with 1,000 meters diameter could cover all private land on Ocracoke Island (121-127). Thus it is not a buffer, but just a more politically correct way of saying "no access".
3. Much was made of the fact that of that of US National Seashores only Cape Hatteras has seen a decline in piping plover numbers in recent years (121-127). There has also been an increase in ORV use. Every scientist knows that *correlation does not necessarily imply causation*. The Pamlico Sound area is very large and unique in the US. They are many other places immediately outside the seashore that are good bird habitat. This may not be true to such an extent for the other seashores. There should be a study of how this factor might figure into bird counts.

Thanks for all you hard work on this DEIS. –Gene Ballance



0038845

Federal, State, and Local Agencies Comments on the Draft EIS

POST OFFICE BOX 549  
101 VETERANS MEMORIAL DRIVE  
KITTY HAWK, NC 27949



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mm

May 6, 2010

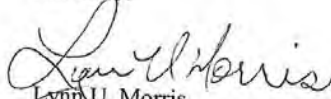
Cape Hatteras Group Headquarters  
1401 National Park Drive  
Manteo, NC 27954

**RE: Resolution Supporting Open and Accessible Beaches on the Cape Hatteras National Seashore Recreational Area**

Dear Sir/Madam:

On behalf of the Kitty Hawk Town Council, please find enclosed a copy of the **Resolution Supporting Open and Accessible Beaches on the Cape Hatteras National Seashore Recreational Area** adopted on May 3, 2010.

Sincerely,

  
Lynn U. Morris  
Town Clerk

Enclosure

RECEIVED  
MAY 07 2010  
CAPE HATTERAS GROUP

POST OFFICE BOX 549  
101 VETERANS MEMORIAL DRIVE  
KITTY HAWK, NC 27949



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**Resolution**  
**Supporting Open and Accessible Beaches**  
**on the Cape Hatteras National Seashore Recreational Area**

**Whereas**, the Cape Hatteras National Seashore Recreational Area (CHNSRA) was created by Congress in 1937 as America's first National Seashore with the promise that people would always have access for recreation; and

**Whereas**, a tourism based economy has been developed on Bodie Island, Hatteras Island and Ocracoke Island, where the Cape Hatteras National Seashore Recreational Area is located, comprising part of the area known as the Outer Banks of North Carolina; and

**Whereas**, access to the beaches of this area has always been the defining element of the visitor's complete seashore experience and is the foundation of the area's economic base upon which thousands of families depend for their livelihood; and

**Whereas**, the National Park Service has managed the Cape Hatteras National Seashore Recreational Area and in July of 2007, adopted an Interim protected Species Management Plan (Interim Plan) to protect the natural resources of the CHNSRA while still providing for public access to the most popular and traditionally used beaches of the area; and

**Whereas**, in October 2007, environmental groups filed suit in U.S. Federal Court seeking to enjoin access to large areas of the CHNSRA resulting in a Consent Decree issued in April of 2008 by the U.S. Federal District Court modifying the Interim Plan and resulting in the closure to the public of large areas of the CHNSRA; and

**Whereas**, the unprecedented closures as a result of the Consent Decree has created significant economic harm to businesses in the area and disrupted a recreational heritage which has been responsibly enjoyed by families for generations; and

**Whereas**, in January 2009, Congressman Walter B. Jones (R-NC) introduced H.R. 718, to reinstate the Interim Management Plan on the CHNSRA, which he first introduced as H.R. 6233 on June 11, 2008; and

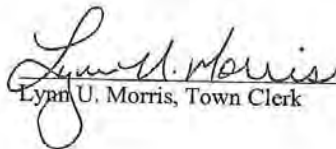
**Whereas**, H.R. 718 would set aside current mandates put in place in the wake of the Consent Decree, restore public access and improve economic conditions by reinstating the Interim Management Plan until the National Park Service establishes a long-term management plan for use of the CHNSRA.

Whereas, in August 2009, Senator Richard Burr (R-NC) introduced S. 1557 to reinstate the Interim Management Plan on CHNSRA, which was first introduced in 2008.

Whereas, in March 2010, the National Park Service released the Draft OFF-ROAD VEHICLE MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT which is more restrictive than the Consent Decree, closing (to ORV) the Inlet spits and the Points during the migrations of large Bluefish, Red Drum, and Cobia.

Now Therefore Be It Resolved that the Kitty Hawk Town Council supports open public access to the Cape Hatteras National Seashore Recreational Area consistent with promises made in the enabling legislation, recognizes the importance of recreational access to sustain the economic viability of this unique area and finds the Interim Management Plan of the National Park Service the most effective tool available to regulate the area until a long-term plan can be adopted.

Adopted May 3, 2010 by a vote of 5 for and 0 against.

  
Lynn U. Morris, Town Clerk



  
Clifton G. Perry, Mayor

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## APPENDIX E: IMPAIRMENT DETERMINATION FOR THE NATIONAL PARK SERVICE PREFERRED ALTERNATIVE

### BACKGROUND

Chapter 1 of the *Cape Hatteras National Seashore Off-Road Vehicle Management Plan/Final Environmental Impact Statement* (FEIS) describes the related federal acts and policies regarding the prohibition against impairing Seashore resources and values in units of the national park system. The prohibition against impairment originates in the National Park Service (NPS) *Organic Act*, which directs that the NPS shall:

promote and regulate the use of the...national parks...which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

According to NPS *Management Policies 2006*, an action constitutes an impairment when an impact “would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values” (NPS 2006, sec. 1.4.5). To determine impairment, the NPS must evaluate “the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts” (NPS 2006, sec. 1.4.5).

National park system units vary based on their enabling legislation, natural and cultural resources present, and park missions; likewise, the activities appropriate for each unit and for areas in each unit also vary. For example, an action appropriate in one unit could impair resources in another unit.

As stated in the NPS *Management Policies 2006* (NPS 2006, sec. 1.4.5), an impact on any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; or
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park’s General Management Plan or other relevant NPS planning documents.

### INTERIM GUIDANCE

Since publication of the Cape Hatteras National Seashore Off-Road Vehicle Management Plan/Draft Environmental Impact Statement in March 2010, the NPS has issued *Interim Guidance for Impairment Determinations In NPS NEPA Documents* (Interim Guidance) (NPS 2010). Consistent with the Interim Guidance, the draft written impairment determination for only the preferred alternative is included in this appendix E of the FEIS. Also, consistent with the Interim Guidance, the potential of the no-action alternative A to result in impairment to common tern, gull-billed tern, black skimmer and sea turtles is discussed in the impact analysis for those species in chapter 4 of the FEIS.

The Interim Guidance provides that impairment findings should be based on analysis in the NEPA document, but should have enough detail to stand on their own. Accordingly, sufficient impact analysis

## Appendix E

detail is provided here to substantiate the determination, but the reader should refer to the FEIS for the complete impact analysis.

The Interim Guidance states:

An impairment determination must be completed for each resource impact topic carried forward and analyzed for the preferred / selected alternative. Impairment findings are not necessary for visitor experience, socioeconomics, public health and safety, environmental justice, land use, park operations, etc. because impairment findings relate back to park resources and values, and these impact areas are not generally considered to be park resources or values according to the *Organic Act*, and cannot be impaired the same way that an action can impair park resources and values.

The resource impact topics carried forward and analyzed for the NPS preferred alternative in the FEIS, and for which an impairment determination is contained in this appendix, are: wetlands, floodplains, piping plover, sea turtles, seabeach amaranth, state-listed and special status species (American oystercatcher, Wilson's plover, least tern, common tern, gull-billed tern, black skimmer, and red knot), invertebrates and other bird species, and soundscapes.

The impairment determination for the NPS preferred alternative in the DEIS has been updated in this FEIS to reflect revisions in the preferred alternative and the provisions of the Interim Guidance for content of the determination.

The Interim Guidance provides that the impairment determination must address the following information:

- a brief description of the condition of the resource
- whether the resource is necessary to fulfill the purposes for which the park was established
- whether the resource is key to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park
- whether the resource is identified as a significant resource in the park's planning documents, and
- a discussion of why the action will or will not result in impairment of the resource including a discussion of the context, severity, duration and timing of any impacts, and any mitigation measures, if applicable.

## **RESOURCES AND THE SEASHORE'S PLANNING DOCUMENTS**

To assist in addressing the 4<sup>th</sup> bullet in the paragraph above, i.e., "whether a resource is identified as a significant resource in the park's planning documents," a brief summary of how the resources in this impairment determination are addressed in the Seashore's planning documents is provided here.

