SUMMARY

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 62 miles of shoreline, Cape Hatteras National Seashore is part of a dynamic barrier island system. Federal ownership in the seashore extends from ocean to sound across three barrier islands—Ocracoke, Hatteras, and Bodie—spanning Dare and Hyde counties. Federal jurisdiction extends 150 feet into the water from the soundside shoreline. The U.S. Coast Guard property and eight village enclaves are excluded 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, located at the northern end of Hatteras Island, is part of the seashore, but administered for refuge purposes by the U.S. Fish and Wildlife Service (NPS 1997).

The purpose of and the need for taking action is to evaluate and implement strategies to protect sensitive species and provide for recreational use as directed in the enabling legislation, NPS management policies, and other laws and mandates, until a long-term ORV management plan/EIS is developed. An interim protected species management strategy/EA would meet the following needs until the long-term ORV management plan/EIS is completed:

- The need for a clear and consistent set of management strategies. The lack of an approved strategy over time has led to inconsistent management of protected species and has created confusion for both the public and the seashore staff.

- The need for a management strategy on which to consult with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act.

- The need for a management strategy that complies with the Endangered Species Act, the Migratory Bird Treaty Act, NPS management policies, and park enabling legislation, and that avoids adverse affects to protected species.

- The need to immediately address public concerns about species management and recreational use.

OBJECTIVES IN TAKING ACTION

Objectives are "what must be achieved to a large degree for the action to be considered a success" (Director's Order 12). 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 park'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 for developing this strategy/EA:

- Management Methodology

    - Establish an ongoing and meaningful dialogue with the multiple public groups interested in and affected by protected species management to ensure development of an implementable strategy/EA.
    - Establish adaptive interim management practices and procedures that allow for responding to changes in the seashore's dynamic physical and biological environment.

  - Establish procedures for prompt and efficient public notification of protected species management actions and the reasons for these actions.

- Visitor Use and Experience

  - Provide for continued recreational use and access consistent with required management of protected species.
  - Increase opportunities for public awareness and understanding of NPS resource management and visitor use policies and responsibilities as they pertain to the seashore and protected species management.

- Threatened, Endangered, and Other Protected Species

  - For threatened, endangered, and other protected species (e.g., state-listed species) and their habitats, provide protection from adverse impacts related to recreational uses as required by laws and policies, such as the Migratory Bird Treaty Act, the Endangered Species Act, and NPS management policies.
  - Cooperate with the U.S. Fish and Wildlife Service to ensure that NPS management actions comply with the requirements of the Endangered Species Act.

- Seashore Management and Operations

  - Provide for effective protected species management while maintaining other seashore operations.

BACKGROUND

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 dredging inlets and building sand berms to protect roads and homes.

While the number of human visitors to Cape Hatteras National Seashore has grown, the breeding population of the federally threatened piping plover (*Charadrius melodus*) (USFWS 1996a) and the occurrence of seabeach amaranth (*Amaranthus pumilus*) (USFWS 1996) have declined within the seashore. Furthermore, statewide declines were documented for common terns (*Sterna hirundo*), least terns (*Sterna antillarum*), gull-billed terns (*Sterna nilotica*), black skimmers (*Rynchops niger*), and American oystercatchers (*Haematopus palliatus*); all of which are, or are being considered for listing as, Species of Special Concern by the North Carolina Wildlife Resources Commission. Recreational pressure has been implicated in low reproductive success and declining population trends for all of these species, as well as for disturbance and/or mortality of migrating and wintering piping plovers, colonial waterbirds, and American oystercatchers and adults, nests, and hatchlings of the three species of sea turtles that nest at the seashore [the federally threatened loggerhead (*Caretta caretta*) and the federally endangered green turtle (*Chelonia mydas*) and leatherback turtle (*Dermochelys coriacea*)] (NMFS and USFWS 1991a, NMFS and USFWS 1991b, NMFS and USFWS 1992).

Increased use by the public for recreational purposes has necessitated the development of a long-term ORV management plan/EIS to meet the requirements for protection of federally listed species under Sections 7(a) (1) and (2) of the Endangered Species Act and other state and park listed sensitive species. According to the 2001 NPS Management Guidelines: “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 Service will fully meet its obligations under the NPS Organic Act and the Endangered Species Act to both pro-actively conserve listed species and prevent detrimental effects on these species." The Endangered Species Act directs federal agencies to carry out programs for the conservation of endangered and threatened species, and to ensure that any action authorized, funded, or carried out by an agency is not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat.

On May 17, 2005, Defenders of Wildlife (Defenders), a non-profit environmental organization, issued a notice of intent to sue the NPS for alleged violations of the Endangered Species Act, 16 U.S.C. §§ 1531 et seq., National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 et seq., the Migratory Bird Treaty Act, 16 U.S.C. §§ 703 et seq., the NPS Organic Act, 16 U.S.C. §§ 1601 et seq., and the enabling legislation for Cape Hatteras National Seashore, 50 Stat. 669 (1937). Defenders alleged that the NPS continuing authorization of ORV use at Cape Hatteras National Seashore without first engaging in formal consultation with the U.S. Fish and Wildlife Service "violates the agency's obligations under the [Endangered Species Act] to carry out programs for the conservation of endangered and threatened species and may be resulting in the take of those species." Defenders also alleged that the continued authorization of ORV use at the seashore without an assessment of environmental impact violates NEPA. Defenders alleged that NPS actions have also caused the death of numerous migratory birds in violation of the Migratory Bird Treaty Act. Lastly, Defenders argued that "the NPS has flagrantly acted contrary to two executive orders, agency regulations, and the organic acts of both [Cape Hatteras National Seashore] and the NPS by authorizing ORV use without first developing a long-term ORV management plan/EIS in a national seashore area intended to be 'permanently reserved as a primitive wilderness'" 50 Stat.669 (1937).

