

CAHA DRAFT bird buffer table 8/04/2008

Species	Buffer distance (m)	Buffer distance (ft)	Disturbance types	Behavior	Region	Reference	
American Oystercatcher	180-200	590-656	Pedestrian, ATV, vehicles, boat, pets	Nesting	Cumberland Island National Seashore, Georgia	Sabine 2006 (as cited in USGS protocol for AMOY)	
	30	100	Development, vegetation removal	Foraging	Maine	Dept. Env. Protection	
	76	250	Development, vegetation removal	Roosting	Maine	Dept. Env. Protection	
	103	338	Watercraft	Foraging and loafing	West and east coasts of Florida	Rodgers and Schwikert 2002	
	Completely close areas used in last 10 years by nesting / foraging AMOY to all recreational activity March 15 – Aug 15			All recreation	all	CAHA	USGS Protocol Option A
	Close specific areas for nesting American Oystercatcher's in coordination with closure of beaches for nesting colonial waterbirds and Piping Plovers (<i>Charadrius melodus</i>). Important nesting areas and ones that have been closed in the past for oystercatchers are Hatteras Island: Cape Point, South Beach, Hatteras Inlet; Bodie Island: Bodie Island flats; and Ocracoke Island: areas from ramp 59 to ramp 72 in addition to sites mentioned in Option B for colonial waterbirds. plus pedestrians not allowed >50 landward from high tide***, place signage 200 m from nesting birds	>166		All (pedestrian corridor in AMOY territory as a "walk through", i.e. passing through quickly)	All	CAHA	USGS Protocol Option B***
	"Restrict all ORV, boat (recommend coordination with other agencies), and pedestrian recreation to a corridor within 50 m of the oceanside mean high time line from sunrise to sunset at all sites used in the last 10 years by nesting American Oystercatchers from March 15 to August 15 The corridor should be reduced or closed during the hatchling stage (assuming the pair were successful) to reduce chick mortality from ORVs. It should			all ORV, boat (recommend coordination with other agencies), and pedestrian recreation	all	CAHA	USGS Protocol Option C (note protocol states "Option C might be considered 'take' under the migratory bird regulations")

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	remain closed until August 15 (Sabine 2005) or until 60 days (independence from adults; Nol and Humphrey 1994) after last hatching date if nests were monitored in the area. Areas should be closed from sunset to sunrise for all recreation activities.”					
	Areas used last 10 years closed, plus 200 sign to warn gov't personnel of nest***	656	All	Nesting	CAHA	USGS Protocol Option A-C***
Black Skimmer	200	656	Pedestrian	Nesting	NC/VA	Erwin 1989
	178	584	Pedestrian	Nesting	17 sites in Florida	Rodgers and Smith 1995
	200	656	All	Nesting	CAHA	USGS Protocol Options B-C
Common Tern	200	656	Pedestrian	Nesting	NC/VA	Erwin 1989
	200	656	All	Nesting	CAHA	USGS Protocol Options B-C
Gull-billed Tern	No data					
	200	656	All	Nesting	CAHA	USGS Protocol Options B-C
Least Tern	100	328	Pedestrian	Nesting	NC/VA	Erwin 1989
	140	459	Watercraft	Foraging and loafing	West and east coasts of Florida	Rodgers and Schwikert 2002
	154	505	Pedestrian	Nesting	17 sites in Florida	Rodgers and Smith 1995
	100	328	All	Nesting	CAHA	USGS Protocol Options B-C
Piping Plover	50	164	Essential vehicles/monitors	Nesting	CAHA	Cohen 2006
	50	164	Pedestrian/vehicle	Incubating	Atlantic Coast	USFWS
	60	200	Pedestrians, development	Nesting	Maine	Dept. Env. Protection
	90	300	Trash receptacles, beach cleaning activities	Nesting	Maine	Dept. Env. Protection
	50**	164	Pedestrians	Nesting	New Hampshire	Fish & Game Dept.

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	50	164	Not known	Nesting	Delaware	Div. Fish & Wildlife
	*	*	Pedestrians	Nest, scrape,, foraging of fledglings*	Rhode Island	Fish and Wildlife Dept.
	“all suitable piping plover nesting habitat”		All recreation	all	Atlantic Coast population	Recovery Plan Appendix G (see cell below)
	50 (fencing “should be expanded in cases where the standard 50-meter radius is inadequate to protect incubating adults or unfledged chicks from harm or disturbance.”	166	Recreation, pedestrians, etc. (everyone except “persons engaged in rare species monitoring, management, or research activities”),	Territorial plovers, nest, scrape, unfledged chicks,	Atlantic coast population	USFWS Revised Recovery Plan, Appendix G [guidelines for avoiding take under section 9 of the ESA, states that “Some land managers have threatened and endangered species protection obligations under Section 7 of the USA or under Executive Orders 11644 and 11989 that go beyond adherence to these guidelines.]
	“...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.”	“Beaches where plovers are present or have traditionally nested”	pets	All behavior	Atlantic coast population	USFWS Revised Recovery Plan, Appendix G [guidelines for avoiding take under section 9 of the ESA, states that “Some land managers have threatened and endangered species protection obligations under Section 7 of the USA or under Executive Orders 11644 and 11989 that go beyond adherence to these

