

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA
NORTHERN DIVISION

No. 02:07-CV-0045-BO

DEFENDERS OF WILDLIFE and
THE NATIONAL AUDUBON SOCIETY,
Plaintiffs,
v.
NATIONAL PARK SERVICE; UNITED
STATES DEPARTMENT OF THE
INTERIOR; DIRK KEMPTHORNE,
SECRETARY OF THE INTERIOR; MARY
A. BOMAR, DIRECTOR OF THE
NATIONAL PARK SERVICE; and
MICHAEL B. MURRAY,
SUPERINTENDENT OF THE CAPE
HATTERAS NATIONAL SEASHORE,
Defendants,
and
DARE COUNTY, NORTH CAROLINA;
HYDE COUNTY, NORTH CAROLINA; and
THE CAPE HATTERAS ACCESS
PRESERVATION ALLIANCE,
Defendant- Intervenors.

DECLARATION OF
JONATHAN COHEN

I, Jonathan Cohen, under penalty of perjury, depose and state as follows:

1. My name is Jonathan Cohen. I reside at 3512 Cameo Lane, Blacksburg, Virginia.

I am a research scientist in the Department of Fisheries and Wildlife Science at Virginia Polytechnic Institute and State University. In this position, I prepare proposals and research plans for wildlife field studies, manage and execute wildlife field studies, statistically analyze the results, and prepare manuscripts for publication in peer-reviewed journals. Prior to being a research scientist, I was a Ph.D.-level graduate research assistant focusing on piping plover ecology, a biological technician for the USGS assisting in wildlife toxicology field studies and database projects, a piping plover/least tern monitoring intern for Massachusetts Audubon, a

Master's-level graduate research assistant focusing on contaminants in diving ducks, and a forest bird mist-netting intern. I have associate Wildlife Biologist certification from The Wildlife Society, and am a member of The Society for Conservation Biology and The Waterbird Society. In 2005 I wrote the USGS Management and Protection Protocols for the Threatened Piping Plover on Cape Hatteras National Seashore, North Carolina. I earned a Ph.D. in 2005 from the Virginia Tech Department of Fisheries and Wildlife Sciences, an M.S. from the University of Connecticut in Natural Resources management in 1998, and a B.S. from Cornell University in Natural Resources in 1994. I have attached my *curriculum vitae* as Exhibit 1, which more fully discloses my credentials.

2. My current research focus is migration ecology of red knots (*Calidris canutus*), a shorebird in the sandpiper family, in coastal Virginia. I have previously researched winter ecology of piping plovers at Cape Hatteras National Seashore, breeding ecology of piping plovers on Long Island, New York, and ecotoxicology of greater scaup (*Aythya marila*) in the northeastern United States. I have participated in research on ecotoxicology of black-crowned night herons (*Nycticorax nycticorax*) and osprey (*Pandion haliaetus*). My *curriculum vitae* contains a list of my publications.

3. In early 2005, the Seashore requested that scientists in the USGS Biological Resources Division write protocols for adaptive management of species of conservation concern within the Seashore. In the wildlife sciences, adaptive management implies using research, management, and monitoring (often combined into “management experiments”) to evaluate the effects of management actions on species population growth, leading to refinement of management. The USGS contracted me to write the protocols for piping plovers because of my experience working with the species.

4. I have reviewed the following materials relevant to this case as they pertain to piping plover (*Charadrius melodus*):

- a. The USGS's Management and Protection Protocols for the Threatened Piping Plover on Cape Hatteras National Seashore, North Carolina;
- b. The USGS's Synthesis of Management, Monitoring, and Protection Protocols for Threatened and Endangered Species and Species of Special Concern at Cape Hatteras National Seashore, North Carolina;
- c. The Fish and Wildlife Service's Biological Opinion for Cape Hatteras National Seashore's Interim Protected Species Management Strategy, dated August 14, 2006;
- d. The Fish and Wildlife Service's Amendment to the Biological Opinion for Cape Hatteras National Seashore's Interim Protected Species Management Strategy, dated April 24, 2007;
- e. The summary, Chapter 2, and Chapter 4 of the Environmental Assessment for the Interim Protected Species Management Strategy;
- f. The National Park Service's Finding of No Significant Impact for the Interim Protected Species Management Strategy/Environmental Assessment, dated July 2007;
- g. The Cape Hatteras National Seashore Resource Management Field Summary reports and Beach Access Reports for the 2007 nesting season at Cape Hatteras National Seashore; and
- h. The complaint in the lawsuit Defenders of Wildlife et al. v. National Park Service et al., 2:07-CV-00045-BO.