Until the long-term ORV management plan/EIS is complete, the NPS wishes to establish an interim protected species management strategy/EA to ensure for the proper management of protected species and comply with the Endangered Species Act, while also providing for adequate use of the seashore's recreational resources. The species addressed in this strategy/EA are those specifically affected by recreation use within the seashore that are listed federally or by the state as threatened, endangered, or species of special concern and/or are of special concern to the seashore. To implement such a strategy, NPS must complete an environmental assessment in accordance with NEPA.

SUMMARY OF PROTECTED SPECIES MANAGEMENT AT CAPE HATTERAS NATIONAL SEASHORE

Providing a variety of important habitats, Cape Hatteras National Seashore plays a vital role in the survival of many wildlife species. Be it for nesting, resting, or feeding, the seashore provides for a diverse assemblage of birds. Rich, varied habitats and locations along the Atlantic Flyway contribute in attracting birds to the seashore. In 1999, the American Bird Conservancy designated Cape Hatteras National Seashore as a Globally Important Bird Area in recognition of the value the seashore provides to bird migration, breeding, and wintering (American Bird Conservancy 2005). The seashore is home to the federally listed piping plover. In addition, the seashore provides nesting habitat for several species of state-listed colonial waterbirds, including the common tern, least tern, gull-billed tern), and black skimmer. Solitary nesters, such as the American oystercatcher and Wilson's plover (*Charadrius wilsonia*) also use Cape Hatteras National Seashore as a breeding ground as well as the red knot (*Calidris canutus rufa*), which uses the seashore the winter and spring and fall migrations.

Cape Hatteras National Seashore is used as nesting habitat by three federally listed sea turtles: the loggerhead, green, and leatherback. Two other federally listed sea turtle species, the hawksbill (*Eretmochelys imbricata*) and Kemp's ridley (*Lepidochelys kempii*), occupy the surrounding waters.

The federally listed seabeach amaranth, a coastal plant, has also been documented at the seashore.

As part of a recently initiated consultation with the U.S. Fish and Wildlife Service, under Section 7 of the Endangered Species Act, and in consultation with the North Carolina Wildlife Resources Commission, the NPS executed an interagency agreement with the U.S. Geological Survey, Biological Resources Division, to prepare scientifically defensible monitoring and protection protocols for federal and state-listed species, and other protected species at the seashore. On October 31, 2005, the U.S. Geological Survey released its species protocols for piping plovers, American oystercatchers, colonial waterbirds, sea turtles, and seabeach amaranth at Cape Hatteras National Seashore.

Using best available scientific information, the protocols provide specific guidance in the implementation of a proactive protected species surveying and habitat conservation program to provide for the continued existence and recovery of endangered, threatened, and species of concern at the seashore. The protocols provide detailed and specific guidance for conservation of each species including topics such as closures, surveying, monitoring frequency and methodology, and identification of specific habitat needs and potential key threats. Experts from the U.S. Fish and Wildlife Service, North Carolina Wildlife Resource Commission, NPS, and academia reviewed the draft protocols to ensure they were scientifically defensible and met regulatory requirements. These protocols were considered and elements incorporated in development of the alternatives for this strategy/EA. These protocols did not balance the need for species protection with other activities at the seashore or consult NPS management polices in detail.

RECREATION AND PROTECTED SPECIES MANAGEMENT

Not only does Cape Hatteras National Seashore provide habitat for a variety of federal and state listed species and sensitive species, it serves as a popular recreation destination, with nearly 2.2 million visitors in 2004. Following its enabling legislation and mission, Cape Hatteras National Seashore must find balance in the needs for species protection and visitor use. ORV use on the seashore beaches predates the establishment of Cape Hatteras National Seashore and is considered an appropriate visitor use. ORVs are currently used to provide vehicular access onto the seashore beaches for recreational purposes, including surf fishing; surfboarding; sunbathing; swimming; bird watching; scenic driving; etc.

On February 8, 1972, President Richard Nixon issued Executive Order 11644: *Use of Off-road Vehicles on the Public Lands* 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 provide for administrative designation of the specific areas and trails on public lands on which the use of ORVs may be permitted, and areas in which the use of ORVs may not be permitted.

Executive Order 11989: *Off-Road Vehicles on Public Lands*, 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 will cause or is causing 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.

Seashore actions related to ORV management began in response to Executive Order 11644, with the establishment of draft guidelines for ORV use. Following the issuance of Executive Order 11989 (*Off-Road Vehicles on Public Lands*, May 24, 1977), the seashore initiated the development of an ORV

management plan. The result was the 1978 Draft Interim ORV Management Plan, which established guidelines and controls for off-road use of vehicles in Cape Hatteras National Seashore until promulgation and adoption of the general management plan that was under development during that time. This plan divided the seashore into zones and described the management that would occur in each zone. ORV management was also addressed in the ORV Plan - North District Cape Hatteras National Seashore (1980) and the General Management Plan/Development Concept Plan for Cape Hatteras National Seashore (1984). More recently, Superintendent's Order 07: ORV Management was issued in 2004.

