

ALTERNATIVES

The National Environmental Policy Act (NEPA) requires that federal agencies develop a range of reasonable alternatives and provide an analysis of what impacts the alternatives could have on the human environment. The alternatives under consideration must include a “no-action” alternative as prescribed by 40 Code of Federal Regulations (CFR) 1502.14. The no-action alternative in this *Interim Protected Species Management Strategy/Environmental Assessment* (strategy/EA) is the continuation of current management of the seashore’s protected species, and it assumes that the National Park Service (NPS) would not make major changes to current management. It does not address the vehicle escort program that was implemented in 2005, as that management action was a one-time emergency action carried out by an NPS incident management team working with seashore staff. The NPS incident management teams are not available for continuing management activities such as interim protected species management at Cape Hatteras National Seashore.

The three action alternatives presented in this chapter were derived from the recommendations of an interdisciplinary planning team and through feedback from the public during the public scoping process. The interdisciplinary planning team comprises NPS resource specialists from the Washington Office, Environmental Quality Division, the Southeast Regional Office, the seashore, and the private contractor working with the NPS on the strategy/EA.

The action alternatives provide specifically for the following species:

- federally threatened piping plover (*Charadrius melodus*)
- federally listed sea turtles:
 - threatened loggerhead (*Caretta caretta*)
 - threatened green turtle (*Chelonia mydas*)
 - endangered leatherback turtle (*Dermochelys coriacea*)
- federally threatened seabeach amaranth (*Amaranthus pumilus*)
- state listed threatened species and species of special concern:
 - common tern (*Sterna hirundo*)
 - least tern (*Sterna antillarum*)
 - gull-billed tern (*Sterna nilotica*)
 - black skimmer (*Rynchops niger*)
- U.S. Shorebird Conservation Plan Species of High Concern
 - American oystercatcher (*Haematopus palliatus*)
 - Wilson’s plover (*Charadrius wilsonia*)
 - red knot (*Calidris canutus rufa*)

The management of endangered and threatened species is mandated by law and should be based on the best available information, including published research, reports and the practical experience of scientists and seashore resource managers. All of these sources, along with public input, were consulted and formed the basis of the alternative management actions. Management guidance or scientific references were

gleaned from a number of sources, including the following documents that can be accessed through the NPS Planning, Environment and Public Comment (PEPC) website for this project (NPS nd).

- Piping Plover (*Charadrius melodus*) Atlantic Coast Population Revised Recovery Plan. U.S. Fish and Wildlife Service. 1996.
- Technical/Agency Review Draft, Revised Recovery Plan for Piping Plovers, *Charadrius melodus*, Breeding on the Great Lakes and Northern Great Plains. U.S. Fish and Wildlife Service. 1994.
- Recovery Plan for the Great Lakes Piping Plover (*Charadrius melodus*). U.S. Fish and Wildlife Service. 2003.
- Recovery Plan for Seabeach Amaranth (*Amaranthus pumilus*). U.S. Fish and Wildlife Service. 1996.
- Waterbird Conservation for the Americas: North American Colonial Waterbird Conservation Management Plan. Kushlan, James et al. 2002.
- Handbook for Sea Turtle Volunteers in North Carolina. North Carolina Wildlife Resources Commission. 2002.
- Recovery Plan for U.S. Population of Loggerhead Turtle (*Caretta caretta*). U.S. Fish and Wildlife Service. 1991.
- Recovery Plan for U.S. Population of Atlantic Green Turtle (*Chelonia mydas*). U.S. Fish and Wildlife Service. 1991.
- Recovery Plan for the Leatherback Turtles in the US. Caribbean, Atlantic, and Gulf of Mexico (*Dermochelys coriacea*). U.S. Fish and Wildlife Service. 1992.
- Synthesis of Management, Monitoring, and Protection Protocols for the Threatened and Endangered Species and Species of Special Concern at Cape Hatteras National Seashore, North Carolina. U.S. Geological Survey, Patuxent Wildlife Research Center. 2005.
- Management and Protection Protocols for the Threatened Piping Plover (*Charadrius melodus*) on Cape Hatteras National Seashore, North Carolina. U.S. Geological Survey, Patuxent Wildlife Research Center. 2005.
- Management, Monitoring, and Protection Protocols for Colonial Nesting Waterbirds at Cape Hatteras National Seashore, North Carolina. U.S. Geological Survey, Patuxent Wildlife Research Center. 2005.
- Management, Monitoring, and Protection Protocols for American Oystercatchers at Cape Hatteras National Seashore, North Carolina. U.S. Geological Survey, Patuxent Wildlife Research Center. 2005.
- Management and Protection Protocols for Nesting Sea Turtles on Cape Hatteras National Seashore, North Carolina. U.S. Geological Survey, Patuxent Wildlife Research Center. 2005.