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						guidelines.]
	1000	3280	Vehicles	Unfledged Chicks	Atlantic coast population	USFWS Revised Recovery Plan, Appendix G [guidelines for avoiding take under section 9 of the ESA, states that "Some land managers have threatened and endangered species protection obligations under Section 7 of the USA or under Executive Orders 11644 and 11989 that go beyond adherence to these guidelines.]
	200 "Kite flying should be prohibited within 200 meters of nesting or territorial adult or unfledged juvenile piping plovers between April 1 and August 31.		Kite flying	"Nesting or territorial adult or unfledged juvenile piping plovers	Atlantic coast population	USFWS Revised Recovery Plan, Appendix G [guidelines for avoiding take under section 9 of the ESA, states that "Some land managers have threatened and endangered species protection obligations under Section 7 of the USA or under Executive Orders 11644 and 11989 that go beyond adherence to these guidelines.]
	50	166	Watercraft,	Nesting, Roosting,	CAHA	USGS Protocol

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			Essential Vehicles, and Monitors	Foraging		Options A
	50 (widen to 100, then 200 if disturbance continues)	166	Recreation	Courtship/Scrapes	CAHA	USGS Protocol Options B-C,
	10	33	Recreation	Ocean Backshore	CAHA	
	1000	3,280	ORVs, Boat Landings	1 week of hatch date and unfledged chicks	CAHA	
Red Knot	30	100	Development, vegetation removal	Foraging	Maine	Dept. Env. Protection
	76	250	Development, vegetation removal	Roosting	Maine	Dept. Env. Protection
<p>Sooty, Forsters Tern: Although mentioned in the Interim Protected Species Management Strategy/Environmental Assessment, the Sooty and Forster's Tern have not been observed breeding in the park since 1993 and 1995 respectively.</p>						
Wilson's Plover	100	328	Watercraft	Foraging and loafing	West and east coasts of Florida	Rodgers and Schwikert 2002

REFERENCES

USFWS Recovery Plan

U.S. Fish and Wildlife Service. 1996. pg. 72. Piping Plover (*Charadrius melodus*) Atlantic Coast Population Revised Recovery Plan. Prepared by the Atlantic Coast Piping Plover Recovery Team For the U.S. Fish and Wildlife Service Region Five Hadley, Massachusetts.

USGS Protocols

Cohen, J. B. 2006. pg. 28. Management and Protection Protocols for the Threatened Piping Plover (*Charadrius melodus*) on Cape Hatteras National Seashore, North Carolina. United States Geological Survey, Patuxent Wildlife Research Center. Posted at: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=13331&documentID=12970>, on March 2, 2006.

Sabine, J. B., personal communication from pg. 9 in Meyers, J. M. Management, monitoring, and protection protocols for American Oystercatchers at Cape Hatteras National Seashore. United States Geological Survey, Patuxent Wildlife Research Center. Posted at: <http://parkplanning.nps.gov/document.cfm?parkID=358&projectId=13331&documentID=12970>, on March 2, 2006.

Need to add references for AMOY and CWB protocols.

State Protocols

State of Delaware, Division of Fish and Wildlife – The State of Delaware follows the protocol of the USFWS Piping Plover Recovery Plan (Holly Niederriter, staff, pers. comm., May 2008)

State of Maine, Dept. of Environmental Protection, Bureau of Land and Water Quality -

Plovers - Municipalities are required to buffer identified plover nests with at least a 200 foot (60 m) radius surrounding the nest. Municipal beaches are required to place trash receptacles and not beach clean with equipment within 300 foot (90 m) radius of plover nests.

Other species – Buffer consists of the actual feeding habitat and a 100 foot (30 m) upland buffer surrounding the foraging area. Roosting habitats have a 250 foot (76 m) buffer (Lindsay Tudor pers. comm., May 2008, Biologist, Maine Department of Environmental Protection, Bureau of Land and Water Quality).

Buffer distances determined by utilizing information from human disturbance studies conducted by Joanna Burger, James A. Rodgers, Jr., Henry T. Smith, and others which most studies recommended buffers of 100 meters (328 ft) for shorebirds. A compromise was made with the legislature and ended up with 100 (30 m) foot buffers for feeding areas and 250-foot (76 m) buffers for roosting areas.