ORVs can access oceanside and some soundside beaches without obtaining a permit, 24 hours a day, 365 days a year, excluding areas closed for resource protection or safety reasons. Recreational use, including the use of ORVs, influences the habitat of protected species. Use of ORVs at the seashore predates authorization of Cape Hatteras National Seashore in 1937. Historically, before 1954, local residents and visitors used the beaches for vehicular transportation purposes. In 1954, North Carolina State Highway 12 (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 ferry system to Ocracoke Island facilitated visitor access to the islands and resulted in increased vehicle use on beaches for recreational purposes (NPS 2004a). Residents adapted ORVs to facilitate commercial fish netting. 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 were often a mile or more from the nearest paved surface. Currently at the seashore, ORVs are used for commercial and recreational fishing, sightseeing, travel to and from swimming and surfing areas, and pleasure driving (NPS 2004b). In 2004, the NPS began preliminary planning for ORV management as required by federal law and regulations.

The long term ORV management planning effort is based on the recognition by the NPS that ORVs must be regulated in a manner that is not only consistent with applicable law, but also appropriately addresses resource protection (including protected, threatened and endangered species), potential conflicts among the various seashore users, and visitor safety. Executive Orders 11644 and 11989 require 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. Section 4.10 also provides that the designation of routes and areas shall comply with Executive Order 11644 and with section 1.5 of Title 36 of the Code of Federal Regulations.

The NPS has contracted with the U.S. Institute for Environmental Conflict Resolution to assess the feasibility of using negotiated rulemaking to reach consensus among interested parties in development of the required special regulation for Cape Hatteras National Seashore. This facilitated approach has been used in other national park sites to reach consensus on regulations. If negotiated rulemaking is feasible, the NPS would carry out and complete the rulemaking process concurrently with the development of a long-term ORV Management Plan/EIS for the seashore. The NPS has assigned a high priority to completing the long-term plan/environmental impact statement and regulations.

ALTERNATIVES CONSIDERED

This environmental assessment evaluates four alternatives for an interim protected species strategy at Cape Hatteras National Seashore. A summary of the alternatives follows:

- Alternative A – Continuation of 2004 Management

  The no action alternative accounts for species management prior to 2005, while acknowledging specific management changes provided in Superintendent's Order 07: ORV Management, which was enacted 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 oystercatcher and colonial waterbirds, if a territory or colony or nest is 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 Superintendent approval. Management would include continued predator removal, recreation use restrictions, and public outreach.

- Alternative B – Undisturbed Area Focus

  Under alternative B, the seashore would implement year-round protective measures for historic piping plover breeding areas (areas used at some time during the past 10 breeding seasons) and seasonal measures for recent American oystercatcher and historic colonial waterbird breeding areas. Sea turtle protections would be the same as alternative A with some variation in management. Closures would be established around all historic and extant populations of seabeach amaranth. Management would include continued predator removal, additional recreation use restrictions, and public outreach.

- Alternative C – Tailored Management Focus

  Under alternative C, the seashore would implement protective measures seasonally for historic piping plover and colonial waterbird breeding areas (areas used at some time during the past 10 breeding seasons) and for recent American oystercatcher and Wilson's plover breeding areas. Sea turtle protections would be the same as alternative A with some variation in management. Like alternative B, closures would be established around all historic and extant populations of seabeach amaranth. Alternative C would provide for adaptive management in that an alternate ORV route, (another access ramp, an existing interdunal road, and/or North Carolina State Highway 12 [NC-12]) and, in the case of turtle nests, potential bypass routes could be established around closure areas to maintain ORV access. Management would include continued predator removal, additional recreation use restrictions, and public outreach. Alternative C would allow for some variability in species management based on the individual species behavior and would adapt management strategies to afford access where feasible while protecting species.

- Alternative D – Access/Research Component Focus

  Under alternative D, the seashore would implement protective measures seasonally for recent bird breeding areas (areas used at some time during the past 3 breeding seasons). Sea turtle protections would be the same as alternative A with some variation in management. Like alternative B, closures would be established around all historic and extant populations of seabeach amaranth. Alternative C would provide for adaptive management in that an alternate ORV route, (another access ramp, an existing interdunal road, and/or North Carolina State Highway 12 [NC-12]) and, in the case of both bird and turtle nests, potential bypass routes could be established around closure areas to maintain ORV access. Management would include continued predator removal, additional recreation use restrictions, and public outreach.

Other alternatives were considered but not analyzed further and are contained in the strategy/EA.

The NPS has identified alternative B as the "environmentally preferable alternative" as defined by the U.S. Council on Environmental Quality. Simply put, "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" (NPS 2004a, 2004c). There is no requirement that the environmentally preferable alternative and the preferred alternative be the same.

Alternative D is the seashore's preferred alternative because it best meets the purpose, needs, and objectives of the strategy.

ENVIRONMENTAL CONSEQUENCES

Impacts of the four interim protected species management alternatives were assessed in accordance with *Director's Order #12: Conservation Planning, Environmental Impact Analysis and Decision-Making.* The *Director's Order #12 Handbook* 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.

To determine impacts, methodologies were identified to assess the impacts that would occur with the implementation of the management alternatives. 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 a baseline to determine the context, duration, and intensity of resource impacts. The baseline, for purposes of impact analysis, is the continuation of current management (alternative A). Table A summarizes the results of the impact analysis for the impact topics that were assessed in the "Environmental Consequences" chapter.

No park resources or values would be impaired by implementing any of the alternatives being considered.

