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

No. 02:07-CV-00045-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 SCOTT MELVIN**

I, Scott Melvin, under penalty of perjury, depose and state as follows:

1. My name is Scott M. Melvin. I reside at 54 Birch Drive, Petersham, Massachusetts. I am the Senior Zoologist with the Massachusetts Division of Fisheries and Wildlife (MassWildlife). I have been employed in this position from 1983 to 1988 and from 1990 to the present. In this position, I am responsible for coordinating conservation, monitoring, and research programs for a variety of rare species of wildlife in Massachusetts. Since 1984, my duties have included developing and coordinating conservation efforts for Piping Plovers throughout the state. These efforts include annual population monitoring, site-specific protection from adverse effects of human recreational activities, including off-road vehicles (ORVs), predator management, and

use of state regulatory tools to protect Piping Plover nests, unfledged chicks, and habitats. In 1993, I was the principal author of MassWildlife's *Guidelines for Managing Recreational Use of Beaches to Protect Piping Plovers, Terns, and Their Habitats in Massachusetts, w*hich is a regulatory guidance document intended to help beach managers and landowners avoid violations of the Massachusetts Endangered Species Act and the Massachusetts Wetlands Protection Act.

2. I am an Adjunct Assistant Professor and member of the graduate faculty in the Wildlife and Fisheries Conservation Program of the Department of Natural Resources Conservation at the University of Massachusetts-Amherst. I have served as academic advisor or co-advisor and co-principal investigator on four graduate studies of Piping Plover ecology and behavior. These studies have investigated Piping Plover population biology, limiting factors, foraging ecology, and habitat use, and effects of recreation on Piping Plover reproductive success at a number of beaches in Massachusetts, including all of the major nesting beaches at Cape Cod National Seashore, and at Gateway National Recreation Area on Long Island, New York.

3. From 1988 to 1990, I was employed as an endangered species biologist with the Maine Department of Inland Fisheries and Wildlife. My responsibilities included coordinating statewide conservation efforts for Piping Plovers, Least Terns, and other coastal nesting birds.

4. As a member of the U.S. Atlantic Coast Piping Plover Recovery Team from 1986 to 2000, I advised the U.S. Fish and Wildlife Service on regional recovery efforts and assisted in the writing of the Recovery Plan for the Atlantic Coast population. I have served as a member of the Eastern Canada Piping Plover Recovery Team from 2001 to the present. I have visited and

reviewed Piping Plover management programs and habitat conditions at over 40 sites in Maine, Rhode Island, New York, New Jersey, Maryland, Virginia, North Carolina, New Brunswick and Prince Edward Island.

5. I have authored and published in scientific journals peer-reviewed papers that describe effects of human recreation, including off-road vehicles, on Piping Plover reproductive success and survival and recommend appropriate conservation measures (Melvin et. al. 1991, 1994). These publications are listed on my resume (Exhibit 1, attached), and are included here as Exhibit 2 (Melvin et. al. 1994. Piping Plover mortalities caused by off-road vehicles on Atlantic Coast beaches. Wildlife Society Bull. 22:409-414) and Exhibit 3 (Melvin et. al. 1991. Recovery strategies for Piping Plovers in managed coastal landscapes. Coastal Management 19:21-34).

6. I hold a Ph.D. in Wildlife Ecology from the University of Wisconsin-Madison (1982), an M.S. degree in Natural Resources from the University of Wisconsin-Stevens Point (1978), and a B.S. degree in Wildlife Management from the University of Maine - Orono (1975). My principal areas of expertise are avian ecology and conservation. Additional information about my experience and qualifications is contained in the attached copy of my resume (Exhibit 1).

7. I have reviewed the following materials relevant to this case as they pertain to Piping Plovers (*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.

i. Melvin, S.M., C.R. Griffin, and L.H. MacIvor. 1991. Recovery strategies for Piping Plovers in managed coastal landscapes. Coastal Management 19:21-34.

j. U.S. Fish and Wildlife Service. 1996. Piping Plover (*Charadrius melodus*) Atlantic Coast Population, Revised Recovery Plan. U.S. Fish and Wildlife Service. Hadley, Massachusetts.

8. The opinions expressed in this Declaration are based, in part, on my review of the foregoing documents, in part, on the knowledge, experience, and expertise regarding Piping Plovers that I have gained during my professional career, and in part, on my visits to Cape Hatteras National Seashore in 1991 and 2000 to inspect habitat conditions and management programs for Piping Plovers.