The Seashore's planning documents do not provide an explicit listing of "significant resources," i.e., a list stating which resources are significant and which are not. However, the planning documents repeatedly address the flora and fauna and physiographic conditions of the Seashore, particularly migratory birds and threatened and endangered species. The Seashore's 2007 Long Range Interpretive Plan in its description of the Seashore's purpose calls out preserving and protecting the "park's natural resources" and "dynamic barrier islands that are shaped by ongoing natural processes" (Cape Hatteras National Seashore Long Range Interpretive Plan (NPS 2007a)). The Seashore's 2006 – 2011 Strategic Plan lists preserving and protecting the "dynamic coastal barrier island system...flora and fauna that are found in a variety of

habitats at the park,” including “migratory birds and several threatened and endangered species” (NPS 2007b). The Seashore’s General Management Plan states:

The overall planning objective for the national seashore is to preserve the cultural resources and the flora, fauna, and natural physiographic condition, while providing for appropriate recreational use and public access to the Oceanside and soundside shores in a manner that will minimize visitor use conflict, enhance visitor safety, and preserve park resources (NPS 1984).

The primary resource management objective of the Seashore, as expressed in the General Management Plan, is to preserve the dynamic physiography and the characteristic ecological communities of the Outer Banks, in all units of the Seashore except for the developed areas.

As described in the Seashore’s 2006 – 2011 Strategic Plan, the mission of the NPS at Cape Hatteras National Seashore is rooted in the National Park Service *Organic Act* and the Seashore's enabling legislation, *Congressional Act*, H. R. 7022 of August 17, 1937. The Seashore's mission statement is a synthesis of this mandated purpose, plus the Seashore's primary significance as itemized below.

The park’s enabling legislation states:

Except for certain portions of the area, deemed to be especially adaptable for recreational uses, particularly swimming, boating, sailing, fishing and other recreational activities of similar nature, which shall be developed for such uses as needed, the said area shall be permanently reserved as a primitive wilderness and no development of the project or plan for the convenience of visitors shall be undertaken which would be incompatible with the preservation of the unique flora and fauna or the physiographic conditions now prevailing in the area.

The Seashore’s Strategic Plan states:

The purpose of Cape Hatteras NS is to preserve and protect significant segments of barrier island coastline for the benefit and enjoyment of the people and to provide for recreational visitor use consistent with that purpose. Cultural resources reflecting and revealing the national maritime experience, cultural expressions and man's inherent relationships with the land are also protected and preserved.

The Seashore’s Strategic Plan describes the significance of the Seashore as follows:

This dynamic coastal barrier island system continually changes in response to natural forces of wind and wave. The flora and fauna that are found in a variety of habitats at the park include migratory birds and several threatened and endangered species. The islands are rich with maritime history of humankind's attempt to survive at the edge of the sea, and with accounts of dangerous storms, shipwrecks, and valiant rescue efforts. Today, the seashore provides unparalleled opportunities for millions to enjoy recreational pursuits in a unique natural seashore setting and to learn of the nation's unique maritime heritage.

In addition to these broader planning documents, that include the flora and fauna, migratory birds and threatened and endangered species as part of the significant resources of the Seashore, the Seashore’s Interim Protected Species Management Strategy provides management measures specifically for the following protected species: piping plover (*Charadrius melodus*), loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), leatherback sea turtle (*Dermochelys coriacea*), seabeach amaranth

(*Amaranthus pumilus*), common tern (*Sterna hirundo*), least tern (*Sterna antillarum*), gull-billed tern (*Sterna nilotica*), black skimmer (*Rynchops niger*), American oystercatcher (*Haematopus palliatus*), Wilson's plover (*Charadrius wilsonia*), and red knot (*Calidris canutus rufa*). The Interim Strategy notes that since 1999 the Seashore has been designated a Globally Important Bird Area in recognition of the value it provides to bird migration, breeding, and wintering (American Bird Conservancy 2005).

## WETLANDS

### *Brief Description of the Condition of the Resource:*

The majority of the undeveloped acreage in the Seashore is classified as a wetland, predominantly marine and estuarine wetlands. Marine wetlands occur along the beaches on the oceanside of the Seashore, and estuarine wetlands generally occur along the soundside, adjacent to the many tidal creeks that are prevalent along the islands. Approximately 14,500 acres of Seashore wetlands are in natural condition, having characteristic wetland vegetation, wildlife, and hydrology. However, historical activities have degraded some wetland areas. The most important landscape altering activities by humans were: (1) early efforts at mosquito control and waterfowl management, which involved excavation of drainage ditches and construction of water control structures; and (2) construction and vegetative stabilization of primary dunes along the length of the Seashore. Also, between 800 and 900 acres of wetland have significant infestations of exotic phragmites.

### *Wetlands are necessary to fulfill the purposes for which the park was established:*

The Seashore's enabling legislation provides that outside those areas where the Seashore develops facilities to support recreation such as swimming, boating, sailing and fishing, the Seashore shall be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic conditions prevailing in the area preserved. Wetlands are an important and predominant physiographic feature of the Seashore which supports the flora and fauna that characterize the barrier island ecosystem that Seashore preserves.

### *Wetlands are key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore:*

Marine and estuarine wetlands are the predominant physiographic feature of the park and support the characteristic barrier island system flora and fauna. Unimpaired wetlands are an integral component of the natural barrier island ecosystem at the Seashore. Wetlands provide ecological conditions required by the Seashore wildlife.

### *Wetlands are implicitly but not explicitly identified as a significant resource in the Seashore's planning documents:*

As described above, the Seashore's planning documents do not provide an explicit listing of "significant resources," i.e., a list stating which resources are significant and which are not. However, the planning documents repeatedly address the flora and fauna and physiographic conditions of the Seashore, particularly migratory birds and threatened and endangered species. Wetlands are the predominant physiographic feature in the Seashore and provide habitat for the characteristic barrier island wildlife and plant resources, including migratory birds and threatened and endangered species. Therefore it seems reasonable to conclude that the Seashore's planning documents implicitly consider wetlands "significant" because they are necessary for the flora, fauna, and physiographic conditions the Seashore is mandated to preserve.



*Analysis:*

Implementation of alternative F would not impair wetlands because of the low magnitude of impacts to wetlands. Species management activities would not typically occur in estuarine wetland areas; and effects on the size, integrity, or connectivity of marine intertidal wetlands from ORVs crossing these areas would not be measurable or perceptible. ORV damage to soundside vegetation would continue to be confined to small areas, and would not affect the overall viability of the Seashore's wetlands. Where driving on limited portions of the soundside is allowed, generally on sandy beach areas, incidental driving on vegetation at the fringes of these sandy areas may occur when vehicles are passing each other, turning around, or during periods of high water because the soundside sandy beach areas tend to be narrow and bordered by vegetation. Incidental driving on vegetation along the margins of interior ORV routes may occur at times to avoid standing water. Signage would help protect soundside vegetation and would serve as mitigation to eliminate or minimize this impact. The effects of the small amount of damage to soundside wetland vegetation were deemed to be negligible in the plan/EIS analysis because the change would be so slight that it would not be of any measureable or perceptible consequence. Parking area and ramp construction would avoid wetland areas and would use materials and management practices that would reduce surface runoff. The effects of this construction on the size, integrity, or connectivity of wetlands would not be measurable or perceptible and were deemed to be negligible in the plan/EIS analysis. Cumulative impacts from combining the effects of alternative F with effects of other past, present, and future planned actions in and around the Seashore would likely result in a small permanent loss of wetlands, mostly from the construction of the Bonner Bridge, which would affect 3.1 acres. Large areas would not be affected and wetland functions would not be affected over the long-term. Therefore, the impacts of alternative F on wetlands would not result in impairment.

**FLOODPLAINS***Brief Description of the Condition of the Resource:*

North Carolina's barrier islands have historically been and continue to be affected by coastal forces and flooding events. The barrier islands where the Seashore is located are flat and narrow and lie adjacent to the shallow and wide Pamlico Sound. The widest part of the Seashore is near Cape Point, between Buxton and Frisco (Pendleton et al. 2005). According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps, most of the Seashore is in the 100-year floodplain, with the exception of some areas in the 500-year floodplain at the Navy tower site on Bodie Island and a larger area near Buxton. Generally lands along the ocean beaches and adjacent to the sound (at wide points) are in flood zone "VE," also known as the Coastal High Hazard Area, which is the flood insurance rate zone that corresponds to 100-year coastal floodplains that have additional hazards associated with storm waves. The rest of the Seashore that is located in the 100-year floodplain and not directly adjacent to the ocean or sound lies in the "AE" zone, which is subject to waves less than 3 feet high (NCDCCPS 2008).

Because the Seashore is almost entirely in the 100-year floodplain and is subject to high water table conditions and high wave action, many areas are subject to drainage and flooding problems that often result from storm events. Areas near Buxton Woods and Cape Point Campground have been documented as historically flood-prone and are examples of popular Seashore destinations that experience flooding during times of above-average precipitation events (Martin pers. comm. 2003).