TABLE A: SUMMARY OF IMPACTS

Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
Federally Listed Special Status Wildlife and Plant Species				
Piping Plover	Alternative A may affect / is likely to adversely affect piping plovers, mainly due to the effects of recreational uses. Past, present, and future actions inside the seashore and within the region, when combined with the impacts of recreation use and the surveying and management of the species expected under this alternative, would continue to result in impacts that may affect / are likely to adversely affect the piping plover. Impairment to the piping plover would not occur under alternative A because none of the activities described could be said definitively to lead to a long-term jeopardy of the resource.	Under alternative B, there is more potential for disturbance from surveying than under alternative A; however, this is offset by the larger and longer duration ORV closures. Past, present, and future actions inside the seashore and within the region, when combined with the impacts of recreation use and the surveying and management of the species expected under this alternative, would continue to result in impacts that may affect / are likely to adversely affect the piping plover. Impairment to the piping plover would not occur under alternative B because none of the activities described could be said definitively to lead to a long-term jeopardy of the resource.	Under alternative C, there would still be potential for disturbance from surveying and management; but more protection for the piping plover due to the larger ORV closures provided relative to alternative A. Overall, alternative C may affect / is likely to adversely affect piping plovers, mainly due to recreational impacts. Past, present, and future activities inside the seashore and within the region, when combined with the impacts of recreation use, surveying and management of the species expected under this alternative, would continue to result in impacts that may affect / are likely to adversely affect the piping plover. Impairment to piping plover would not occur under alternative C.	Under alternative D, there would be the potential for disturbance from surveying and management, but more protection would be provided to piping plovers by monitoring historic and newly created breeding habitat, and continuing the monitoring until at least June 15. Overall, alternative D may affect / is likely to adversely affect piping plovers, mainly due to recreational impacts. Past, present, and future activities both inside the seashore and within the region, when combined with the impacts of recreation use, surveying and management of the species expected under this alternative, would continue to result in impacts that may affect / are likely to adversely affect the piping plover. Impairment to piping plover would not occur under alternative D.

TABLE A: SUMMARY OF IMPACTS

Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
Sea Turtles	While surveying and management activities would reduce the impacts to some extent, adult turtles may still be killed or caused to abort nesting attempts, nests may be run over or disturbed in other manners, and hatchlings may be run over or disoriented by light pollution. Therefore, overall the actions taken under alternative A may affect / are likely to adversely affect sea turtles. Past, present, and future activities both inside the seashore and within the state of North Carolina, when combined with the impacts of recreation use, surveying and management of the species expected under this alternative would continue to result in impacts that may affect / are likely to adversely affect the sea turtles. Impairment of sea turtles would not occur under alternative A.	Though surveying and management activities would greatly reduce these impacts, there would still be a risk that some adult turtles may be killed or caused to abort nesting attempts, unidentified nests may be run over or disturbed in other manners, and hatchlings may be run over or disoriented by light pollution. Therefore the actions taken under alternative B may affect / are likely to adversely affect sea turtles. Past, present, and future activities both inside the seashore and within the state of North Carolina, when combined with the impacts of recreation use, surveying, and management of the species may affect / are likely to adversely affect the sea turtles. Impairment of sea turtles would not occur under alternative B.	Surveying and management activities would reduce these impacts, though not as much as under alternative B but there would still be a risk that some adult turtles may be killed or caused to abort nesting attempts, unidentified nests may be run over or disturbed in other manners, and hatchlings may be run over or disoriented by light pollution. Therefore actions taken under alternative C may affect / are likely to adversely affect all species of sea turtle. Past, present, and future activities both inside the seashore and within the state of North Carolina, when combined with the impacts of recreation use, surveying, and management of the species expected under this alternative may affect / are likely to adversely affect the sea turtles. Impairment of sea turtles would not occur under alternative C.	Though surveying and management activities would reduce these impacts, though not as much as alternative B or C, there would still be a risk that some adult turtles may be killed or caused to abort nesting attempts, unidentified nests may be impacted, and hatchlings may be run over or disoriented by light pollution. Therefore, actions taken under alternative D may affect/are likely to adversely affect all species of sea turtle within the seashore. Past, present, and future activities both inside the seashore and within the state of North Carolina, when combined with the impacts of recreation use, surveying, and management of the species expected under this alternative may affect/are likely to adversely affect the sea turtles. Impairment of sea turtles would not occur under alternative D.

TABLE A: SUMMARY OF IMPACTS

Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
Seabeach Amaranth	Though surveying and management activities would reduce these impacts slightly, there would still be a risk that plants would be crushed and seeds would be pulverized or buried. Therefore the overall impacts of actions taken under alternative A is may affect/are likely to adversely affect the seabeach amaranth. Past, present, and future activities both inside the seashore and within the plant's historic range, when combined with the impacts of recreation use, surveying and management of the species expected under this alternative would continue to result in impacts that may affect/likely to adversely affect the seabeach amaranth. There would be no impairment of seabeach amaranth under alternative A.	Though surveying and management activities would protect both the plant and its habitat, greatly reducing the recreational impacts, there would still be a risk that plants would be crushed and seeds would be pulverized or buried. Therefore the overall actions under alternative B may affect / are likely to adversely affect seabeach amaranth. Past, present, and future activities both inside the seashore and within the plant's historic range, when combined with the impacts of recreation use, surveying, and management of the species expected under this alternative, would continue to result in impacts that may affect / are likely to adversely affect the seabeach amaranth. Impairment of seabeach amaranth would not occur under alternative B.	While surveying and management activities would reduce these impacts, though not as much as under alternative B, there would still be a risk that plants would be crushed and seeds would be pulverized or buried. The actions taken under alternative C may affect / are likely to adversely affect seabeach amaranth. Past, present, and future activities both inside the seashore and within the plant's historic range, when combined with the impacts of recreation use, surveying, and management of the species expected under this alternative, would continue to result in impacts that may affect/likely to adversely affect the seabeach amaranth. Impairment of seabeach amaranth would not occur under alternative C.	While surveying and management activities would reduce these impacts, though not as much as under alternatives B and C, there would still be a risk that plants would be crushed and seeds would be pulverized or buried. The actions taken under alternative D may affect / are likely to adversely affect seabeach amaranth. Past, present, and future activities both inside the seashore and within the plant's historic range, when combined with the impacts of recreation use, surveying, and management of the species expected under this alternative, would continue to result in impacts that may affect/likely to adversely affect the seabeach amaranth. Impairment of seabeach amaranth would not occur under alternative D.