9. The Piping Plover is the rarest species of shorebird that regularly nests in North America. Censuses in 2006 estimated less than 8,500 breeding adults, distributed among three populations: Atlantic Coast, Great Lakes, and Northern Great Plains. Along the Atlantic Coast, Piping Plovers nest on sandy beaches from North Carolina to Newfoundland. The U.S. portion of the

Atlantic Coast population is listed as "Threatened" by the U.S. Fish and Wildlife Service pursuant to the U.S. Endangered Species Act of 1973 and was estimated at only 1,491 breeding pairs in 2006.

10. Along the Atlantic Coast, Piping Plovers nest on sandy beaches and sandspits above the high-tide line, on gently sloping, sparsely vegetated foredunes, and in unvegetated "blow-outs" or wash-over areas created by wind and wave action, respectively, between or behind coastal dunes. They may also nest where dredged sand or a mixture of sand and seashells has been deposited on beaches. Nests are simple scrapes in the sand, and are usually placed on relatively undisturbed areas of sand, sometimes with varying amounts of shells, gravel, or small stones nearby, or next to patches of sparse to moderately dense beach grass and other dune vegetation. Piping Plovers depend on natural processes of accretion and erosion of beaches and dunes through wind and wave action to create and maintain suitable nesting habitat.

11. Piping Plovers return to nesting beaches along the Atlantic Coast from early March to mid-May. Males establish and defend territories and court females. Males use their bodies to make multiple shallow depressions or "scrapes" in the sand within their territories. Females inspect the scrapes and eventually select one into which the eggs are laid. Prior to egg-laying, the plovers may place small shell fragments or pebbles in the bottom of the scrape; the exact function of this behavior is uncertain, but it may aid in thermoregulation of the eggs. Nesting may occur from mid-April through late July. Eggs are usually laid every other day, and clutch size is usually 4 eggs. Eggs are usually incubated 27-28 days before hatching. Piping Plovers

usually fledge only a single brood of chicks per season, but may renest several times during the same season if previous nests are lost.

12. Piping Plover chicks are precocial, meaning that they are able to move about and search for food within a few hours after hatching. Although they do not return to the nest scrape after the first day of life, young chicks are frequently sheltered (brooded) by their parents during inclement weather and at night. Prior to fledging, chicks are unable to fly. During this time period, usually until 25 to 35 days after hatching, chicks frequently move hundreds of yards from the nest site. Chick locations can change rapidly and unexpectedly, as much as 200 yards or more in less than 5 minutes. Chicks remain together with one or both parents until they are able to fly (fledge). Depending on date of hatching, unfledged chicks may be present on Atlantic Coast beaches from late May until mid-August.

13. Adults and chicks feed on small invertebrates such as amphipods, sand fleas, fly larvae and adults, beetles, and marine worms. The most important feeding habitats for both adults and chicks are the intertidal zones (especially areas of wet sand) on both ocean-facing and sound-side beaches, in wrack (seaweed, vegetation, shells and other organic debris deposited on the beach by tides and storms), along the edges of ephemeral pools located on upper beaches and in interdunal areas behind primary dunes, and in sparse vegetation on the upper beach and at the base of foredunes. Piping Plover chicks must find adequate food resources in order to sustain rapid weight gain, growth, and development, and in order to move about, feed, maintain body temperature, and escape predators.

14. Foraging habitats that are suitable for breeding, post-breeding, migrating, and wintering Piping Plovers and for unfledged chicks are found on the Seashore. These include "wet sand" portions of the intertidal zone on both the ocean-facing and sound-side beaches of barrier islands and sandspits; wrack; ponds and ephemeral pools on the upper beach or behind the primary dunes; and sparse vegetation on the upper beach and at the base of foredunes. Nesting habitat that is suitable for Piping Plovers occurs on the Seashore and includes coastal beaches and sandspits above the high-tide line, gently sloping, sparsely vegetated foredunes, and unvegetated "blow-outs" or wash-over areas created by wind and wave action, respectively, between or behind coastal dunes. Resting habitat for migrating and wintering Piping Plovers also occurs on the Seashore and includes unvegetated beaches and sandspits above the high tide line, gently sloping, sparsely vegetated foredunes, and unvegetated "blow-outs" and washover areas created by wind and wave action, respectively, between or behind coastal dunes.