*Floodplains are necessary to fulfill the purposes for which the Seashore was established:*

The Seashore's enabling legislation provides that outside those areas where the Seashore develops facilities to support recreation such as swimming, boating, sailing and fishing, the Seashore shall be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic

conditions prevailing in the area preserved. The physiographic conditions characterizing the Seashore include their flat topography, high water table and susceptibility to high wave action and flooding events caused by storms. The Seashore is almost entirely in the 100-year floodplain; the remainder is in the 500-year floodplain. Floodplains are an important and predominant physiographic feature of the Seashore, and are necessary to fulfill the purpose of the enabling legislation to preserve the “physiographic conditions then prevailing.”

*Floodplains are key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore:*

The barrier islands where the Seashore is located are flat and narrow and lie between the shallow and wide Pamlico Sound and the Atlantic Ocean. The native wildlife of the Seashore is adapted to live on the barrier island floodplains and relies on the recurrent storms and flood events for habitat creation. As a predominant physiographic feature of the park and the habitat supporting the characteristic barrier island system flora and fauna, the floodplains are an integral and key component of the natural barrier island ecosystem at the Seashore. Floodplains are an important and predominant physiographic feature of the Seashore, and are necessary to fulfill the purpose of the enabling legislation to preserve the “physiographic conditions then prevailing.”

*Floodplains are implicitly but not explicitly identified as a significant resource in the Seashore’s planning documents:*

As described above in the “Resources and the Seashore’s Planning Documents” section of this Impairment Determination, the Seashore’s planning documents do not provide an explicit listing of “significant resources,” i.e., a list stating which resources are “significant” and which are not. The planning documents instead repeatedly address the flora and fauna and physiographic conditions, particularly migratory birds and threatened and endangered species. Wetlands and floodplains are the predominant physiographic condition in the Seashore and provide habitat for the characteristic barrier island wildlife and plant resources. Therefore it seems reasonable to conclude that the Seashore’s planning documents implicitly consider floodplains “significant” as part of the flora, fauna, and physiographic conditions the Seashore is mandated to preserve.

*Analysis:*

Implementation of alternative F would not impair floodplains because the use of ORVs for recreation or commercial fishing and the use of ORVs for Seashore management activities in the project area would not have a measurable effect on floodplains. Driving on beaches, interior ORV routes, or along soundside ORV access routes would not impact the natural function of the floodplain or affect floodplain values. Floodplains in the study area do not function as a natural moderator of floods because water levels in the Seashore are not dependent on floodplain storage capacity. The Seashore is subject to coastal flooding caused by both hurricanes and other storm systems that can raise water levels substantially via storm surge. Implementation of alternative F would involve the construction of 4 new ORV access ramps, the relocation of two ORV access ramps, the establishment of two new interdunal roads, the establishment of two pedestrian trails on Bodie and Ocracoke islands, and the construction of 10 new public parking areas (surfaced with semi-permeable materials such as a clay-shell base) and the reuse or resurfacing for public parking of two existing paved areas that were not previously used for public parking), which in combination would create or improve a total of approximately 135 new public parking spaces along the Seashore, with associated pedestrian access to the beach. Ramps would be surfaced with a natural semi-permeable clay/shell base, reducing stormwater runoff during heavy rain events and limiting the potential for impacts to floodplain function. New parking areas would be located landward of the primary dune. The new parking areas would be designed and constructed with a semi-permeable clay/shell base, turf

block, or other porous material, using environmentally sensitive standards to minimize stormwater runoff, and would have a limited effect on the ability of the floodplain to convey floodwaters from storm surge. Two new on-sand parking areas accessible by 4-wheel drive vehicles at the end of two of the new interdunal roads would have no floodplain impact because they would not require a hardened surface because vehicles would travel over sand to reach them. The interdunal roads would be constructed at grade and would not alter topography or require a finished surface. The pedestrian trails would not result in floodplain impacts because they would be primitive in nature and would not be paved or surfaced. The plan/EIS impact analysis deemed the impacts from construction to be minor because they would result in a change in floodplain functions and values that would be detectable but small, of little consequence, and localized in the immediate area of construction. Cumulative impacts from combining the effects of alternative F with effects of other past, present, and future planned actions in and around the Seashore, such as the location of structures and impervious surfaces in the floodplain, development of NC-12, the Bonner Bridge and its replacement, and local development, would result in a change to floodplain functions and values. The cumulative impacts were deemed minor to moderate in the plan/EIS impact analysis because they would be readily detectable and could increase risk to life or property, but would be relatively localized and could be successfully mitigated. Additionally, alternative F would not contribute appreciably to cumulative impacts. Therefore, the floodplain impacts would not result in impairment.

## **FEDERALLY LISTED THREATENED OR ENDANGERED SPECIES**

### **Piping Plover**

#### *Brief Description of the Condition of the Resource:*

The piping plover (*Charadrius melodus*) became a protected species under the *Endangered Species Act* on January 10, 1986. Piping plovers use the Seashore during all phases of their annual cycle: breeding, migrating, and wintering. The Seashore is used by both the endangered Great Lakes population of piping plover (considered threatened on wintering grounds, which include the Seashore) and the threatened Atlantic Coast population (for breeding and wintering, with breeding occurring at the Seashore). The Seashore contains 1,827 acres of USFWS-designated critical habitat for wintering plovers. Between 1995 and 2005 the number of piping plover breeding pairs at the Seashore dropped from 14 to 2. However, between 2005 and 2010 the number of breeding pairs at the Seashore increased from 2 to 12. A fledge rate of 1.25 fledged chicks per breeding pair annually would be needed to sustain the population and the recovery goal set by the USFWS is 1.50 fledged chicks per breeding pair. Although a fledge rate of 1.25 chicks per breeding pair was achieved at the Seashore in 2010, the fledge rate at the Seashore has averaged less than half the recovery goal since 1992.

#### *Piping plover are necessary to fulfill the purposes for which the Seashore was established:*

The Seashore's enabling legislation provides that outside those areas where the Seashore develops facilities to support recreation such as swimming, boating, sailing and fishing, the Seashore shall be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic conditions prevailing in the area preserved. Piping plover are characteristic of the barrier island fauna that the enabling legislation mandates be preserved.

#### *Piping plover are key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore:*

Vital signs identified for the Seashore include wintering and migratory shorebirds and threatened and endangered species. Piping plover use the Seashore for nesting, migration and wintering; are a federally

## Appendix E

and state listed threatened species; and are a key component of the natural integrity of the fauna the enabling legislation mandates be preserved.

*Piping plover are implicitly but not explicitly identified as a significant resource in the Seashore's planning documents:*

As described above in the "Resources and the Seashore's Planning Documents" section of this Impairment Determination, the Seashore's planning documents do not provide an explicit listing of "significant resources," i.e. a list stating which resources are "significant" and which are not. The planning documents instead repeatedly address the flora and fauna and physiographic conditions, particularly migratory birds and threatened and endangered species. In addition to these broader planning documents that include the flora and fauna, migratory birds and threatened and endangered species as part of the significant resources of the Seashore, the Seashore's Interim Protected Species Management Strategy provides management measures specifically for piping plover. Therefore it seems reasonable to conclude that the Seashore's planning documents implicitly consider piping plover "significant" as part of the flora, fauna, and physiographic conditions the Seashore is mandated to preserve.

*Analysis:*

Implementation of alternative F would not impair piping plover because sufficient population numbers and functional habitat would remain to maintain a sustainable population of piping plover in the Seashore. Under alternative F, the Seashore would survey and evaluate all potential breeding habitats by March 1 of each year and recommend piping plover prenesting closures based on that evaluation. Areas of suitable habitat that have had individual piping plover nests in more than one of the past five years and new habitat that is particularly suitable for nesting (such as the habitat at new inlets or overwash areas) would be posted as prenesting closures using symbolic fencing by March 15 of each year.

In addition to prenesting closures, the Seashore would also designate year-round and seasonal vehicle-free areas (VFAs), which would preclude recreational ORV use early in the breeding season. Many of the VFAs would be located in areas of suitable habitat that have had concentrated and recurring use by multiple individuals and/or multiple species of protected shorebirds during the breeding or nonbreeding season. Under alternative F, ORVs and pedestrians would be prohibited in prenesting closures. Once established at the beginning of the breeding season, prenesting closures would not be reduced to accommodate an ORV corridor. Prenesting closures would be removed if no breeding activity is seen in the area by July 31 (or August 15 if black skimmers are present), or 2 weeks after all chicks have fledged, whichever comes later. Nonbreeding shorebird habitat protection would be implemented before prenesting areas are removed. Pedestrian access would be allowed seaward of prenesting closures along the shoreline below the high tide line unless standard buffers implemented in response to observed breeding behavior preclude access. Areas where piping plover have been known to breed would be designated as VFAs seasonally (Bodie Island spit), or year-round (Hatteras Inlet Spit and North Ocracoke Spit), or would have protective measures to manage or restrict ORV use during the breeding season, (Cape Point and South Point). Alternative F would prohibit pets in resource closures and in pedestrian shoreline access areas in front of (i.e. seaward of) prenesting closures to offer additional protection in these areas, but would allow pets in the other areas of the Seashore, on a 6-foot leash. From March 15 through July 15, Seashore staff would survey prenesting closures three times per week and suitable habitat outside of prenesting closures two times per week, increasing to three times per week once birds are present. If breeding piping plover are observed foraging outside an existing closure, the site would be surveyed daily and if foraging is observed outside a closure on two consecutive surveys, a buffer would be established or expanded to include the foraging site. These closures would provide undisturbed foraging opportunities close to breeding sites.