These buffers and protection regulations involve only activities or projects that require a permit or license from, or is funded or carried out by a state agency or municipal government. Such projects include subdivisions, building construction, docks and piers, road construction, municipal dog ordinances, forest management, agriculture management, dredging, bulldozing etc. Piping plover nesting areas are staked off from pedestrians as part of Beach Management

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Agreements with municipalities as part of the Essential Habitat policy, this is through agreements not regulation. Buffers and staging areas established through NRPA do not exclude pedestrians from designated shorebird feeding and roosting habitats. (Lindsay Tudor pers. comm., May 2008, Biologist, Maine Department of Environmental Protection, Bureau of Land and Water Quality).

There are two pieces of state legislation that offer habitat protection for shorebirds in Maine.

Under the Maine Natural Resources Protection Act (38 M.R.S.A), Shorebird staging areas are designated as "Significant Wildlife Habitat (SWH)". Areas with recorded shorebird observations are mapped and identified and must meet certain criteria before such areas are designated as SWH. This criteria looks at total numbers of shorebirds using the site and species diversity. Shorebird SWHs are identified as roosting or feeding areas. All SWH shorebird feeding areas consist of the actual feeding habitat and a 100 foot upland buffer surrounding the feeding area. Development, vegetation removal and other activities that require a state permit within this 100 foot buffer as well as within the feeding habitat are restricted (for example applications for docks and piers in the mudflat and salt marsh habitats can be denied). All shorebird SWH roosting habitats have a 250 foot buffer around the roost. Same restrictions apply.

Other protective legislation involves protecting nesting Piping Plovers under the Maine Endangered Species Act (Inland Fisheries and Wildlife Laws, 12 MRSA Part 13, Chapter 925, Subchapter 3 Endangered Species). This Act allows IFW to identify and protect piping plover nesting and foraging areas as Essential Habitat. The state has authority to dictate state and municipal beach management practices within Essential Habitats. Municipalities are ideally required to buffer identified nests with stake and twine fencing with at least a 200-foot (60 m) radius surrounding the nest, municipal beaches to place trash receptacles and not beach clean with equipment within 300-foot (90 m) radius of the nest. This isn't always possible due to the beach area size and configuration where nests may occur (Tudor, personal communication).

Regulations can be found at:

<http://www.maine.gov/dep/blwq/docstand/nrpa/birdhabitat/index.htm>

***USGS Protocol Option

Option A areas of breeding habitat used in last 10 years closed to all recreation. Option B same as option A plus pedestrian corridor. Option C same as option A plus a 50m ORV and pedestrian corridor sunrise to sunset.

**State of New Hampshire, Fish and Game Department

The State of New Hampshire manages piping plovers on state parks and a municipal beach, following the 50 m (164 ft) protocol of the USFWS Piping Plover recovery plan. The State and Federal Endangered Species Acts are the most relevant legislation; however, they do not specifically describe buffer management. Plovers are buffered from human activities by way of predator and human exclosure fencing. Predator exclosure fencing is installed after eggs are laid, is not moved once installed, and is 10 feet in diameter around each nest. Human symbolic exclosure fencing extends across the length of dunes. The distance from the symbolic and predator fence does occasionally vary with topography. (John Kanter pers. comm; Non-game and Endangered Wildlife Program Coordinator New Hampshire Fish and Game Department 2 Hazen Drive; Concord, NH 03301; Phone: 603.271.3017).

*State of Rhode Island, Fish and Wildlife Department

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Rhode Island manages plovers on 12 beaches on a case-by-case basis following USFWS protocols. The USFWS recommends a buffer distance of 50 m for nesting plovers. In Rhode Island, symbolic fencing (8' metal "U" poles, yellow rope, do-not-enter signs) is used to protect plover nests, nest scrapes and, if needed, fledgling foraging areas, from pedestrians. Sixty volunteers monitor nests while providing public education (e.g., discussion, flyers) seven days a week. The buffer distances are determined, in part, by the flush distance of incubating adults. State biologists observe flush distances in the field to make these determinations. In general, plovers that breed on beaches with more pedestrians flush at shorter distances than plovers breeding in areas with less human contact. Buffer distances are also a function of nest location and beach width. For example, if nest is placed on the upper dune, managers will protect the lower beach in addition to nest site. In one example, a beach 1.5 mile in length has one-third of its length closed during the breeding season (personal communication, Wendy Edwards, 06/13/2008)

Scientific Literature

Erwin R. 1989. pg. 106. Response to human intruders by birds nesting in colonies: experimental results and management guidelines. *Colonial Waterbirds* 12: 104-108.

Rodgers and Schwikert (2002) pg. 222 – "Buffer-zone distances to protect foraging and loafing waterbirds from disturbance by personal watercraft and outboard-powered boats." *Conservation Biology* 16: 216-224.