15. Piping Plovers and their habitats are vulnerable to recreational impacts, including off-road vehicle, pedestrian, and pet impacts. Off-road vehicles (ORVs) on beaches typically may have a variety of adverse effects on Piping Plovers or their habitats. ORVs may:

a) preclude territory establishment or maintenance, courtship, nesting, feeding, resting, or chick-rearing, either by disturbing the plovers or by physically occupying habitat that otherwise would be suitable for one or more of the above activities,

b) physically alter and degrade nesting substrate,

c) destroy or damage nest scrapes made by courting males,

d) crush and bury wrack, an important foraging substrate for both adults and chicks,

e) create ruts that can trap chicks or impede their movements,

f) crush eggs,

g) run over and kill or injure adults or chicks,

h) create disturbances that place increased energetic demands on adults and chicks by eliciting avoidance behavior and/or keeping birds away from preferred feeding habitats,

i) disturb adult plovers to the point where they abandon eggs or are kept off nests long enough to cause death of the embryos or prolonged incubation that extends the period of time that eggs are vulnerable to predation.

16. Repeated or prolonged disturbance caused by people walking, running, sun-bathing, or playing games (including throwing balls or frisbees or flying kites) on beaches may cause Piping Plovers to abandon nests or nesting habitat, may disturb incubating adults off nests long enough to cause death of embryos or expose the eggs to predation, or may prolong the time until hatching. Pedestrian beach-goers may inadvertently step on and crush Piping Plover eggs, and may disturb or displace unfledged chicks.

17. Unleashed dogs on beaches may chase adult Piping Plovers and unfledged chicks, disturb incubating adults off nests, destroy eggs, and kill chicks (Melvin et. al. 1991, U.S. Fish and Wildlife Service 1996). In my opinion, such incidents are likely to occur on beaches with breeding Piping Plovers if dogs are allowed to roam freely.

18. 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 is inadequate for protecting Piping Plovers and their eggs and chicks from disturbance or direct mortality caused by recreational activities, especially ORVs. It is also inadequate for protecting Piping Plover habitats from adverse effects of ORVs and pedestrian use. The 2007 Interim Plan affords pre-nesting protection to only a subset of available nesting habitat on the Seashore, i.e. only areas where Piping Plovers have nested in the previous three years. The 2007 Interim Plan provides no specific guidance as to the physical (substrate or landform types, vegetation) features that will define suitable nesting or feeding habitats to be protected. It provides no guidance on minimum width of nesting habitat that will be protected. Rather, its emphasis is on defining broad (at least 100 feet wide extending landward from mean high water), continuous vehicle use areas. By definition, such ORV areas are likely to contain, i.e. encroach upon, Piping Plover nesting and feeding habitat. It is unclear whether any Piping Plover habitat will be protected prior to nesting on sections of beach where it is not possible to maintain a 100 foot-wide ORV corridor.

In my opinion, important aspects of the Interim Plan are so vague or confusing as to create a substantial likelihood that Piping Plover adults, eggs, chicks, and habitats will not be adequately protected from ORV and pedestrian impacts. Because the 2007 Interim Plan lacks adequate specificity as to the actual location and extent (length and/or width) of habitat areas that will be closed to ORVs, and lacks specificity as to the specific habitat features that will be protected within closures, it provides inadequate guidance to field staff as to when and where vehicle closures are to be implemented.

The 2007 Interim Plan fails to specify that ORV closures to protect unfledged Piping Plover chicks will extend from mean low water on the ocean side of beaches all the way to either low water on the sound-side beach or to the farthest extent of dune habitat that can reasonably be considered accessible by chicks if no sound-side intertidal habitat exists.

Because the 2007 Interim Plan restricts pre-nesting habitat protection only to "breeding areas used within the past three years", it limits the potential to increase the number of Piping Plovers breeding on the Seashore. Location, extent, and quality of Piping Plover nesting and chick-rearing habitat varies annually, as a result of dynamic processes of beach, dune, and sandspit accretion and erosion. Sufficient habitat areas need to be protected to allow Piping Plovers to choose areas with optimal habitat conditions, move to alternate nesting, feeding, or brood-rearing habitats in response to human disturbance, predators, competition with adjacent plover pairs, or changing habitat conditions, and to allow new recruits to the local population to colonize adjacent areas of nesting and chick-rearing habitat and contribute to the growth of the local population.