In addition to the relatively less disturbed habitat in the year-round VFAs, under alternative F a survey for nonbreeding habitat would occur and would result in nonbreeding closures in areas of important habitat. The plan/EIS impact analysis deemed the management measures for breeding and nonbreeding piping plover (such as establishment of prenesting closures early in the breeding season; 75-meter buffers for nests, nest scrapes, and breeding behavior; 1,000-meter ORV buffers and 300-meter pedestrian buffers for chicks; nonbreeding closures; use of predator exclosures for nests, establishment of VFAs; and prohibition of night driving between 9:00 pm and 7:00 am to be moderate beneficial. At the moderate intensity level, beneficial impacts would be detectable and could be beyond the level of disturbance or harm that would occur naturally. Protection to key life history stages would minimize or prevent harassment or injury to individuals and improve the sustainability of the piping plover in the Seashore.

Effects from commercial fishing would not be observable or measurable and would be well within natural fluctuations because the special use permit under which commercial fishing is managed prohibits entering resource closures and because a relatively small number of commercial fishermen operate inside the Seashore.

Although most visitors respect closures, closure intrusions by vehicles, pedestrians, and pets may result in harassment, injury, or mortality to one or more individuals. However, alternative F would require a permit for ORV use, which includes an educational component. Because ORV users would be more aware of the regulations in place to protect piping plover, the permit requirement would likely increase compliance with buffers, closures, and other restrictions. Violations may result in permit revocation, which is also expected to increase compliance. Alternative F would also establish a new voluntary resource education program targeted toward pedestrian beach users. Under alternative F, ORVs would bring people into the vicinity of plover areas where trash associated with recreation use would continue to attract mammalian and avian predators. Predation is known to affect the reproductive success of piping plovers; the indirect impacts of attracting predators would be detectable and beyond the level of disturbance and harm that would occur naturally, but is not expected to result in large declines in population because the Seashore takes management action to protect piping plover from predation.

The plan/EIS impact analysis of alternative F deemed adverse impacts to piping plover from ORV and other recreational use to be minor to moderate. This range of impacts is projected, in part, because it is not possible to predict the extent or exact effect of closure intrusions by vehicles, pedestrians, or pets on piping plover. Minor adverse effects would not result in impacts beyond what could occur naturally with occasional responses by some individuals to disturbance and minimal interference to feeding, reproduction, resting, or other factors affecting population levels. Adverse effects at the minor level of intensity would neither be expected to result in changes to the Seashore's population numbers of piping plover, population structure or other demographic factors nor to result in injury or mortality to individual piping plover. At the moderate level of impact intensity the impacts on piping plover, their habitat, or the natural processes sustaining them could be beyond what would occur naturally. Frequent responses by some individuals to disturbance could be expected, with some negative impacts to feeding, reproduction, resting, or other factors affecting Seashore population levels. Small changes to population numbers in the Seashore, population structure, and other demographic factors may occur. Although some impacts might occur during critical reproductive periods or in key habitats in the Seashore and could result in injury or mortality, sufficient population numbers and functional habitat would remain to maintain a sustainable population in the Seashore. The FEIS establishes desired future conditions for piping plover number of breeding pairs, fledge rate, and depredation rate and provides that where progress is not being made toward the attainment of desired future conditions, periodic review and adaptive management may result in increased restrictions on recreational use. Over the life of the plan, as public awareness increases and compliance with closures improves, the impacts on piping plover would be more likely to be at the minor than the moderate level of intensity.

The plan/EIS analysis of cumulative impacts from combining the effects of alternative F with effects of other past, present, and future planned actions in and around the Seashore (such as major dredging and maintenance dredging of Oregon Inlet, storms and other weather events, local development, predator management by the seashore, and increased interpretative programs as part of the Seashore's long range interpretive plan) indicates that NPS management actions within the Seashore would act as a driver for overall cumulative impacts. The cumulative impacts were deemed to be minor to moderate adverse in the plan/EIS impact analysis because large declines in population numbers would not result and sufficient population numbers and functional habitat would remain to maintain a sustainable population in the Seashore. Some negative impacts to feeding, reproduction, resting or other factors affecting local population levels may occur and may result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and functional habitat would remain to maintain a sustainable population in the Seashore. Therefore, the piping plover impacts would not result in impairment.

## Sea Turtles

### *Brief Description of the Condition of the Resource:*

Five of the seven sea turtle species existing in the world today occur in the coastal waters of North Carolina and the Seashore, and all are listed as either federally threatened or endangered. These five species are the loggerhead sea turtle, the green sea turtle, the Kemp's ridley sea turtle, the leatherback sea turtle, and the hawksbill sea turtle. Of the five species, only three are known to nest at the Seashore: the loggerhead, green, and leatherback sea turtles. The number of nests recorded at the Seashore from 2000 to 2010 has fluctuated greatly, with only 43 nests recorded in 2004 and 153 nests recorded in 2010, which was the highest number on record. Of the three species that nest at the Seashore, the loggerhead turtle is by far the most numerous, comprising approximately 95% of the known nests between 2000 and 2010.

### *Sea turtles are necessary to fulfill the purposes for which the Seashore was established:*

The Seashore's enabling legislation provides that outside those areas where the Seashore develops facilities to support recreation such as swimming, boating, sailing and fishing, the Seashore shall be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic conditions prevailing in the area preserved. Sea turtles are an important member of the Seashore's barrier island fauna that the enabling legislations mandates be preserved.

### *Sea turtles are key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore:*

Sea turtles are key to the natural integrity of the Seashore, which has for decades provided management to protect them during the terrestrial part of their life cycle. They are a characteristic and significant member of barrier island system wildlife.

### *Sea turtles are implicitly but not explicitly identified as a significant resource in the Seashore's planning documents:*

As described above in the "Resources and the Seashore's Planning Documents" section of the Impairment Determination, the Seashore's planning documents do not provide an explicit listing of "significant resources," i.e., a list of which resources are "significant" and which are not. The planning documents instead repeatedly address the flora and fauna and physiographic conditions, particularly migratory birds and threatened and endangered species, such as sea turtles as a significant member of the Seashore's fauna. Loggerhead and green sea turtles are listed as threatened; leatherback sea turtles as endangered. All three have the same listing by the State of North Carolina. As mentioned above the Seashore's Interim

Protected Species Management Strategy contains management measures for sea turtles, as does this plan/EIS. Therefore it seems reasonable to conclude that the Seashore's planning documents implicitly consider sea turtles a "significant" resource as part of the flora, fauna, and physiographic conditions the Seashore is mandated to preserve.

*Analysis:*

Implementation of alternative F would not result in impairment to sea turtles because sufficient population numbers and functional habitat would remain to maintain a sustainable population in the Seashore. Beach fires would be prohibited from 10:00 pm to 6:00 am year-round. A permit would be required for all beach fires to ensure that users are informed of basic safety and resource protection measures. Beach fires would be restricted to areas in front of the villages and Coquina Beach and the Ocracoke Day Use Area during the sea turtle nesting season, reducing the areas of the Seashore subject to light pollution from beach fires. Where fires are permitted, they would be prohibited within 100 meters of turtle nest closures. From May 1 through November 15 portable lanterns, auxiliary lights, and powered fixed lights of any kind shining for more than 5 minutes at a time would be prohibited on Seashore ocean beaches.

By May 1, 2012, turtle-friendly lighting fixtures would be installed on all Seashore structures visible from the ocean beach (except where prevented by other overriding lighting requirements, such as lighthouses, which serve as aids to navigation) and fishing piers operated by NPS concessioners. The Seashore would provide information about and encourage the use of turtle-friendly lighting. Educational material would be developed to inform visitors about their impact on the success of sea turtle nests. The Seashore would work with the USFWS, the NCWRC, and Dare County to encourage development of a turtle-friendly lighting education program for villages within the Seashore on Hatteras Island.