- Management, Monitoring, and Protection Protocols for Seabeach Amaranth at Cape Hatteras National Seashore, North Carolina. U.S. Geological Survey, Patuxent Wildlife Research Center. 2005.

The range of reasonable alternatives selected for detailed analysis in the environmental assessment must meet the management objectives of the seashore to a large degree, while also meeting the purpose of and need for action. Reasonable alternatives:

- are within stated constraints, including existing law and NPS policies
- should each minimize impacts on all or several resources
- are economically feasible (but not necessarily the cheapest or easiest solution)
- display common sense
- meet the objectives of taking action
- are technically feasible

In addition to the no action (continuation of current management) alternative A, three other alternatives are analyzed in detail in this environmental assessment. See the “Alternatives Considered but Rejected” section at the end of this chapter for a discussion of those alternatives that the NPS considered but eliminated from further detailed analysis in this document. Some of these may be appropriate for detailed analysis in the long-term off-road vehicle (ORV) management plan/environmental impact statement (EIS).

The following is an overview of the alternatives selected for detailed analysis; detailed descriptions of each alternative follow at the end of this chapter in the Alternatives Elements Summary Tables (“Table 1: Alternatives Elements Summary—Species Observation,” “Table 2: Alternatives Elements Summary—Species Management,” and “Table 3: Alternatives Elements Summary—Recreation and Other Seashore Management”). The alternatives elements summary tables are designed to point out how the alternatives differ from each other and highlight when actions vary for different species. For bird species the alternatives description and the summary tables illustrate how actions change with the specific life stages of each species. The alternatives are organized in this way to reflect that the biological needs and, hence, the management needs of each species change dramatically as a function of life stage. The life stages include:

- Pre-nesting—The time when first-time and established breeding birds select habitat for courtship and nesting and try to attract a mate. Birds are highly territorial at this time and particularly vulnerable to disturbance. This is the life stage when risk of abandonment of a site is the highest.
- Courtship/mating (includes territory establishment)—Similar to pre-nesting as courtship, mating, and territorial establishment are all part of pre-nesting/egg-laying.
- Nesting—Incubation typically begins when the clutch (eggs) is complete and, while abandonment is still a risk, especially early in incubation, the risk that birds will abandon declines as incubation time increases. Essentially, the more invested the birds are in their nest and eggs, the less likely they are to abandon a clutch. Typically, older, more established birds are more tolerant of disturbance than first-time breeding birds.

- Unfledged chicks—The life stage when chicks are mobile but still need efficient food-finding with their parents.
- Non-breeding/wintering activity—Migration support and the high energy demands of migrating or surviving in winter means that birds need to be mobile and provided with opportunities for efficient food-finding.

The timing of each life stage varies according to the species in question; however, there is much overlap among species. For example, surveying for piping plover would occur at the same time as surveying for colonial waterbirds. In addition, there would likely be overlap among the established closures, as the preferred habitat is similar between similar species (e.g., piping plover and Wilson’s plover). Therefore, some closures would likely occur at the same time and in the same place for multiple species.

For each of the alternatives, species management includes establishment of closures and buffers to protect special status species (birds, turtles, and seabeach amaranth) from human disturbance. A closure is an area delineated by posts, usually with string between them (symbolic fence), prohibiting vehicle and/or pedestrian access. A buffer is defined as an area surrounding a sensitive resource limiting access. Buffers would typically be indicated through the placement of signage around an area (i.e., bird nesting area, sea turtle nest).

At the end of this chapter, table 4 compares how each of the alternatives described in this chapter would meet the objectives. The “Environmental Consequences” chapter describes the effects on each impact topic under each of the alternatives, including the impact on recreational values and visitor experience. These impacts are summarized in table 5.