In my opinion, under the 2007 Interim Plan, so much nesting habitat will be left unprotected from ORVs and pedestrians, because of inadequate pre-nesting fencing, that there is a high risk that at some locations Piping Plovers will be prevented from establishing and maintaining nesting territories and laying eggs, and at other locations plover eggs will be crushed by passing vehicles or pedestrians or abandoned by the adult plovers before the nests can be found by shorebird monitors and protected inside fenced areas.

The requirement in the Interim Plan that monitors observe breeding behavior by Piping Plovers on two consecutive visits before establishing or expanding fenced buffer areas increases the likelihood that at some locations plovers will be unable to successfully establish nesting territories and lay eggs, and at other locations will abandon nests or have eggs destroyed before the nests are discovered by monitors and protected with fencing. Some Piping Plovers may not exhibit breeding behavior for several weeks after their arrival on nesting beaches; the Interim Plan provides inadequate protection from recreational impacts to individuals such as these and their habitats.

In my opinion, the performance measures for Piping Plovers at the Seashore are inadequate, given the potential of the habitat on the Seashore to support more nesting pairs and higher reproductive success, and the fact that the Seashore has supported a much higher number of pairs in the past.

In my opinion, under the protocols contained in the 2007 Interim Plan, there is a significant risk that unfledged Piping Plover chicks will be run over and killed by passing ORVs, especially during nighttime driving. When unfledged chicks are present, failure to prohibit driving in a zone extending all the way to the low water line during both daytime and at night creates a significant risk that Piping Plover chicks will be run over and killed

In my opinion, the 2007 Interim Plan lacks the adequate specificity that is necessary for resource managers to be able to accurately describe the extent of ORV and other recreational impacts on the abundance, distribution, reproductive success, and habitats of Piping Plovers on the Seashore.

Contradictory to the Finding of No Significant Impact issued by the National Park Service in regard to the 2007 Interim Plan, I believe that current management of ORV use and other recreational activities at the Seashore will have substantial adverse effects on Piping Plovers and their habitats.

19. I have also reviewed in detail the alternative management protocols described in the USGS's Management, Monitoring, and Protection Protocols for Piping Plovers 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 protectiveness, which the author labeled the "highest degree of protection", "moderate protection" and "minimum protection." 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").

20. In my opinion, the 2007 Interim Plan is substantially weaker than all of the USGS protocols in its ability to protect Piping Plovers and their habitats from impacts of human recreation. In my opinion, each of the three sets of USGS protocols would more effectively protect Piping Plover nesting, chick-rearing, and feeding habitat from adverse effects of ORV use and other

recreational activities than would the Interim Plan, and would greatly reduce the likelihood that Piping Plover eggs or unfledged chicks would be run over by ORVs.

21. In my opinion, the appropriate protocols for managing ORVs and other recreational activities at the Seashore in order to halt and reverse declines in breeding Piping Plovers at the Seashore are contained in Option B (Moderate Protection) of the USGS protocols. I believe the management actions prescribed in Option B should be implemented to protect the majority of suitable Piping Plover nesting habitat on the Seashore, allow individual plovers to establish and maintain nesting territories, allow successful nesting, and prevent the loss of eggs, chicks, or adults to direct or indirect effects of human recreational activities, including use of ORVs.

22. Due to the documented decline in abundance of breeding Piping Plovers at the Seashore (from 14 pairs in 1996 to only 6 pairs in 2007), it is imperative, in my opinion, that the Seashore implement more effective management of factors that are likely to limit Piping Plover reproductive success and survival, including more rigorous protection of Piping Plover adults, eggs, chicks, and habitats from impacts of ORVs and other recreational activities. Failure to implement more effective protection, beginning with the 2008 breeding season, will continue to impede progress toward recovery of this local population, and will not reduce the current risk that breeding Piping Plovers will be extirpated from the Seashore.

In my opinion, the failure of the Seashore to implement more comprehensive and effective protection measures has likely contributed to the current at-risk status of breeding Piping Plovers

on the Seashore, and to the need for more restrictive management of ORVs, at least in the short term.

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

Signature

January 8, 2008
Date