TABLE A: SUMMARY OF IMPACTS

Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
State Listed and Special Status Species				
American Oystercatcher	Species surveying and management actions under alternative A would result in minor to moderate adverse impacts on the American oystercatcher. Because protection measures for nesting oystercatchers and their habitat are both inconsistently applied and entail some risks when they are applied, recreational use under alternative A is likely to lead to major adverse impacts. Cumulative impacts would be long-term, moderate to major and adverse. Impairment to American oystercatchers at Cape Hatteras National Seashore would not occur.	Under alternative B, overall protection to nesting oystercatchers would be much improved over alternative A. However, there is still a likely chance of direct, moderate impacts to early nesting oystercatchers from surveying and impacts to all oystercatchers nesting outside of historical breeding sites or in or near to the ORV corridor. In these cases, buffer size might not be large enough to shield the birds for recreation and surveying disturbances or from the risk of being run over by a vehicle. Predator numbers would likely be an ongoing source of oystercatcher egg and chick loss under alternative B. Overall, alternative B would have mostly long-term, minor adverse impacts on the oystercatcher from recreational use. Cumulative impacts would also be long-term, minor and adverse. Impairment to American oystercatchers would not occur under alternative B.	Under alternative C, overall protection to nesting oystercatchers would be much improved over alternative A. However, there is still a likely chance of direct impacts to early nesting oystercatchers and to all oystercatchers nesting outside of historical breeding sites, outside of other bird closures (such as those for piping plovers), or in or near to the ORV corridor. In these cases, buffer size might not be large enough to shield the birds for recreation and surveying disturbances or from the risk of being run over by a vehicle. Predator numbers would likely continue to be an ongoing source of oystercatcher egg and chick loss under alternative C. Therefore, alternative C would result in long-term, moderate, adverse impacts to American oystercatchers. Cumulative impacts would be long-term, minor to moderate, and adverse. Impairment to American oystercatcher would not occur under alternative C.	Under alternative D, overall protection to nesting oystercatchers would be much improved over alternative A. However, there is still a likely chance of direct minor to moderate impacts to early nesting oystercatchers from surveying and management-research associated with implementing bypasses and impacts to all oystercatchers nesting in or near to the ORV corridor. In these cases, buffer size might not be large enough to shield the birds for recreation and surveying disturbances or from the risk of being run over by a vehicle. Predator numbers would likely continue to be an ongoing source of oystercatcher egg and chick loss under alternative D. Overall, alternative D would have long-term, moderate, adverse impacts from recreational use and surveying. Cumulative impacts would be long-term, minor to moderate, and adverse. Impairment to American oystercatcher would not occur under alternative D.

TABLE A: SUMMARY OF IMPACTS

Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
Colonial Waterbirds	Under alternative A, surveying and recreational use would have long-term, moderate, adverse impacts on colonial waterbirds. Species management and other management would have minor impacts. Cumulative impacts would be long-term, minor to moderate, and adverse. Impairment to colonial waterbirds would not be expected to occur under alternative A.	Under alternative B, increased surveying to include distribution and reproductive success or fecundity would increase surveying disturbance over alternative A resulting in minor to moderate adverse impacts during the nesting season. However, enhanced protection from all recreation except pedestrian traffic in both historic and new colonial waterbird nesting sites would provide additional protection over and above alternative A, resulting in long-term adverse impacts from management and long-term minor adverse impacts from recreation . Cumulative impacts would be long-term, minor, and adverse. Impairment to colonial waterbirds would not occur under alternative B.	Under alternative C, disturbance from surveying would be more than alternative A but less than alternative B, and would include the measuring of distribution and reproductive success and associated moderate adverse impacts during nesting. However, enhanced protection from all recreation (except pedestrian traffic) in both historic and new colonial waterbird nesting sites would provide additional protection over and above alternative A. Therefore, overall impacts of alternative C on colonial waterbirds would be long-term, minor, and adverse. Cumulative impacts would be long-term, minor, and adverse. Impairment to colonial waterbirds would not occur under alternative C.	Under alternative D, overall protection to nesting colonial waterbirds would be much improved over alternative A. However, there is still a likely chance of direct minor to moderate impacts to early nesting waterbirds from surveying, management-focused research, and minor impacts to all waterbirds nesting in or near to the ORV corridor. In these cases, buffer size might not be large enough to shield the birds from recreation and surveying disturbances or from the risk of being run over by a vehicle. Predator numbers are also likely to be an ongoing source of egg and chick loss under alternative D. Alternative D would have long-term, minor adverse impacts to colonial waterbirds from recreational uses. Cumulative impacts would be long-term, minor to moderate and adverse. Impairment to colonial waterbirds would not occur under alternative D.