ALTERNATIVE A: NO-ACTION ALTERNATIVE, CONTINUATION OF 2004 MANAGEMENT

Regulations from the Council on Environmental Quality 40 CFR 1502.14(d) require that the alternatives analysis in an EA must “include the alternative of no action.” The no action alternative “sets a baseline of existing impacts continued into the future against which to compare impacts of action alternatives” (NPS Director’s Order 12, Section 2.7). Under the no action alternative, protected species management at the seashore would be a continuation of existing management, or protected species management as it occurred before 2005. As stated previously, it does not address the vehicle escort program that was implemented in 2005, as that management action was a one-time emergency action carried out by an NPS incident management team working with seashore staff. The NPS incident management teams are not available for continuing management activities such as interim protected species management at the seashore. 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. Management actions prior to 2004 are provided to give context to the baseline.

Under alternative A, the seashore would implement protective measures for recent piping plover breeding areas (areas used at some time during the past three 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 before being erected. Continued management would include predator removal, recreation use restrictions, and public outreach.

SPECIES SURVEYING AND MANAGEMENT

Birds. As described above, surveying and management of each species occurs across important life stages for the birds (see tables 1 and 2 for specific dates). First, closure areas would continue to be established with symbolic fencing to minimize human disturbance in areas used by birds during the past three breeding seasons (defined as recent breeding habitat; see appendix A, “Alternative A: Piping Plover Pre-Nesting Closures”). Breeding areas are those areas that host the birds during territorial displaying, courtship and mating, scraping, nesting, incubation, brooding, and chick foraging. Under alternative A, recent piping plover breeding habitat would continue to be closed to the public with symbolic fencing beginning in April each year. American oystercatcher and colonial waterbird breeding areas would be surveyed and closures initiated with symbolic fencing only if a territory is established or nests are found. Staff would survey recent breeding areas three times per week, or every other day. A range of observations would occur for each bird species by qualified staff across all life stages. For example, staff would observe piping plover adults, scrapes, nests, eggs, broods and chicks, as well as adult and juvenile piping plovers using migration and/or wintering grounds.

If individual piping plover, American oystercatcher, or colonial waterbirds establish a territory, nest, or colony, as applicable, outside of an existing closure area, additional closures would continue to be established to protect the adult pair, nest, brood, or colony. All closures would require the Superintendent’s approval and would be removed when areas have been abandoned for a two-week period; this allows time for re-nesting to occur. If no birds occupy an existing closure at all during the breeding season, closures would be removed by July 15.

When nests are found in existing or newly established closure areas, seashore staff would collect data on bird behavior, presence of predators, and, in the case of piping plover, the condition of predator exclosures. Buffers would be established around nests during nesting activity for the piping plover, American oystercatcher, and colonial waterbirds. Buffer sizes would vary according to bird species. For example, a 150-foot buffer, from which all recreational uses would be restricted, would be established around any piping plover nests. American oystercatcher buffers would be based on observations to

determine how the adults are reacting to human disturbance. A 150-foot buffer would be established from the edge of any colonial waterbird colonies.

Staff would continue to erect predator exclosures directly over piping plover nests when they contain 3 or 4 eggs. Predator exclosures would not be erected over American oystercatcher or colonial waterbird nests because of the size and behavior patterns of the birds. All nesting areas would be surveyed for predator tracks and U.S. Department of Agriculture trappers would remove non-native red and gray fox. Nesting areas are those areas that host the birds during nesting including incubation, brooding, and chick foraging.

Adult foraging activity and chicks leaving the nest to forage could initiate the expansion of a closure area. For example, if foraging piping plover chicks leave a closure area to forage in the intertidal zone, a 3,000-foot buffer would be established on either side of the piping plover nest from oceanside low water to soundside that may or may not allow for some recreational use.

Closure and buffers would continue to be removed once all the chicks have fledged or are lost. Some symbolic fencing would remain in place through November 1 to protect non-breeding (migrating and wintering) piping plover that may use the area (appendix A, “Alternative A: Piping Plover Wintering/Non-Breeding Closures”).