5. The opinions expressed in this Declaration are based, in part, on my review of the foregoing documents and, in part, on the knowledge, experience, and expertise regarding piping plover that I have gained during my professional career.

6. Although the specific landscape features used by piping plovers can change among the breeding, migration, and wintering periods, there is a general pattern of habitat use: they nest and rest in open sandy or gravelly areas that are of high enough elevation to avoid flooding, and forage on invertebrates in lower-elevation moist or wet soil areas, including intertidal zones. In the breeding period, nesting and resting habitat includes river sandbars, the

dry margins of lakes and Alkali wetlands, and sandy or gravelly beaches. During migration and in the winter, the Great Plains, Great Lakes, and Atlantic Coast breeding populations come together on the Atlantic and Gulf Coasts and Caribbean Islands. Migrating and wintering piping plovers are typically found where broad, sandy beaches exist in close proximity to intertidal sand flats, mud flats, and algal flats. On the Atlantic Coast of the United States, such habitat configurations are characteristic of barrier island inlets and overwash fans. The latter are places where coastal storms have penetrated the dune line from the ocean side and deposited sediment on the lower-wave energy side of the island. In addition to foraging in intertidal areas, adults and especially chicks forage on invertebrates in the wrack line (plant material and other organic debris deposited by the retreating tide). When wrack is deposited higher up on the beach by storms, it dries out and collects windblown sand, eventually forming small dunes that are used as windbreaks by roosting adults and their broods. At high tide or on windy days, chicks may forage on invertebrates among stalks of beach vegetation closer to the dune line.

7. Cape Hatteras National Seashore contains several inlet and overwash areas that contain an attractive mix of nesting and roosting habitat adjacent to abundant intertidal foraging habitat. These include Bodie Island Spit, Hatteras Spit, and the north and south tips of Ocracoke. These sites have hosted breeding, migrant, and wintering piping plovers. Cape Point also attracts piping plovers, because the sediment dynamics there have created sandy berms and ridges adjacent to extensive ephemeral pools and tidal ponds. In addition, migrating and wintering piping plovers use Green Island, a small island in Oregon Inlet with some roosting and intertidal foraging habitat.

8. Piping plovers are vulnerable to recreational impacts, including off-road vehicle (ORV), pedestrian, and pet impacts in the following ways:

- a. Frequent disturbance of piping plovers by ORV's, pedestrians, and pets when they are attempting to establish territories in late March and early April may frustrate courtship and egg-laying. This may lead to abandonment of a prospective nesting site, in which case the piping plovers must attempt to find a territory elsewhere. This disturbance may take the form of flushing the birds and interrupting their behavior, or obliterating their courtship scrapes in the sand, one of which would eventually have been chosen as a nest site;
- b. Frequent disturbance to birds that have begun to lay eggs may cause delayed laying schedules (piping plovers ordinarily lay 1 egg every other day until the clutch is complete) and decreased clutch sizes, or abandonment of a nest after incubation has commenced;
- c. ORVs and pedestrians may crush eggs or chicks, and domestic pets may kill eggs or chicks. Piping plover eggs and chicks are tiny and camouflaged to blend into sandy substrate. When danger is near, small chicks crouch and freeze, relying on their cryptic coloration to protect them. A slowly-moving ORV or pedestrian that is paying attention could still easily overlook a nest, or a chick that is trying to hide, and crush it. On ORV beaches, there is an especial danger because such beaches tend to be heavily rutted, and adults and chicks will use the ruts as shelter from wind and disturbance. Chicks may become temporarily trapped in the ruts, and will be in danger of being run over should a new vehicle come along;
- d. Frequent flushing of incubating adults by pedestrians may expose eggs to loss from overheating in direct sun;
- e. Passage of ORVs grinds wrack into the sand and destroys it. This removes an important source of food and shelter for adults and especially chicks;
- f. Predator populations in piping plover nesting areas may increase if predators are attracted to the area by fish, bait, food, and other such edible refuse discarded by humans. In a recent site visit (12/5/07), I noted gulls feeding on fish bycatch (shark and ray carcasses) that had been left to rot on the beach at south Ocracoke and Cape Point. Gulls are known piping plover egg and chick predators. Many other egg or chick predators (crows, blackbirds, raccoons, foxes, opossums, feral cats) may be attracted to such waste;
- g. Frequent passage of ORVS can lead to compaction, erosion, and/or displacement of sand which leads to steeper beaches that are less attractive to nesting piping plovers. ORV passage can also prevent the growth of beach vegetation. While this may keep areas from becoming too vegetated for piping plovers to penetrate, in the extreme it also removes a source of shelter and foraging habitat.
- h. Passage of ORVs through intertidal areas may disrupt communities of benthic organisms that form the prey base for nesting, migrating, and wintering piping plovers.