Unattended beach equipment (chairs, canopies, volleyball nets, watersports gear, etc.) would be prohibited on the Seashore at night. Turtle patrol and law enforcement would tag equipment found at night. Owners would have 24 hours to remove equipment before it would be removed by NPS staff. The Seashore would work with local organizations and businesses, including real estate rental agencies and hotels/motels, to ensure wider distribution of ORV and resource protection educational information. This would include encouraging these businesses to provide information about removal of beach equipment from the beaches at night.

The Seashore would implement a Nest Watch Program. A cadre of trained volunteers would be established to watch nests that have reached their hatch windows to monitor hatchling emergence success and success reaching the water, and to minimize negative impacts from artificial lighting, predation, and human disturbance. Depending on the number of nests that may be ready to hatch and the availability of volunteers, it may be necessary for NPS turtle staff to prioritize which nests are watched on any particular night. Priority would be given to watching the nests that are most likely to be negatively impacted by manageable factors.

During part of the nesting season approximately 39 miles of ocean beach would be closed to ORV use, although where resource conditions permit an ORV corridor would be provided at Cape Point and South Point. Between May 1 and November 15 night driving on designated ORV routes would be prohibited between 9:00 pm and 7:00 am. However, from September 16 through November 15, night driving would be allowed on ORV routes where there are no turtle nests, subject to terms and conditions of the ORV permit. Night driving on ORV routes prior to 9:00 pm during the turtle nesting/hatching season; night driving from September 16 through November 16 (only if an undiscovered nest is in an area with no known nests), erosion and sand compaction; and other adverse effects related to ORV and other recreational use would be expected to occasionally result in aborted nesting attempts (false crawls),

hatchling disorientation or misorientation, running over hatchlings or nests, complete or partial nest loss due to human activities, and obscuring turtle crawl tracks that Seashore staff use to locate newly laid nests so that the undetected nests are not managed. These adverse effects on sea turtles were deemed to be minor to moderate in the plan/EIS analysis because, although there would be occasional disturbance and harm to sea turtles or their habitat (beyond the level of disturbance and harm that occur naturally), the Seashore would be expected to maintain a sustainable sea turtle population.

Cumulative impacts from combining the effects of alternative F with effects of other past, present, and future planned actions in and around the Seashore would likely result in infrequent or occasional occurrences of disturbance to some nesting females with negative effects to reproduction affecting local population levels, infrequent or occasional complete or partial nest loss due to human activities, and occasional disorientation or disruption of hatchling movement or direct hatchling mortality from human activities. Even with these adverse effects, large declines in population numbers would not result and sufficient population numbers and functional habitat would remain to maintain a sustainable population in the Seashore. Therefore the sea turtle impacts would not result in impairment.

### **Seabeach Amaranth**

#### *Brief Description of the Condition of the Resource:*

Seabeach amaranth is an annual plant native to barrier-island beaches along the U.S. Atlantic Coast, including those within the Seashore. It was federally listed as threatened by the USFWS in 1993 because of its vulnerability to human and natural impacts and the fact that it had been eliminated from two-thirds of its historic range. This species is listed as threatened by the State of North Carolina. Within the Seashore, seabeach amaranth numbers ranged from 550 to nearly 16,000 plants between 1985 and 1990. However, in the last 10 years a maximum of only 93 plants was observed in 2002. More recently, only one plant was found in 2004 and two plants in 2005. Since 2005, no plants have been found within the Seashore.

#### *Seabeach amaranth is necessary to fulfill the purposes for which the Seashore was established:*

The Seashore's enabling legislation provides that outside those areas where the Seashore develops facilities to support recreation such as swimming, boating, sailing and fishing, the Seashore shall be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic conditions prevailing in the area preserved. Seabeach amaranth is a characteristic feature of the Seashore flora that the Seashore's enabling legislation mandates it to preserve.

#### *Seabeach amaranth is key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore:*

Seabeach amaranth is a characteristic barrier island native, occupying a fairly narrow habitat niche, and is a characteristic member of the flora that the Seashore's enabling legislation mandates it to preserve.

#### *Seabeach amaranth is implicitly but not explicitly identified as a significant resource in the Seashore's planning documents:*

As described above in the "Resources and the Seashore's Planning Documents" section of the Impairment Determination, the Seashore's planning documents do not provide an explicit listing of "significant resources," i.e., a list of which resources are "significant" and which are not. The planning documents instead repeatedly address the flora and fauna and physiographic conditions, particularly migratory birds and threatened and endangered species. Seabeach amaranth is federally-listed as a threatened species



under the *Endangered Species Act* and is also listed as a threatened species by the State of North Carolina. It is native to barrier island beaches, including those at the Seashore and the Seashore has implemented management measures for it. Therefore it seems reasonable to conclude that the Seashore's planning documents implicitly consider seabeach amaranth "significant" as part of the flora, fauna, and physiographic conditions the Seashore is mandated to preserve.

*Analysis:*

Seabeach amaranth has not been found in the Seashore since 2005, and for reasons discussed in the seabeach amaranth impact analysis in the plan/EIS, it is thought that the species may possibly be extirpated from the Seashore, thus creating a potential impairment before the no-action alternatives A and B were implemented. However, as noted in the USFWS 5-year review of the plant species, populations of seabeach amaranth may still be present, existing in the seed bank, even though plants are not visible for several years. NPS Management Policy 1.4.7 (NPS 2006) provides that if there is, or will be, an impairment, the decision-maker must take appropriate action, to the extent possible within NPS authorities and available resources, to eliminate the impairment. Although developing a specific plan to remedy the potential impairment is outside the scope of this plan/EIS, the desired future conditions for seabeach amaranth described in chapter 1 of this plan/EIS state that the Seashore will develop a seabeach amaranth restoration plan for four suitable sites. A restoration plan would be consistent with NPS Management Policy 4.4.2.2, which provides that NPS will strive to restore extirpated native plant and animal species to parks whenever certain criteria are met. Although unmanaged or poorly managed beach driving can constitute an important threat to the species, it can be mitigated by using vehicle corridors, and closures and buffers to protect the plants and seeds. The relative contribution of various factors, both human and natural, to the possible extirpation of the species from the Seashore is unknown. However, the action alternatives in this plan/EIS have been developed to manage beach driving so that its effects are at a sufficiently low intensity to not preclude restoration of seabeach amaranth to the Seashore. Moreover, seabeach amaranth has been known to reoccur on its own in areas where it has not occurred for many years. For example, seabeach amaranth was believed extirpated in New York from Long Island's barrier beaches for 35 years before plants were discovered in 1990, 1991, and again in 1992, though it is not known if this reoccurrence resulted from seed dispersal from other plant populations or exposure of local seed banks. Therefore, this impairment determination focuses on how alternative F protects potential habitat where plants might eventually occur, as well as unknown sites where seeds might be, in addition to protecting plants, if discovered or reintroduced.

Implementation of alternative F would not impair seabeach amaranth because the adverse impacts to seabeach amaranth habitat are low enough that sufficient functional habitat would remain to maintain a sustainable population in the Seashore, if the species reappears or is reintroduced to the Seashore. The effects on seabeach amaranth of constructing four new beach access ramps and relocating two existing ramps were deemed negligible to minor because the amount of potential habitat affected would be small compared to the total amount of habitat in the Seashore. Historically, most areas where seabeach amaranth has been found at the Seashore were either in established bird closures or other areas closed to vehicular traffic. Under alternative F, in addition to areas closed seasonally for shorebird nesting, suitable habitat at the points and spits used by seabeach amaranth during the preceding 5 years would be seasonally closed as well, which would protect additional seabeach amaranth habitat, if the species is rediscovered or reintroduced. Some other areas would not be designated as ORV routes to provide areas for visitors to enjoy the beach without the presence of vehicles. The 10-meter-wide backshore zone, which would be closed year-round to ORVs wherever there is sufficient beach width to allow an ORV corridor of at least 30 meters above the mean high tide line, would protect some additional habitat year-round. Alternative F would provide about 39 miles of habitat protected, at least seasonally, from vehicles (which have more adverse impacts than pedestrians to seabeach amaranth) and would include areas that are historically important for seabeach amaranth. If plants are found outside an existing closure, the

Seashore would install 30-foot by 30-foot closures around them for protection from vehicle or foot traffic. Before bird or turtle closures are reopened to ORV traffic, the areas would be surveyed for seabeach amaranth plants. If found, the plants would be protected by a 30-foot by 30-foot closure. The potential for undetected plants outside closures to be crushed and seeds pulverized or buried to a depth where they cannot germinate was deemed to constitute a minor to moderate adverse impact in the plan/EIS analysis because sufficient habitat inside closures is protected to maintain a sustainable population of seabeach amaranth, if rediscovered or reintroduced.

Cumulative impacts from combining the effects of alternative F with effects of other past, present, and future planned actions in the state of North Carolina would likely result in measurable or perceptible adverse effects (beyond the level of disturbance or harm that would occur naturally) and result in a change in the abundance and distribution of plants or quantity and quality of available habitat over the long-term, but the magnitude would be low enough to allow sufficient population numbers and functional habitat to remain to maintain a sustainable population in the Seashore, if plants reappear or are reintroduced. Therefore the seabeach amaranth impacts would not result in impairment.