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Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
Wilson's Plover	Under alternative A, impacts to Wilson's plover would occur from other species' surveying, management, and recreation uses, and would be long-term, minor to moderate, and adverse. Other species' management and other management would have long-term, minor adverse effects. Cumulative impacts would be long-term, minor to moderate, and adverse. Impairment to Wilson's plover would not occur under alternative A.	Under alternative B, there would be more potential for disturbance from surveying than under alternative A, but this is more than offset by the larger and longer duration ORV closures. Furthermore, alternative B includes trapping and control of problem predator species and better control of the recreation use waste stream that contributes to maintaining predator populations at Cape Hatteras National Seashore. Most of the benefits that accrue to Wilson's plovers under alternative B do so because they currently nest inside piping plover closures and not because of comprehensive Wilson's plover-specific management. Overall, recreation use under alternative B would result in long-term, minor, adverse impacts to Wilson's plover. Species management and other management actions would provide long-term, minor to moderate, beneficial effects. Cumulative impacts would be minor and adverse. Impairment to Wilson's plovers would not occur under alternative B.	Under alternative C, there is more potential for disturbance from surveying than under alternative A, but less surveying disturbance than under alternative B. Disturbance from surveying and management is more than offset by the protection afforded by ORV closures. However, predators could still cause adverse effects. Most of the benefits that accrue to Wilson's plovers under alternative C are because they currently nest inside piping plover closures and not because of comprehensive Wilson's plover-specific management. Overall, recreation use and surveying under alternative C would result in long-term, minor adverse impacts, and species and other management would provide long-term, minor beneficial effects. Cumulative impacts would be long-term, minor, and adverse. Impairment to Wilson's plovers would not occur under alternative C.	Under alternative D, overall protection to Wilson's plover would be much improved over alternative A. However, there is still a likely chance of direct minor impacts to early nesting birds from surveying and impacts to all birds nesting in or near to the ORV corridor. In these cases, buffer size might not be large enough to shield the birds for recreation and surveying disturbances or from the risk of being run over by a vehicle. Predator numbers are also likely to be an ongoing source of egg and chick loss under alternative D. Overall, alternative D would have long-term, minor, adverse impacts on Wilson's plover. Cumulative impacts would be long-term, minor, and adverse. Impairment of Wilson's plover or their habitat would not occur under alternative D.

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Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
Red Knot	The red knot is a winter visitor at the seashore, and impacts are therefore very limited. Since red knots rest and feed only during the fall and winter (when recreation use is at its lowest), impacts from recreational use would be long-term, minor, and adverse. Cumulative impacts would also be long-term, minor, and adverse. Impairment to red knot would not occur under alternative A.	Surveying, management, and recreation use under alternative B would result in long-term, negligible to minor adverse impacts to the red knot. Cumulative impacts would be long-term, minor, and adverse. Impairment to the red knot would not occur under alternative B.	Surveying, management, and recreation use might impact the red knot when in residence at Cape Hatteras National Seashore, resulting in long-term, negligible to minor, adverse impacts. Cumulative impacts would be long-term, minor, and adverse. Impairment to the red knot would not occur under alternative C.	Surveying, management, and recreation use might impact the red knot during the fall and winter when they use the area, resulting in long-term, negligible to minor adverse impacts. Cumulative impacts would be long-term, minor, and adverse. Impairment to red knot would not occur under alternative D.
Wildlife and Wildlife Habitats				
	ORV use would have adverse impacts on invertebrate species within the seashore under alternative A. Though driving in the intertidal zone would have negligible impacts, doing so would require driving across wrack lines. In areas where there is continual disruption of the wrack line there would be long-term moderate adverse impacts to the invertebrate population inhabiting this area. To the extent that ORVs drive on softer intertidal sand flats, there would be long-term moderate impacts on soft-bodied animals, for even relatively few vehicles passes can decimate the animals. Other bird species would be able to use protected areas, free of disturbance, thus providing a long-term, minor, beneficial impact. Predator removal at the park would provide long-term, minor, beneficial impacts to other bird species, reducing the risk of predations for individual birds. These areas, specifically configured for piping	ORV use would have direct adverse impacts on invertebrate species within the seashore under alternative B but it would be less than alternative A. Impacts within the intertidal zone would be negligible throughout the seashore. Closing the spits to ORVs would provide long-term moderate benefits by protecting all invertebrate species in these areas and allowing them to recover to natural levels. Ghost crabs would be completely protected by prohibiting night driving with the impacts being long-term moderate beneficial. The overall impact would be long-term minor to moderate adverse. The ORV corridor would also protect the intertidal sand flats from ORV use and would provide long-term minor beneficial effects dependent upon the current level of impacts, which is not known. Impacts to invertebrates under alternative B would generally be beneficial and impairment of the resource would not occur	ORV use would have direct adverse impacts on invertebrate species within the seashore under alternative C but would be less than alternative A. Impacts within the intertidal zone would be negligible throughout the seashore. Closing the spits to ORVs would be beneficial, but allowing an ORV corridor would decimate any soft-bodied invertebrates within the corridor, resulting in an overall impact of long-term, minor beneficial effect. Ghost crabs would be protected from night driving to some degree, but would still experience adverse impacts outside of night driving prohibitions, resulting in long-term, minor to moderate, adverse impacts the ghost crab population. Similar to alternative B, the wrack would be afforded greater protection than under alternative A. The overall impact to wrack would be long-term, minor to moderate adverse. The ORV corridor would also protect the intertidal sand flats from ORV use and would provide long-term minor beneficial effects dependent upon	ORV use would have direct adverse impacts on invertebrate and other bird species within the seashore under alternative D and would be less than alternative A but more than alternative B and C. Impacts within the intertidal zone would be negligible throughout the seashore. The spits would not be closed to ORV use; however, impacts to any invertebrates would be restricted to above the mean high tide wrack line resulting in an overall impact of long-term minor to moderate adverse impacts. Ghost crabs would not be protected from night driving and similar to alternative A the impacts would be long-term moderate adverse. The wrack would be afforded greater protection than under alternative A. The ORV corridor would protect most soft-bodied animals found in the intertidal sand flats from ORV use and would provide long-term minor beneficial effects dependent upon the current level of impacts, which is not known