Sea Turtles. Cape Hatteras National Seashore would continue to follow management guidelines defined by the North Carolina Wildlife Resources Commission in its Handbook for Sea Turtle Volunteers in North Carolina (2002). An annual permit is issued to the seashore by the North Carolina Wildlife Resources Commission under the authority of the U.S. Fish and Wildlife Service. Under alternative A, beaches would be patrolled daily beginning at dawn each day between June 1 and September 1 in search of turtle crawls (tracks left by turtles when they come ashore to nest). Volunteers, Student Conservation Association interns, and seashore staff would continue to patrol approximately 55 miles each day on Bodie, Hatteras, and Ocracoke Islands. Nest locations would be documented.

Nests would be left in place or relocated for environmental reasons. Nest relocation would be confined to nests that might be threatened with loss by erosion or frequent overwash. Any single nest left in place, or relocated, would be protected by an approximately 30 feet by 30 feet posted closure during the incubation period. These small closures would be expanded to the surf line 55 days into incubation. The width of the closure would be based on the type and level of use of the beach: 75 feet in a vehicle free area with little or no pedestrian traffic; 150 feet adjacent to villages or other high levels of day use; 350 feet in ORV areas. Opposite the surf line on the upper end of the closure, the closed area would be expanded to a minimum of 50 feet duneward from the nest. If present, all vehicle tracks would be smoothed over manually with rakes or with a steel mat attached to an all-terrain vehicle, so as not to impede hatchlings attempting to reach the surf (NMFS and USFWS 1991a, 1991b; see “Figure 4: Representative Sea Turtle Closure, Aerial Photo”). If ample space is available, ORVs would be allowed access around the duneside of the nest closure. If space is not available, a full beach closure would be implemented with no ORV access and signs placed on ORV access ramps on either side of the closure. In some cases, silt fence would be used behind nests as the hatch date nears. Fencing would be used to block light pollution from the villages and from beach vehicles operating after dark. Since fencing can be buried and/or removed by high tides and strong winds, and often damaged in the process, the use of silt fencing would require daily maintenance. Large signs would be posted to notify drivers that the established closures included the surf line at all tides. Interpretive signs would warn how vehicle traffic can harm eggs and hatchlings. Traffic detours behind the nest area would be clearly marked with signs and reflective arrows. Closure materials would be removed no earlier than 72 hours after hatching occurs, and after the excavation of the nest is complete.

Seabeach amaranth. Staff would continue to document the presence of any seabeach amaranth plants or seedlings occurring within existing closures erected for bird species management. No proactive management would occur; if a plant or seedling is seen outside of existing closures, a 10-foot buffer would be established around the plant or seedling.



FIGURE 4: REPRESENTATIVE SEA TURTLE CLOSURE, AERIAL PHOTO

RECREATION

Following guidance in Superintendent's Order 07, ORVs would continue to be limited to a corridor 150 feet duneward of the mean high tide line, or seaward of a line 20 feet east of the toe of the dunes/vegetation line, whichever is less or between marked posts and existing tideline, except in certain circumstances. ORVs would be prohibited from entering any established closures or buffer areas. If ample space is available around sea turtle nest closures, ORVs would be allowed access around the duneside of the nest closure. If space is not available, a full beach closure would be implemented with no ORV access and signs placed on ORV access ramps on either side of the closure. Traffic detours behind sea turtle nest areas would be clearly marked with signs and reflective arrows. The speed limit would be 25 miles per hour (mph).

Pedestrians would not be restricted from bird closures except for access inside nest buffer areas and in ORV resource closures before discovery of the nests (see appendix A, Alternative A Piping Plover Pre-Nesting Closure Maps). Pedestrian access would be restricted from closures and/or buffers provided around sea turtle nests and seabeach amaranth plants or seedlings.

Pets must be crated, caged, restrained on a leash, or otherwise physically confined at all times in all areas of the park (36 CFR 2.15, Pets). Pets would continue to be prohibited, even if on leash, from the landward side of the white posts delineating use areas for vehicles on the "flats" at the spits (Bodie, Hatteras, Ocracoke).

Other recreational uses such as kite flying and ball and Frisbee tossing would be prohibited from all sites being used by piping plover, during any part of the year. Fireworks are prohibited in the seashore at all times (36 CFR 2.38, Explosives).