## **STATE-LISTED AND SPECIAL STATUS SPECIES**

### *Brief Description of the Condition of the Resource:*

State-listed and Special Status Species at the Seashore include the American oystercatcher; four species of colonial waterbirds, including gull-billed tern, least tern, common tern, and black skimmer; Wilson's plover; and red knot. The American oystercatcher is classified as a Species of High Concern in the U.S. Shorebird Conservation Plan because of its small population (11,000 individuals), widespread habitat loss, and the threats it faces both during the breeding and nonbreeding seasons. At the Seashore, the oystercatcher population has experienced declines in numbers of breeding pairs since the 1990s. From 1999 to 2006, the number of nesting pairs declined 44% from 41 to 23 pairs and has remained stable at 23 nesting pairs for the last five years. The annual number of fledged chicks has ranged from a low of 5 in 1999 to a high of 30 in 2010, which represents the first time the fledge rate exceeded 1.0 at the Seashore. American oystercatchers also use the Seashore during migration.

Colonial waterbirds at the Seashore include gull-billed tern, common tern, least tern, and black skimmer. All four species are listed on the 2008 Birds of Conservation Concern (USFWS 2008). Gull-billed terns are considered by the State to be threatened in North Carolina, while the other three are listed by the State as Species of Special Concern. Ground-nesting colonial waterbirds breed along the Seashore beaches. Studies have documented that populations of some species of colonial waterbirds are declining. Beach nesters such as common terns, gull-billed terns, and black skimmers have shown the most significant declines. Coastal development, disturbances by humans, and increased nest predation all contribute to the decline in numbers of colonial waterbirds.

Wilson's plover was classified as a species of conservation concern by the USFWS in 2002. Wilson's plover is listed as endangered in Virginia and Maryland, threatened in South Carolina, rare in Georgia, state protected in Alabama, and as a species of special concern in North Carolina. No indications of Wilson's plover nesting had been documented at the Seashore until 2009 when a three-egg nest was found. During the 2010 breeding season, a Wilson's plover chick successfully fledged, which was the first time that this had been documented at the Seashore. Seashore staff have not completed a comprehensive survey of nonbreeding Wilson's plovers, so it is not known if the Seashore supports wintering populations.

The red knot is a shorebird that breeds in the Canadian Arctic and is known to visit North Carolina, the Outer Banks, and the Seashore, as well as the entire eastern seaboard of the United States, only as a

migrant and an occasional winter resident. The red knot is not listed as threatened or endangered by the USFWS, but it is a federal candidate species. Red knots have one of the longest migrations of any shorebirds and use the Seashore in the winter and during spring and fall migration.

*State-listed and special status species are necessary to fulfill the purposes for which the Seashore was established:*

The Seashore's enabling legislation provides that outside those areas where the Seashore develops facilities to support recreation such as swimming, boating, sailing and fishing, the Seashore shall be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic conditions prevailing in the area preserved. The state-listed shorebird species are an integral and easily recognizable part of the Seashore's wildlife which characterize the barrier island ecosystem that the Seashore preserves.

*State-listed and special status species are key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore:*

These species are an important part of the characteristic wild life of the barrier island ecosystem and are integral members of the ecological community.

*State-listed and special status species are implicitly but not explicitly identified as a significant resource in the Seashore's planning document:*

As described above in the "Resources and the Seashore's Planning Documents" section of the Impairment Determination, the Seashore's planning documents do not provide an explicit listing of "significant resources," i.e., a list of which resources are significant and which are not. The planning documents instead repeatedly address the flora and fauna and physiographic conditions, particularly migratory birds and threatened and endangered species. The state listed shorebirds are well known migratory birds that breed in the Seashore. American oystercatcher and black skimmer are easily recognized larger shorebirds that are characteristic of the ecosystem. These shorebirds are an integral component of the Seashore wildlife. Therefore it seems reasonable to conclude that the Seashore's planning documents implicitly consider these species "significant" as part of the flora, fauna, and physiographic conditions the Seashore is mandated to preserve.

*Analysis:*

Implementation of alternative F would not impair state-listed and special status species because although frequent responses by some individuals to disturbance would be expected, with negative impacts to feeding or reproduction, and impacts would occur during critical periods of reproduction or in key habitats in the Seashore and could result in harassment, injury, or mortality to one or more individuals, sufficient population numbers and functional habitat would remain to maintain a sustainable population in the Seashore.

Under alternative F, the Seashore would establish prenesting closures, as well as areas that are seasonally vehicle free (13 miles of the Seashore) or year-round vehicle free (26 miles of the Seashore), which proactively reduce or preclude recreational use from ORVs early in the breeding season. Pedestrians would be permitted in the VFAs, which would be subject to resource closures using standard buffers. Under alternative F, ORVs and pedestrians would be prohibited in prenesting closures. Prenesting closures would be established by March 15 at sites involving piping plover, Wilson's plover or American oystercatcher, and by April 15 at sites involving only colonial waterbirds. Surveys for American

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oystercatchers and Wilson's plover would begin on March 15, and surveys for colonial waterbirds would begin on May 1.

Because colonial waterbird colonies may shift locations from year to year, ramps that have had colonies in more than one of the past five years will remain open until scraping or nesting is observed. Prenesting closures will still be established in these areas, however, the closure will allow vehicle access through the areas until scraping or nesting is documented at which point the appropriate buffer will be established.

Prenesting closures would be removed if no breeding activity is seen in the area by July 31 (or August 15 if black skimmers are present), or 2 weeks after all chicks have fledged, whichever comes later. Pedestrian access would be allowed seaward of prenesting closures along the shoreline below the high tide line unless buffers preclude it. An ORV corridor would be established at Cape Point and South Point, but would be reduced in size from 50 meters (164 feet) to 35 meters (115 feet) during the period prenesting closures are in effect. Many areas that have historically been used as habitat for state-listed and special status species, including Hatteras Inlet Spit and North Ocracoke spit, would be designated as vehicle free year-round.

Alternative F would continue to allow pets at the Seashore, in accordance with 36 CFR 2.15, which applies to all units of the national park system and prohibits pet owners from "failing to crate, cage, restrain on a leash which shall not exceed 6 feet in length, or otherwise physically confine a pet at all times." This alternative would prohibit pets in resource closures and in pedestrian shoreline access areas in front of (i.e., seaward of) bird prenesting areas.

From March 15 through July 15, Seashore staff would survey prenesting closures three times per week and suitable habitat outside of prenesting closures two times per week, increasing to three times per week once breeding pairs are present.

Under alternative F, there would be 39 miles of seasonal and year-round VFAs. Management of state-listed and special status species would include prenesting closures as well as the buffers listed in FEIS table 10-1. For colonial waterbirds, since the colonies may shift locations from year to year, ORV ramps and pedestrian access points that have had colonies in more than one of the past five years will remain open until scraping or nesting is observed. Waiting until this activity is observed may result in disturbance to colonial waterbirds that causes them to abandon the areas before nest/scrapes are produced or observed by Seashore staff, and may result in the selection of less desirable areas for breeding.

American oystercatchers at the Seashore can begin courting and nesting as early as mid-February or early March and be particularly sensitive to disturbance at that time. Hence, a March 15 start to management could mean that early nesting oystercatchers, especially those that establish territories outside of historic areas, would not be fully protected under alternative F.

Buffers would be applied both within and outside of prenesting areas. Under alternative F, management for American oystercatchers would establish 150-meter (492-foot) buffers for breeding and nesting activities and 200 meters (656 feet) for unfledged chick activity. Buffers for least terns would be 100 meters (328 feet) for breeding and nesting activities and 200 meters (656 feet) for unfledged chick activity. All other colonial waterbird buffers would be 200 meters (656 feet) for breeding, nesting, and unfledged chick activities.

For all species, the Seashore would retain the discretion to expand scrape or nest buffers as needed to protect resources. In unprotected areas, a buffer would be established immediately when a nest with egg(s) is found. If breeding activity or scraping is observed outside of an existing closure, buffers would be expanded to accommodate the designated buffer for the particular species. Prior to hatching, vehicles

may be allowed to pass by such areas within designated ORV access corridors that have been established along the outside edge of nesting habitat where, in the judgment of Seashore resources management staff, steep topography, dense vegetation, or other naturally-occurring obstacles minimize the risk of human disturbance. Such sites would be re-evaluated for disturbance during each subsequent survey. When scrape(s), nest(s) or chick(s) occur in the immediate vicinity of paved roads, parking lots, campgrounds, buildings, and other facilities, such as within the villages or at NPS developed sites, the NPS would retain the discretion to adjust or reduce resource protection buffers to the extent necessary to allow these facilities to remain operational. In all cases involving such facilities, as a minimum, NPS would provide signs, fencing and reduced buffers to protect nest(s) and chick(s) once they occur. This provision does not apply to ORV routes or ORV ramp access, which would be subject to standard buffers.