- i. Flushing of migrant and wintering piping plovers by ORVs, pedestrians, or pets may disrupt feeding at times of the year when the birds are energetically stressed, either because of cold weather or because they are in the midst of a long distance journey. This could potentially reduce their survival prospects.

9. I have reviewed in detail the interim management plan that was in effect during the summer breeding season of 2007 (hereinafter referred to as the “2007 Interim Plan”), which was described and approved in the document entitled National Park Service’s Finding of No Significant Impact for the Interim Protected Species Management Strategy/Environmental Assessment, dated July 2007 (or “FONSI”). In my opinion, the 2007 Interim Plan will not provide for the recovery of the piping plover population at Cape Hatteras National Seashore, and does not acceptably reduce the risk of human-caused injury or mortality to nests or chicks. The 2007 Interim Plan fails to protect piping plovers in the following ways:

- a. The use of April 1 rather than March 15 for protection of historic nesting sites mean that piping plovers will be exposed to recreational disturbance during the time that they are selecting territories, with the possible result that some pairs will be deterred from nesting.
- b. The monitoring frequency of once per week prior to April 1 will make it difficult for monitors to identify territorial pairs, and to thus protect habitat outside of closures.
- c. The decision to add protection only where territorial or courtship behavior has been observed on two consecutive occasions is risky, especially given the low frequency of monitoring under the 2007 Interim Plan (once/week before April 1, three times/week thereafter). This protocol is likely to lead to deterrence of nesting, since a pair that has been observed in territorial behavior would be left exposed to disturbance until the second time territoriality is documented.
- d. The use of only the previous three years worth of nesting site data to define habitat in need of pre-nesting protection ignores the fact that three years ago the piping plover population was already at a critically low level, and was not occupying all of the sites within the Seashore with suitable habitat.
- e. Failure to maintain closures year round will cause adverse effects on piping plover habitat, reducing the ability of piping plovers to find adequate nesting, roosting, and foraging areas.

- f. Failure to include a 10 meter buffer strip of ocean backshore as a minimum requirement for year-round piping plover closures will have a similar effect.
- g. Allowing flexibility and “professional judgement” in buffer zones widths around piping plover chicks, especially considering the inadequacy of monitoring outside of daylight hours, puts chicks at risk of being run over.

10. The performance standards detailed in the 2007 Interim Management plan are not reasonable. There is no basis for setting four pairs of nesting piping plovers as a target, since the estimated carrying capacity of Cape Hatteras National Seashore, as detailed in the species’ Recovery Plan, was 30 pairs. A more sensible performance standard would be an annual increase in the number of nesting pairs, since the short-term goal is population growth. The performance standard that 75% of all known pairs must make a nest also makes little sense. The standard should be that no territorial pairs fail to nest due to human activities, since human related abandonment would be cause to re-evaluate management. Some site abandonment may be unavoidable due to weather-related habitat alteration or natural predators such as raptors. The performance standard of 1.0 chicks fledged per nest is biologically meaningless. The nest is not the unit of reproduction; rather it is the adult female (since the birds are monogamous, this is synonymous with the pair). Throughout the range of this species, the number of chicks fledged per pair is the standard used to measure reproductive success. Each pair can lay several replacement nests within a breeding season if early attempts are lost to egg predation or flooding, but with rare exception they do not nest again after they have a nest hatch, even if the chicks fail to fledge. It is the contribution of each female to the population that enters into population models and assessments of extinction risk. Finally, the development of monitoring standards for nonbreeding birds does not indicate success in managing nonbreeding piping plovers. The performance standard must be related to either population size or growth. The development of monitoring methods is a means and not an end unto itself. If the Seashore does not feel that it

can set reasonable performance standards for nonbreeding piping plovers in the short term because it lacks adequate monitoring methods, then this should be made clear and protection for nonbreeding piping plovers should be very strong while methods are developed.