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Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
	plover, provided limited protection to other wintering/migrating species only during the winter months and, thus have a long-term, negligible beneficial impact. Past, present, and future activities inside the seashore when combined with the impacts of protected species management and recreation use would result in long-term negligible adverse impacts to other bird species and long-term, moderate, adverse impacts to invertebrates in the seashore. Though many of the ORV impacts to invertebrates would be long-term, major adverse, the impacts would not be at a level that would threaten the existence of the invertebrate populations within the entire seashore, and, therefore, impairment of invertebrates and other bird species would not occur.	not occur. Other bird species would be able to use protected areas, free of disturbance, thus providing a long-term, minor, beneficial impact. Predator removal at the park would provide long-term, minor, beneficial impacts to other bird species, reducing the risk of predations for individual birds. These areas, specifically configured for piping plover, provided limited protection to other wintering/migrating species only during the winter months and, thus have a long-term, negligible beneficial impact. Past, present, and future activities inside the seashore when combined with the impacts of recreation use would result in short to long-term minor impacts to invertebrates in the seashore and long-term negligible adverse impacts to other bird species. Impairment of invertebrates and other bird species would not occur.	beneficial effects dependent upon the current level of impacts, which is not known. Other bird species would be able to use protected areas, free of disturbance, thus providing a long-term, minor, beneficial impact. Predator removal at the park would provide long-term, minor, beneficial impacts to other bird species, reducing the risk of predations for individual birds. These areas, specifically configured for piping plover, provided limited protection to other wintering/migrating species only during the winter months and, thus have a long-term, moderate beneficial impact. Past, present, and future activities inside the seashore when combined with the impacts of recreation use would result in short to long-term minor adverse impacts to invertebrates in the seashore and long-term negligible adverse impacts to other bird species. Impairment of invertebrates and other bird species would not occur.	is not known. Other bird species would be able to use protected areas, free of disturbance, thus providing a long-term, minor, beneficial impact. Predator removal at the park would provide long-term, minor, beneficial impacts to other bird species, reducing the risk of predations for individual birds. These areas, specifically configured for piping plover, provided limited protection to other wintering/migrating species only during the winter months and, thus have a long-term, minor beneficial impact. Past, present, and future activities inside the seashore when combined with the impacts of recreation use would result in short to long-term minor adverse impacts to invertebrates in the seashore and long-term negligible adverse impacts to other bird species. Impairment of invertebrates and other bird species would not occur.
Visitor Use	Resource closures on the spits would result in long-term negligible to minor adverse impacts if 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 on the spits or along spit access routes could affect approximately 2% of annual ORV use per month per spit or approximately 6% per spit for a	Year-round closures of all the spits, Cape Point, and South Beach would eliminate vehicular access from the most heavily used ORV ramps, potentially affecting approximately 50% or 46,000 of the 91,900 ORVs that use the park annually and resulting in long-term, major, adverse impacts to ORV users, fishermen, and other ORV-dependent recreational activities that frequent these areas. However, this loss of opportunity	Although resource closures would be implemented annually on the spits, Cape Point, and South Beach, the provision of an ORV and pedestrian corridor would allow continued access unless species activity or safety issues required a closure. Before implementing a closure, alternate access routes and bypass criteria would be evaluated, thereby reducing the likelihood of a closure along spit access routes. However, closures could still occur	Resource closures would be based on recent breeding activity on the spits, Cape Point, and South Beach and in other park locations. As described in alternative C, an ORV and pedestrian corridor would be provided adjacent to closure areas unless species activity or safety issues required a closure. Before implementing a closure, alternate access routes and then bypass criteria would be evaluated, thereby reducing the

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Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
	summer season. Such a closure would result in long-term moderate adverse impacts to visitors who regularly frequent these locations because of the inability to participate in recreational activities, such as fishing, beach driving, or any other ORV-dependent activity. However, this loss of opportunity would affect less than 0.5% of annual park visitations. In park areas outside the spits, partial-beach resource closures would result in short-term, negligible, adverse impacts, because ORVs and other dispersed recreation users would negotiate around these smaller closures. Full-beach resource closures in these areas would only be long-term and minor, because the beach would remain open on either side of a resource closure and would be accessible from an ORV ramp. Because pedestrians and most other recreational opportunities could occur in bird closures, but would be restricted in sea turtle and seabeach amaranth closures, short-term minor adverse impacts would occur to these users. Cumulative impacts would be long-term, moderate, and adverse to ORV users, and long-term, moderate, beneficial for other park users.	would affect less than 5% of annual park visitation. In areas outside the spits, partial-beach resource closures would result in short-term minor, adverse impacts, because, although still negotiable by ORVs, closure areas would be larger. Full-beach resource closures would be long-term and minor, because the beach would remain accessible on either side of the closure. However, the displacement of ORVs from the spits, Cape Point, and South Beach to less-frequented areas of the park could substantially change the current visitor experience because of increased crowding. Because visitors to the seashore like uncrowded beaches and prefer low densities of users, resource closures and recreation displacement would most likely result in long-term, moderate, adverse impacts to visitors in areas outside the spits. Some beneficial impacts to visitors would occur, because pedestrian access would be maintained to the spits. However, restrictions on pedestrian uses and other recreation activities within closure areas would result in long-term minor-to-moderate adverse impacts. Cumulative impacts would be long-term, major adverse to ORV users accessing the spits and long-term, moderate beneficial to other park users.	impacting the same ORV population, as described in alternative A (2% of annual ORV users or less than 0.5% of annual park visitors). This temporary loss of recreation opportunity at a spit would result in adverse impacts to ORV users and fishermen. However, it would be short-term and minor because of alternate routes and bypass options. Similar to alternative A, partial-beach resource closures would result in short-term, negligible, adverse impacts and full-beach resource closures would result in long-term, minor, adverse impacts in park areas outside the spits. Pedestrian impacts would be the same as alternative B. In many cases, the defined ORV and pedestrian corridors would overlap; however, the width of the corridor would be sufficient to avoid user conflicts. Cumulative impacts would be long-term, moderate, and adverse to ORV users and long-term, moderate, beneficial for other park users.	likelihood of a closure along spit access routes. Therefore, impacts to visitor use and experience would be the same as alternative C.