Buffers would remain in place for two weeks after a nest is lost to determine if the pair will re-nest. For buffers that occur outside of, or that expand, the original prenesting areas, the buffer or expansion would be removed if no breeding activity is observed for a two-week period, or when associated breeding activity has concluded. For alternative F, buffers would be removed outside of prenesting areas if no breeding activity is observed for a two-week period or when associated breeding activity has concluded, whichever is later.

Under alternative F, nonbreeding shorebird closures would be established for migrating/wintering piping plovers. These closures could be utilized by other birds at the Seashore. Nonbreeding resource closures would be established at the points and spits based on habitat used by wintering piping plovers in more than one of the past five years, the presence of birds at the beginning of the migratory season, and suitable habitat types based on the results of the annual habitat assessment. In addition to these closures, there would be year-round VFAs (totaling 26 miles) that would provide areas of less intensive use at various locations throughout the Seashore. These measures would ensure that adequate foraging, resting, and roosting areas would be provided for all migratory and nonbreeding state-listed/special status species.

Under alternative F, all nonessential ORV traffic would be prohibited from Seashore beaches from 9:00 pm to 7:00 am from May 1 to November 15. From September 16 to November 15, ORV routes with no turtle nests remaining would reopen for night driving subject to the terms and conditions of the standard ORV permit. From November 16 to April 30, ORV use would be allowed 24 hours per day on designated ORV routes for vehicles with a valid ORV permit. Effects from commercial fishing would not be observable or measurable and would be well within natural fluctuations because the special use permit under which commercial fishing is managed prohibits entering resource closures and because a relatively small number of commercial fishermen operate inside the Seashore.

Although most visitors respect closures, closure intrusions by vehicles, pedestrians, and pets may result in harassment, injury, or mortality to one or more individuals. However, alternative F would require a permit for ORV use that includes an educational component. Because ORV users would be more aware of the regulations in place to protect state-listed/special status species, the permit requirement would likely increase compliance with buffers, closures, and other restrictions. Violations may result in permit revocation, which is expected to increase compliance. Alternative F would also establish a new voluntary resource education program targeted toward pedestrian beach users. Under alternative F, ORVs would bring people into the vicinity of state-listed/special status species where trash associated with recreation use would continue to attract mammalian and avian predators. Predation is known to affect the reproductive success of shorebirds; the indirect impacts of attracting predators would be detectable and beyond the level of disturbance or harm that would occur naturally, but would not be expected to result in large declines in population because the Seashore takes management action to protect state-listed species from predation.

The impact analysis of alternative F deemed adverse impacts to state-listed/special status species from ORV and other recreational use to be minor to moderate because impacts would be detectable, and could be beyond the level of disturbance or harm that would occur naturally. Although some impacts might occur during critical reproductive periods or in key habitats in the Seashore and could result in injury or mortality, sufficient population numbers and functional habitat would exist to maintain a sustainable population in the Seashore.

The analysis in the plan/EIS of cumulative impacts combined the effects of alternative F with effects of other past, present, and future planned actions in and around the Seashore, such as major dredging and maintenance dredging of Oregon Inlet, storms and other weather events, local development, predator management by the Seashore, and increased interpretative programs as part of the Seashore's long-range interpretive plan. The cumulative impacts were deemed to be minor to moderate adverse in the plan/EIS impact analysis because impacts on state-listed/special status species and their habitats would be detectable and could be beyond the level of disturbance or harm that would occur naturally. Some negative impacts to feeding, reproduction, resting or other factors affecting local population levels may occur and may result in harassment, injury, or mortality to one or more individuals. However, sufficient population numbers and functional habitat would exist to maintain a sustainable population in the Seashore. Therefore, the state-listed/special status impacts would not result in impairment.

## **WILDLIFE AND WILDLIFE HABITAT**

### *Brief Description of the Condition of the Resource:*

Wildlife and wildlife habitat includes invertebrate species and other bird species that are found at the Seashore. Thousands of migrating shorebirds use the barrier islands as a stopover point to rest, forage, or spend the winter. In 1999, the American Bird Conservancy designated Cape Hatteras National Seashore as a Globally Important Bird Area in recognition of the Seashore's value in bird migration, breeding, and wintering. Studies have recorded 21 species of shorebirds (see table 32 of the plan/FEIS) on the beaches of the Outer Banks of North Carolina, such as whimbrels (*Numenius phaeopus*), willets (*Catoptrophorus semipalmatus*), and sanderlings (*Calidris alba*). Although not state-listed or federally listed, several of the shorebirds found at the Seashore appear on the USFWS Birds of Conservation Concern list, which identifies migratory birds that, without additional conservation actions, are likely to become candidates for listing under the ESA.

The Seashore beach ecosystem is home to a vast quantity of invertebrates, which form a valuable link in the coastal food chain. Many of the protected bird species found within the Seashore, including the piping plover, Wilson's plover, red knot, American oystercatcher, and gull-billed tern, feed on invertebrates in areas that are open to ORV use, such as the intertidal zone and the wrack line. High-energy, intertidal beaches in the southeastern United States generally support approximately 20 to 30 types of invertebrate species, with the most identifiable being mole crabs, ghost crabs, and coquina clams.

### *Wildlife and wildlife habitat are necessary to fulfill the purposes for which the Seashore was established:*

The Seashore's enabling legislation provides that outside those areas where the Seashore develops facilities to support recreation such as swimming, boating, sailing and fishing, the Seashore shall be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic conditions prevailing in the area preserved. Other migratory shorebird species and wintering waterbirds and the invertebrates, which form a valuable link in the coastal food chain, are wildlife characteristic of the barrier island ecosystem that Seashore preserves.

*Wildlife and wildlife habitat are key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore:*

The Outer Banks of North Carolina provides a crucial link in the migratory path of several shorebird species. The barrier island ecosystems at the Seashore provide habitat for large numbers of migratory and nesting bird species and coastal marshes are critical to wintering populations of many waterbirds. Nearly 400 species of birds have been sighted within the Seashore and its surrounding waters (Fussell et al. 1990). Migration routes for many raptor species include southeastern barrier islands. Thousands of migrating shorebirds use the barrier islands as a stopover point to rest, forage, or spend the winter (Manning 2004). In 1999, the American Bird Conservancy designated the Seashore as a Globally Important Bird Area in recognition of the Seashore's value in bird migration, breeding, and wintering (American Bird Conservancy 2005). Studies have recorded 21 species of shorebirds on the beaches of the Outer Banks of North Carolina, such as whimbrels (*Numenius phaeopus*), willets (*Catoptrophorus semipalmatus*), and sanderlings (*Calidris alba*). Studies have demonstrated the importance of the Outer Banks as a staging area for piping plover, whimbrels, and sanderlings when compared to other areas along the Atlantic Coast and confirmed that the area provides a critical link in the migratory path of several shorebird species (Dinsmore et al. 1998). For example, the Outer Banks is listed as a conservation site for sanderlings during migration along the Atlantic Coast (Payne 2010), and the Outer Banks (North Core Banks to Bodie Island) is considered an important migratory stopover/staging site for whimbrel migration along the U.S. Atlantic coast (Wilke et al. 2010).

The Seashore beach ecosystem is home to a vast quantity of invertebrates, which form a valuable link in the coastal food chain. Many of the protected bird species found in the Seashore, including piping and Wilson's plover, red knot, American oystercatcher, and gull-billed tern, feed on invertebrates in the intertidal zone and wrack.

These other shorebird species and invertebrates are an integral component of the natural barrier island ecosystem at the Seashore and are key to the natural integrity of the Seashore.

*Wildlife and wildlife habitat are implicitly but not explicitly identified as a significant resource in the Seashore's planning documents:*

As described above in the "Resources and the Seashore's Planning Documents" section of the Impairment Determination, the Seashore's planning documents do not provide an explicit listing of "significant resources," i.e., a list of which resources are significant and which are not. The planning documents instead repeatedly address the flora and fauna and physiographic conditions, particularly migratory birds and threatened and endangered species. As noted earlier the Seashore has been designated a Globally Important Bird Area, in part because many species of migratory birds, particularly shorebirds, depend on it for resting and foraging during migration. Therefore it seems reasonable to conclude that the Seashore's planning documents implicitly consider these other shorebirds and invertebrates "significant" resources as part of the flora, fauna, and physiographic conditions the Seashore is mandated to preserve.