ESSENTIAL VEHICLE USE

Alternative A would continue to require all essential vehicles to travel at not more than 5 mph through closure areas only during daylight hours and with the aid of a trained observer. Essential vehicles are those emergency, law enforcement, and seashore vehicles necessary to provide for the safety of recreationists, law enforcement, maintenance of public property, or access to private dwellings not otherwise accessible. Use of open, 4-wheel motorized ORVs, all-terrain vehicles, or non-motorized all-terrain bicycles would be recommended for species observations and law enforcement. Essential vehicles would avoid the wrack line when driving in the intertidal zone, if possible, and travel should be infrequent to avoid creating deep ruts.

OUTREACH AND COMPLIANCE

The seashore would continue to provide information about endangered species at the visitor centers. Articles would be provided in the seashore's summer and winter newspaper and on the website. In addition, the public would be notified of closures that would temporarily limit ORV traffic via a press release to local and regional newspapers and direct contact with local tackle shops and ORV organizations contacted when closures are established or reopened.

COST OF IMPLEMENTATION

The costs associated with the no-action alternative would primarily be for species observation, interpretation, law enforcement, and associated equipment needs (table 6). Under alternative A, resource management activities between the three divisions would continue as conducted during 2004. The amount of staff required would remain relatively constant from existing levels.

TABLE 6: COST ESTIMATE – ALTERNATIVE A: NO-ACTION ALTERNATIVE, CONTINUATION OF 2004 MANAGEMENT

| Action | Assumptions | Annual Costs |
|-----------------------------|---|---|
| Natural Resource Management | 3 full-time employees, 4 seasonal employees, and 5 Student Conservation Association interns | Staff: \$155,849 Materials: \$67,500 Total: \$223,349 |
| Interpretation | 29 staff spending between 2-15% of their time and 1 staff - (volunteer coordinator) spending 50% of his/her time on protected species related activities. | Staff: \$42,737 Materials: \$10,500 Total: \$53,237 |
| Law Enforcement | 16 staff spending between 5- 20% of their time on protected species related activities. | Staff: \$52,948 Materials: \$59,182 Total: \$112,130 |
| TOTAL ANNUAL COST | | \$388,367 |

ELEMENTS COMMON TO ALL ACTION ALTERNATIVES

The “no action” alternative is developed for two reasons. It may be a viable choice in the range of reasonable alternatives, and it sets a baseline of existing impacts continued into the future against which to compare the impacts of action alternatives. The three action alternatives, alternatives B, C, and D, provide a range of reasonable alternatives. The following provides those management actions common to all the action alternatives.

1. Implementation of any of these action alternatives would replace Superintendent’s Order 10: Monitoring and Protection of Species of Concern.
2. In general, because of the dynamic nature of the Cape Hatteras National Seashore beaches and inlets, the management may change by location and time, and new sites (bars, islands) may require additional management, or management actions may become inapplicable for certain sites due to changes in ground conditions (i.e., habitat changes with vegetation growth).
3. Areas with symbolic fencing (string between posts) are closed to recreational access.
4. Data collection under each alternative would include documenting breeding and nest locations using a geographic positioning system (GPS) and incorporating data into a geographic information system. The data to be collected is provided in “Table 1: Alternatives Elements Summary—Species Observation.”
5. Existing seashore regulations including:
 - a. 36 CFR 2.15, Pets: pets must be crated, caged, restrained on a leash, or otherwise physically confined at all times in all areas of the park.
 - b. 36 CFR 2.38, Explosives: all fireworks are prohibited in the seashore at all times.
 - c. 36 CFR 3.6, Prohibited Operations: launching sites for non-commercial, recreational boats/vessels would only be permitted at the boat ramps located at Oregon Inlet Fishing Center and Ocracoke Marina parking area.
 - d. 36 CFR 4.10, Travel on Park Roads and Designated Routes: operating a motor vehicle is prohibited except on park roads, in parking areas and on routes and areas designated for off-road motor vehicle use
6. Predator management would continue as identified under alternative A with the removal of red and gray fox by U.S. Department of Agriculture trappers. Use of predator exclosures over piping plover and sea turtle nests would continue. In addition, funding has been allocated for the development of a Predator Management Plan/EA in cooperation with the U.S. Department of Agriculture. Thus, predator management as defined under alternative A would continue under the action alternatives until a Predator Management Plan/EA can be drafted, published for public review, approved, and implemented.
7. On going studies which would continue at Cape Hatteras National Seashore under each of the action alternatives:
 - a. “Wintering Piping Plover Habitat Use Near Barrier Islands” conducted by Dr. James Fraser, VA Tech. The study will investigate effects to piping plovers from inlet maintenance activities, conducted by the U.S. Corps of Engineers, which have the potential to modify nesting, roosting and foraging habitats used by plovers at Cape Hatteras National Seashore.