TABLE A: SUMMARY OF IMPACTS

Impact Topics	Alternative A: No-Action Alternative, Continuation of 2004 Management (baseline)	Alternative B: Undisturbed Area Focus	Alternative C: Tailored Management Focus	Alternative D: Access/Research Component Focus (Preferred Alternative)
Socioeconomic Resources	Implementation of alternative A would likely adversely affect some tourist-related businesses located on Hatteras Island in southern Dare County. Future economic loses would be primarily incurred by recreational fishing suppliers and lodging and food establishments in the towns of Avon, Buxton, Hatteras, and Frisco. Regional impacts would be negligible due to the overall economy's reliance on tourist spending not linked to ORV accessibility to Cape Hatteras National Seashore beaches. Impacts would likely remain localized and not affect overall regional economic growth. Impacts would be long-term, moderate, and adverse.	Implementation of alternative B would have long-term, moderate adverse impacts on some tourist related businesses on Hatteras Island in southern Dare County, particularly recreational fishing suppliers and lodging establishments in the villages of Avon, Buxton, Hatteras, and Frisco. Impacts would likely remain localized and not affect overall regional economic growth. Impacts would be long-term, moderate, and adverse.	Implementation of alternative C would likely have long-term, moderate, adverse impacts on some tourist related businesses on Hatteras Island in southern Dare County, particularly recreational fishing suppliers and lodging establishments in the villages of Avon, Buxton, Hatteras, and Frisco. Regional impacts would likely be negligible due to the overall economy's reliance on tourist spending not linked to ORV accessibility to Cape Hatteras National Seashore beaches. Impacts would likely remain localized and not affect overall regional economic growth. Impacts would be long-term, moderate, and adverse.	The flexibility of this alternative could lead to more ORV visitors compared to the other alternatives. Therefore, the projected adverse impacts on selected businesses in the towns and villages of Hatteras Island in southern Dare County could be lessened or even eliminated. Hence, this alternative could confer economic benefits to those communities relative to the all three of the other alternatives, including continuation of the current management practices. Impacts would likely remain localized and not affect overall regional economic growth. Impacts would be long-term, negligible, and adverse. At the regional level, however, the economic benefits would be negligible, because the region's economic growth has not been affected by past closures and would not be affected by continuation of the current species management practices.
Seashore Management and Operations	Staffing levels and resources in all three divisions dedicated to protected species management activities would remain relatively constant, resulting in negligible, short- and long-term adverse impacts. The implementation of protected species management programs for all three divisions would cost approximately $388,870 under alternative A. Any unexpected resource protection needs or weather events may divert staff from other resource management activities and result	Implementation of alternative B would require existing staff in the Interpretation, Resource Management, and Law Enforcement divisions to allocate more staff time toward natural resource management activities. In addition to the opportunity costs from reallocated staff resources, interpretation programs would require an additional $11,000 and an increase in natural resource management and law enforcement staff and operations would require an additional $310,258. The total	Implementation of alternative C would require existing staff in the interpretation, resource management, and law enforcement divisions to allocate more staff time for natural resource management activities. In addition to the opportunity costs from relocated staff resources, interpretation programs would require an additional $11,000 and an increase in natural resource management and law enforcement staff and operations would require an additional $273,341. The total	Implementation of alternative D would require existing staff in the interpretation, resource management, and law enforcement divisions to allocate more staff time toward natural resource management activities. In addition to the opportunities costs from relocated staff resources, interpretation programs would require an additional $11,000 and an increase in resource management staff and operations would require an additional $277,255. The total additional

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	in long-term, moderate adverse impacts. The cumulative impacts under alternative A would be short-term, moderate and long-term, minor to moderate adverse.	additional funding required under alternative B would be $321,168, which would be funded in part by the park's annual operating budget but mostly through other sources, such as the Federal Lands Recreation Enhancement program. Due to the reprogramming of staff, additional funding required, and potential deferred maintenance, there would be long- and short-term moderate adverse impacts to all divisions, except for law enforcement, which would have short- and long-term major adverse impacts. Cumulative impacts would be short-term moderate to major adverse and long-term moderate adverse.	additional funding required under alternative C would be $284,341, which would be funded in part by the annual budget but mostly from other funding source, such as the Federal Lands Recreation Enhancement Act program. Due to the reprogramming of staff, additional funding required, and deferred maintenance because of use of funding for natural resource management programs, there would be long- and short-term moderate adverse impacts to all divisions, except for law enforcement, which would have short- and long-term major adverse impacts. Cumulative impacts would be short-term moderate to major adverse and long-term moderate adverse.	funding required under alternative D would be $288,255, which would be funded in part by the annual operating budget but mostly from others funds, such as the Federal Lands Recreation Enhancement Act program. Due to the reprogramming of staff, additional funding required, and possible deferred maintenance, there would be long- and short-term moderate impacts to all divisions. Cumulative impacts would be short- and long-term moderate adverse.

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