The authors exposed 23 species of waterbirds to the direct approach of personal watercraft and an outboard-powered boat to determine their flush distances. Average flush distances for the personal watercraft ranged from 19 m (62 ft) (Least Tern) to 49.5 m (162 ft) (Osprey). Data suggest that a single buffer-zone distance can be developed for both personal watercraft and outboard-powered vessels. A formula used for calculating a buffer zone was based on the upper one-sided 95% confidence limit for the mean and one standard deviation of the flush distance plus 40 m (131 ft). Buffer zones of 180 m (591 ft) for wading birds, 140 m (459 ft) for terns and gulls, 100 m (328 ft) for plovers and sandpipers, and 150 m (492 ft) for ospreys would minimize their disturbance at foraging and loafing sites in Florida. The minimum recommended buffer-zone distance (m) between American Oystercatcher and fast approach of watercraft directly toward waterbirds to prevent flushing is 103 m (338 ft).

Rodgers and Smith. (1995) - pg. 89, 94.

Set-back distances to protect nesting bird colonies from human disturbance in Florida. *Conservation Biology* 9: 89-99

Fifteen species of colonial waterbirds nesting at 17 colonies in north and central Florida were exposed to three different human disturbance mechanisms to determine set back distances. In general, colonial waterbirds exhibited greater average flush distance in reaction to a walking approach than to approaching motor boats. Recommended set back distances were estimated using a formula based on the mean plus 1.6495 standard deviations of the observed flushing distances plus 40 meters (131 ft) [RS = $\exp(\mu + 1.6495\sigma + 40)$]. In general, a recommended set-back distance of about 100 meters for wading bird colonies and 180 meters for mixed tern/skimmer colonies should be adequate to effectively buffer the sites studied from human disturbance caused by approach of pedestrians and motor boats. More specifically, recommended set back distances

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between walking or motor boat and least terns and black skimmers are 154 m (505 ft) and 178 m (584 ft) respectively.

Below is copied from USFWS. 1996. Piping Plover (*Charadrius melodus*) Atlantic Coast Population Revised Recovery Plan. Prepared by the Atlantic Coast Piping Plover Recovery Team For the U.S. Fish and Wildlife Service Region Five Hadley, Massachusetts. 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 Endangered Species Act.

MANAGEMENT OF NON-MOTORIZED RECREATIONAL USES

On beaches where pedestrians, joggers, sun-bathers, 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 a 50-meter radius around nests above the high tide line should be delineated with warning signs and symbolic fencing². 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 indicate that larger buffers may be needed in some locations (see Table 3, page 12). 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.

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[Footnote 2] Symbolic fencing refers to one or two strands of light-weight string, tied between posts to delineate areas where pedestrians and vehicles should not enter.

For example, on the basis of data from an intensive three year study that showed that plovers on Assateague Island in Maryland flush from nests at greater distances than those elsewhere (Loegenng 1992), the Assateague Island National Seashore established 200 meter buffers zones around most nest sites and primary foraging areas (NPS 1 993b). Following a precipitous drop in numbers of nesting plover pairs in Delaware in the late 1980's, that State adopted a Piping Plover Management Plan that provided 100 yard buffers around nests on State park lands and included intertidal areas (DNREC 1990).

MOTORVEHICLE MANAGEMENT

The USFWS 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 USFWS 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 suggest 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 USFWS 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.

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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 2,000-meter-wide area of protected habitat for plover chicks should extend from the ocean-side low water line to the bayside low water line or to the farthest extent of dune habitat if no bay-side intertidal habitat exists. However, vehicles maybe 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 USFWS 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 1,000 meters, even where they are intensively monitored. Protected areas should extend from the oceanside low water line to the bay-side lowwater line or to the farthest extent of dune habitat if no bayside intertidal habitat exists. However, vehicles maybe 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 document that piping plovers on a particular site feed in only certain habitat types, the USFWS 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:

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I. 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 five 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 [omitted by NPS]

SITE-SPECIFIC MANAGEMENT GUIDANCE

The guidelines provided in this document are based on an extensive review of the scientific literature and are intended to cover the vast majority of situations likely to be encountered on piping plover nesting sites along the U.S. Atlantic Coast. However, the USFWS recognizes that site-specific conditions may lead to anomalous situations in which departures from this guidance maybe safely implemented. The USFWS recommends that landowners who believe such situations exist on their lands contact either the USFWS or the State wildlife agency and, if appropriate, arrange for an on-site review. Written documentation of agreements regarding departures from this guidance is recommended.

In some unusual circumstances, USFWS or State biologists may recognize situations where this guidance provides insufficient protection for piping plovers or their nests. In such a case, the USFWS or the State wildlife agency may provide written notice to the landowner describing additional measures recommended to prevent take of piping plovers on that site.