- b. “Monitoring and Management of American Oystercatcher on Cape Hatteras National Seashore” conducted by Dr. Ted Simons and Shiloh Shulte, Cooperative Research Group, North Carolina State University. The study will monitor plover nesting and chick success/survival and document unfledged chick behavior.
 - c. “The Effects of Off-Road Vehicles on the Nesting Activity of the Loggerhead Turtle” conducted by Lindsay Nester, University of Florida. The study will investigate possible differences between nest laying and nesting success of loggerhead sea turtles in areas that have ORV use and ORV-free nesting sites.
- 8. ORV access is managed according to Superintendent’s Order 07, as detailed under the no action alternative. Unless otherwise posted, the maximum speed is 25 mph. Superintendent’s Order 07 specifically provides for an “Ocean Beach Zone” in which ORVs would “...be permitted within 150 feet of the existing tideline...”. Thus, unless otherwise stated, a 150-foot ORV corridor would be provided in all areas of the seashore outside of those areas specifically designated and/or being managed for species protection. Implementation of any of these action alternatives would result in the review and update of Superintendent’s Order 7: ORV Management, as determined necessary.
- 9. Essential use vehicles would enter restricted areas subject to the guidelines in the Essential Vehicles section of the Piping Plover Revised Recovery Plan (USFWS 1996a). Essential use vehicles would not exceed 5 mph. In the spring (April 15 through late May) and fall migration (August through September 30) periods, all vehicles and personnel (NPS and trained observers) would try to avoid tips of spits and inlet areas where colonial species often stage, or court (spring migration).
- 10. The weekly frequencies provided for species observations are minimums. If a need is established for more frequent observations than the minimum stated, and staff is available, the seashore may conduct observations more frequently on a case-by-case basis.
- 11. Staff used for field observations, education and outreach will be trained by qualified NPS staff and will meet the following minimum qualifications:
 - a. Completion of an instruction course conducted by a qualified staff biologist. Training would occur at the beginning of the season (March/April) and again in late May-early June. Training would include:
 - i. Job description/expectations
 - ii. Personal safety
 - iii. Professional behavior
 - iv. NPS and seashore rules, regulations, policies
 - v. Geographic locations orientation
 - vi. Awareness of the community and their role in it
 - vii. Cape Hatteras National Seashore personnel and job descriptions
 - viii. ATV/beach driving
 - ix. Protected species surveying and management
 - 1. Identification
 - 2. Behavior
 - 3. Needs
 - 4. Closures
 - x. Completion of observation forms, etc.
 - xi. Overview of existing seashore activities and studies
 - xii. Equipment care and upkeep
 - xiii. Outreach and education

- b. Returning staff may not need the full training.
12. Temporary/seasonal staff would be hired using the following procedure:
- a. Temporary/seasonal staff would be hired by March 1 and trained by March 15 to begin bird species management, education, and/or outreach activities.
 - b. Any additional temporary/seasonal staff would be hired and trained by May 15 to conduct turtle management, education, and/or outreach activities, following the guidelines in the North Carolina Wildlife Resources Commission Handbook for Sea Turtle Volunteers in North Carolina (2002). These may be the same individuals hired for bird management (see item 10 above).
 - c. A list of needed positions would be identified for resource management volunteers, Student Conservation Association interns, seasonal employees, and interns including skilled and unskilled labor to provide manual labor (erecting closures and signs) and bird identification and behavior observations.
 - d. Job descriptions would be created with specific needs and standards for all skilled and unskilled positions including approximately how many hours would be needed.
 - e. A standard for hiring Student Conservation Association interns, seasonal employees, interns, and volunteers would be developed, including expectations and requirements for in-house training to occur at established times.
 - f. Recruiting would begin in October of the preceding year.
 - g. A list would be maintained of trained local volunteers and those interested in becoming trained to fill volunteer positions.
 - h. Set times for training and set start dates for temporary/seasonal staff would be established.
 - i. All the training information would be available for transmittal to all new staff during training. This would provide consistent information to everyone and managers would be assured that Student Conservation Association interns, seasonal employees, interns, and volunteers received consistent information.
13. Programming of staff time may be adjusted following the first season of the strategy implementation.
14. In FY 2006 and beyond, there would be an increase of three permanent law enforcement positions over that in FY 2005. It is planned that law enforcement staff activities would be directed to appropriate protected species projects. However, enforcement staff would be reallocated in the event that other emergency or enforcement situations must be attended to during high visitation periods. It is the responsibility of the Superintendent and law enforcement managers to direct their resources where most needed depending on circumstances. If, and as this occurs, law enforcement staff may not be able to dedicate as much time to species protection.
15. Outreach and compliance efforts would be the same as alternative A for all action alternatives; however, additional efforts would occur.
- a. The seashore would enforce proper trash disposal and anti-wildlife feeding regulations to reduce the attraction of predators to the area.
 - b. Annual reports regarding the previous bird breeding season would be published on the seashore website and an initial posting plan for the upcoming season would be drafted that provides pre-nesting closures.