*Analysis:*

Implementation of alternative F would not result in impairment to wildlife as sufficient population numbers and functional habitat would remain to maintain sustainable populations of invertebrates and other bird species in the Seashore. Alternative F would continue to provide for recreational beach access but would implement species protection through the use of prenesting closures and seasonal and year-round VFAs and night-driving restrictions. This alternative would require an ORV permit with an educational component, and all species at the Seashore would benefit from the increased level of resource stewardship that is associated with increased public awareness.

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Twenty-six miles of Seashore would be designated as vehicle free year-round and 13 miles of beach would be a seasonal VFA. These VFAs would reduce the potential for disturbances to species that use these areas. However, this alternative would allow pedestrian access to these areas, subject to resource closures. The size of the protected species buffers provide additional protection to other wildlife.

Limiting vehicles to daytime use 7:00 am to 9:00 pm for 6.5 months of the year would reduce the potential for impacts to nocturnal invertebrates and night foraging birds throughout the Seashore. Vehicle use would result in the loss of individual invertebrates, but would not be measurable and would be well within natural fluctuations.

The plan/EIS impact analysis deemed the adverse effects on other wildlife from the implementation of alternative F to be minor because, although occasional disturbance and harm to other wildlife or their habitat would occur from ORV and other recreational use, it would not be outside the level of disturbance or harm that would occur naturally and the Seashore would maintain sustainable populations of invertebrates and other bird species.

Cumulative impacts from combining the effects of alternative F with effects of other past, present, and future planned actions in and around the Seashore would likely result in harassment of other bird species and injury or mortality to invertebrates at the Seashore. Even with these adverse effects, population numbers and functional habitat would remain to maintain sustainable populations in the Seashore. Therefore, impacts to other wildlife would not result in impairment to these species.

## SOUNDSCAPES

### *Brief Description of the Condition of the Resource:*

A soundscape is defined as the way in which humans perceive this acoustic environment. According to the NPS, 72% of visitors indicate that a crucial reason for the need to preserve national parks is that parks provide opportunities to experience natural peace and the sound of nature (NPS 2009). Wildlife is very sensitive to sound, as animals often depend on auditory cues for hunting, predator awareness, sexual communication, defense of territory, and habitat quality assessment. Negative population-level, behavioral, and habitat use consequences of higher ambient sound levels from human voices, along with sound events associated with human activities (motorists, snowmobiles, hikers), have been observed in many species.

The presence of millions of visitors to the Seashore engaging in various activities, coupled with the vehicular traffic through the Seashore along NC-12 and associated ramps, including ORV usage on the beaches, serve as sources of unnatural sounds in the Seashore. However, these sources are also considered to be consistent with the Seashore's purpose. Currently visitors are allowed to operate ORVs on all the ocean and inlet shoreline and on existing soundside routes that are designated as ORV routes, 24 hours per day, subject to temporary resource closures, seasonal night driving restrictions, seasonal ORV closures in front of the villages and temporary ORV safety closures.

### *Soundscapes are necessary to fulfill the purposes for which the Seashore was established:*

The Seashore's enabling legislation provides that outside those areas where the Seashore develops facilities to support recreation such as swimming, boating, sailing and fishing, the Seashore shall be permanently reserved as a primitive wilderness and the unique flora and fauna and physiographic conditions prevailing in the area preserved. The soundscape is an integral component of the Seashore environment which is important to the fauna of the barrier island ecosystem that the Seashore preserves. As described in the plan/FEIS, birds in particular depend on the natural soundscape, as they rely heavily



on auditory cues for identifying and attracting suitable mates, pair bonding, communication, and detection of predator alerts or warning signals

*Soundscapes are key to the natural or cultural integrity of the Seashore or to the opportunity for enjoyment of the Seashore:*

The barrier island soundscape, in itself, is an important feature of the Seashore. The natural soundscape is an integral component of the natural barrier island ecosystem at the Seashore, which provides necessary ecological requirements for the Seashore wildlife.

*Soundscapes are implicitly but not explicitly identified as a significant resource in the Seashore's planning documents:*

As described above in the "Resources and the Seashore's Planning Documents" section of the Impairment Determination, the Seashore's planning documents do not provide an explicit listing of "significant resources," i.e., a list of which resources are significant and which are not. The planning documents instead repeatedly address the flora and fauna and physiographic conditions, particularly migratory birds and threatened and endangered species. Soundscapes are an integral component of species habitat. Therefore it seems reasonable to conclude that the Seashore's planning documents implicitly consider this resource "significant" as part of the flora, fauna, and physiographic conditions the Seashore is mandated to preserve.

*Analysis:*

Implementation of alternative F would not result in impairment to soundscapes because the noise from ORV passages (i.e., from an ORV as it passes a set point) would still leave areas of the Seashore where natural sounds would predominate, including areas of visitor use, and would increase the opportunity to experience natural sounds when compared to the current condition. ORV access would be prohibited in all areas of the Seashore except where an ORV route is specifically designated. In general, ORV use at the Seashore would continue intermittently over the life of the plan, but would be limited as a result of the establishment of 26 miles of year-round vehicle-free areas (VFAs), and 13 miles of seasonally designated VFAs. The impact analysis in this plan/EIS deemed vehicle noise to be a minor adverse impact in all areas of the Seashore beaches open to ORV driving. In these areas, noise from vehicles traveling 15 mph would only exceed sound energy generated by the surf (and inhibit the ability to hear natural sounds) to a distance of approximately 20 meters inland from an ORV track and to a distance of approximately 10 meters from the ORV track towards the surf. Vehicle noise would also exceed the natural ambient environment by 3 dBA or more to a distance of approximately 12 meters inland and 8 meters seaward of a vehicle traveling at 15 mph, leaving many areas of the Seashore where natural sounds would predominate for visitor enjoyment. Under these conditions during an ORV passage, opportunities to hear the sounds of nature would be degraded to a certain degree, which would be less than the existing condition because of the lower speed limit under alternative F. Due to the size of the affected area and the differences between the vehicle noise and the sounds of the surf, impairment of Seashore resources would not occur.

Prohibiting ORV access in all areas of the Seashore, except where an ORV route is specifically designated, would result in less area of the Seashore being open to ORV use year-round than is currently occurring, and would provide more areas where visitors and wildlife can experience natural sounds. Areas of high resource sensitivity and high visitor use would generally be designated as year-round or seasonal VFAs. Generally, most areas where there is a designated seasonal ORV route would be open to ORVs from November 1 through March 31, with several seasonal routes including Bodie Island spit open to ORVs from September 15 through March 14. During the periods when these areas would not be open to ORV use, both visitors and wildlife would experience benefits from a reduction in vehicle related noise

and the ability to experience natural sounds. Most areas of historically lower visitor use and resource sensitivity would be designated as year-round ORV routes, subject to temporary resource closures. The establishment of seasonal VFAs for approximately 2 to 3 months longer than under alternatives A and B (depending on where the seasonally designated VFA is located), would provide longer periods of time for natural sounds to prevail and for visitors and wildlife to experience the benefits of reduced vehicle noise. Throughout the Seashore, where ORV use is permitted, the speed limit would be reduced from 25 mph to 15 mph (unless otherwise posted), which would also contribute to long-term beneficial impacts because slower moving vehicles produce less sound. Additional beneficial impacts would result from seasonal night-driving restrictions, which would create vehicle-free beaches at night from May 1 to November 15, from 9:00 pm until 7:00 am and provide visitors with a nighttime experience that is free of vehicle noise.

Improving, reconfiguring, and adding new ramps and parking areas would result in noise from construction. The impact analysis in this plan/EIS deemed these construction impacts to be minor because they would be expected to be localized in the immediate area of the construction; of short duration, lasting only a few days to a week; would not occur in ecologically sensitive areas; and would not inhibit the long-term ability to experience natural sounds at the Seashore.

Overall, the impact analysis in this plan/EIS found that impacts would be long-term minor adverse, with short- and long-term beneficial impacts because ORV use, and its resulting soundscape impacts, would be largely limited to areas of the Seashore designated as ORV routes. Sounds related to ORV use such as from essential vehicles<sup>1</sup> or commercial fishermen operating under a special use permit, could be experienced at times throughout the Seashore, even in VFAs. However, many opportunities to experience natural sound would exist due to the extent of seasonal and year-round VFAs, seasonal night-driving restrictions, and lowered speed limits. Cumulative impacts from combining the effects of alternative F with effects of other past, present, and future planned actions in and around the Seashore would likely contribute to a similar level of adverse impacts as alternative F, with noise being present for intervals of time, with beneficial impacts from intervals of natural sounds. Therefore, impacts to soundscapes would not result in impairment.

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<sup>1</sup> Essential vehicles are vehicles used by the National Park Service, or its agents, to conduct authorized administrative activities, such as resources management, law enforcement or other park operations, related to implementation of this plan or other applicable management plan(s) or permit(s), or as needed to respond to emergency operations involving threats to life, property, or park resources, within areas that are otherwise closed to recreational ORV or visitor use.

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