11. Implementation of the 2007 Interim Management Plan has not been adequate, further reducing protection for the piping plover. I observed numerous discarded shark and ray carcasses on my site visit (12/5/07), indicating that the enforcement of trash disposal regulations is not going according to the 2007 Interim Plan. Such trash attracts piping plover chick and nest predators. I observed ORV corridors running directly across important intertidal sand flats on Bodie Island Spit, habitat that I know from my own research was a key winter foraging location for piping plovers and was among the important areas that I indicated should be protected in the USGS protocols I wrote for the Park Service, as did the Park Service's own EA. At Hatteras Spit and Bodie Island Spit, I observed extensive closures marked with piping plover signs around areas that do not currently provide piping plover habitat, such as heavily vegetated dune systems. Such management provides no benefit to piping plovers and misleads the public regarding piping plover conservation. At Cape Point, ORVs were permitted to drive between areas where piping plover chicks forage on an interior pond and the ocean tide line, putting the chicks at risk if they moved to the ocean beach and were not detected quickly by monitors. ORV corridors in historic piping plover breeding areas after April 1 appear to have been wider than the 100 feet required by the 2007 Interim Plan, based on a site visit I made on 12/5/07. Finally, I also observed ORV tire tracks inside a bird closure area, suggesting that even where closures are put in place, their boundaries may not be adequately enforced.

12. I have also reviewed in detail the alternative management protocols described in the USGS's Management, Monitoring, and Protection Protocols that I drafted for piping plover



at Cape Hatteras National Seashore (hereinafter, the “USGS Protocols”) and in the Environmental Assessment for the Interim Protected Species Management Strategy (hereinafter, the “EA Alternatives”). The USGS Protocols described alternative management protocols of varying degrees of protection, which I labeled the “highest degree of protection” (Option A), “moderate protection” (Option B) and “minimum protection” (Option C). The EA described four different alternative management protocols of varying degrees of protectiveness, labeled Alternative A (the “no-action alternative, continuation of 2004 management”), Alternative B (the “environmentally preferred alternative, undisturbed area focus”), Alternative C (the “tailored management focus”), and Alternative D (the “access/research component focus/preferred alternative”).

13. In my opinion, the 2007 Interim Plan was weaker (provided less protection) overall than the USGS Protocols. The USGS protocols were designed to allow habitat at the historically-used sites to recover from the effects of recreation and to become as productive and attractive as possible, and to provide habitat outside of these sites into which the population could eventually grow. They were intended to increase the chances for population growth of piping plovers at the Seashore, to increase the Seashore’s contribution to species recovery, and to reduce the risk of human-related piping plover injury or mortality at the Seashore. The greatest amount of protection was afforded by USGS Option A (highest protection), which created recreation-free zones at the spits and Cape Point. Under USGS Option B (moderate protection), only ORVs were excluded from these sites, and pedestrian recreation was closely managed within ocean side corridors. Under Option C (minimum protection) ORVs and pedestrians were allowed in ocean side corridors within piping plover habitat, but were closely managed. The EA Alternative B closely resembled USGS Option B. The EA alternatives C and D contained

elements of USGS Option C. The 2007 Interim Plan was weaker than the USGS protocols in the following ways:

- a. The 2007 Interim Plan did not provide for at least a 10 meter wide strip of protected ocean backshore throughout the Seashore year round. In the USGS protocols this was intended to allow the habitat to recover from the effects of recreation and to develop more naturally, so as to become as attractive to piping plovers and as productive as possible, and to provide potential habitat for future colonization by breeding piping plovers;
- b. The 2007 Interim Plan used three years of nesting data to define protected areas rather than ten. In the USGS protocols, ten years of previous nesting sites included all the major spits and Cape Point (as of 2007, this would require 12 years). Three years does not.
- c. The 2007 Interim Plan provided for monitoring once per week prior to April 1 instead of three times per week. At least three times per week is necessary to identify potential breeding sites before recreational disturbance causes birds to abandon their prospective territory.
- d. The 2007 Interim Plan only added protection outside of closures if territorial birds were observed on two consecutive occasions. The USGS protocols made no such stipulation, because given the low intensity of monitoring and high intensity of recreational disturbance, territorial birds should be protected upon first discovery.
- e. The 2007 Interim Plan did not stipulate 50 m buffer zone closures around piping plover foraging habitat. In the USGS protocols this was intended to provide disturbance-free foraging habitat.
- f. The 2007 Interim Plan allowed night driving in piping plover habitat. The USGS protocols prohibited night driving because monitoring is not possible at night, but piping plovers and their chicks are mobile at night and would be at risk of harm.
- g. The 2007 Interim Plan only reduced the ORV speed limit to 10 mph if the corridors were narrowed to less than 100 feet. In the USGS protocols the recommended speed limit was 10 mph in corridors within piping plover habitat at all times, to reduce the risk of injury or mortality to piping plovers.
- h. The 2007 Interim Plan allowed reductions in the size of buffer zones around chicks based on the judgment of the monitors. The USGS Protocols required 1000 m buffers at all times, because the level of monitoring at the Seashore is not enough to accurately detect long distance movements of broods in a timely manner.

The Interim Plan was only stronger than USGS Option C in one way. It automatically restricted ORV recreation to a 100 foot (approximately 30 meter) corridor instead of a 50 meter corridor after April 1 in historic breeding areas. However, it does not appear that this requirement was fully implemented in 2007.

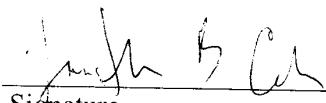
14. In my opinion the protocol that most appropriately protects piping plovers is Option B in the USGS protocols, given the precarious state of the population. This protocol effectively provides ORV-free habitat for piping plovers year round at the most-used sites. It also minimizes potential pedestrian threats. Kites, ball-playing, and Frisbee tossing adjacent to breeding piping plover closures is a threat to the birds, since such activities may accidentally spill over into the closures (e.g., a ball rolls into the closure and must be retrieved). Option B would allow the habitat to recover to a more natural level of attractiveness and productivity, and would minimize the risk of human-related harm to piping plovers. In the absence of ORVs, the wrack line will be protected, providing foraging and resting habitat. USGS Option B provides the most protection in the absence of intensive monitoring (which the Seashore has had difficulty enacting), while still allowing visitors to the Seashore to enjoy the piping plover and other natural resources at the spits and Cape Point (which USGS Option A would prohibit). The 2007 Interim Plan, and the protocols it most resembles (USGS Option C, EA Alternative D), require better monitoring and responsiveness of management to threats than the Seashore has been able to provide in order to adequately protect the piping plover. Given the inability of the Seashore to effectively implement even the lessened protections in its 2007 Interim Plan, a stricter protocol that relies less on day-to-day management and monitoring to protect the species is warranted. If the piping plover breeding population exhibits sustained growth and acceptable reproductive success under USGS Option B while a permanent recreation management plan is being

formulated, consideration of a less restrictive alternative might be warranted in the future. This would be predicated on proper implementation and adequate monitoring. Under the 2007 Interim Plan, there is a risk that there will not be a viable piping plover population in place when the long-term ORV management plan is enacted.

15. In my opinion, it will be necessary to implement protocols that are at least as protective of piping plovers as USGS Option B in order to reduce the risk of injury and habitat loss. Implementation of such a protocol would also help prompt the recovery of the Cape Hatteras population of piping plovers, and would ensure that migrating and wintering piping plovers are minimally disturbed.

16. Due to the documented low population size and reproductive success of piping plovers at the Seashore, it important to implement effective conservation measures in the upcoming breeding season, which commences when prospecting birds arrive in mid March. As described in the USGS protocols, populations of this size are prone to sudden extinction by chance events, so the sooner it increases the better. Furthermore, each year in which reproductive success is low this population fails to contribute new breeders to the regional population, because first time breeders typically disperse from the site of their birth. As long as reproductive success is inadequate and the habitat is not attractive to immigrant piping plovers, Cape Hatteras National Seashore holds back species recovery.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

  
Signature

12/17/07  
Date