- c. A variety of educational and outreach materials would be developed regarding the impacts of trash-disposal, wildlife feeding, fireworks, and pets on sensitive seashore species. Local volunteer and community organizations would be enlisted to distribute these materials.
 - d. Interpretive signage would be developed for certain species.
16. All monitoring and management would, at a minimum, meet the guidelines of the U.S. Fish and Wildlife Service recovery plans for each federally listed species.

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. Additional management would include continued predator removal, additional recreation use restrictions, and public outreach.

SPECIES SURVEYING AND MANAGEMENT

Birds. Species observations would be similar to those described under alternative A, with more intensive observation procedures provided for some species during particular life stages (see “Table 1: Alternatives Elements Summary—Species Observation”). Under alternative B, Bodie Island Spit; Green Island; Cape Point, South Beach, and Hatteras Spit on Hatteras Island; and, North Ocracoke (inlet area) and South Ocracoke on Ocracoke Island would be symbolically fenced to protect historic piping plover breeding areas year-round (see appendix A, Alternative B Piping Plover Pre-Nesting Closure Maps). Recent American oystercatcher and historic colonial waterbird breeding areas, as well as recent Wilson’s plover breeding areas, would be symbolically fenced at the start of the individual breeding season (see “Table 2: Alternatives Elements Summary—Species Management” for specific dates). As stated previously, these closure areas may overlap. Staff would observe species activities and potentially close areas outside of defined pre-nesting closures being used by other protected bird species. If no birds occupy an existing closure at all during the breeding seasons, excluding those year-round closures identified for piping plover, closures would be removed by July 15.

When nests are found in existing or newly established closure areas, seashore staff would collect a variety of data (see “Table 1: Alternatives Elements Summary—Species Observation”). Nest buffers would vary according to the species; 150-foot buffers that could be incrementally increased would be established for piping plover and Wilson’s plover and 600-foot buffers would be established for American oystercatcher and colonial waterbirds.

Management of adult bird foraging areas would occur as defined under alternative A. Unfledged chick, or brood, activity could initiate the expansion of closure areas. Piping plover broods would be protected by a 3,000-foot buffer; a 600-foot buffer would be established around American oystercatcher, colonial waterbird, and Wilson’s plover chicks. This buffer would move with the chicks as they move between nests and foraging sites.

Like alternative A, closures and buffers would be removed once all of the chicks have fledged or are lost, except in those areas designated as year-round closures. The year-round closures would also afford non-breeding (migrating and wintering) birds protection during those time periods. In addition, American oystercatcher non-breeding areas would be observed and posted with a 300-foot buffer during the non-breeding season.

Sea Turtles. Cape Hatteras National Seashore would follow the management guidelines defined by the North Carolina Wildlife Resources Commission in its Handbook for Sea Turtle Volunteers in North Carolina (2002). An annual permit would be required. Under alternative B, beaches would be patrolled daily beginning at dawn between May 15 and August 31 in search of sea turtle crawls and nests. Staff would collect the same data as identified under alternative A (see “Table 1: Alternatives Elements Summary—Species Observation”).

Like alternative A, nests would be left in place or relocated for environmental reasons. Any single nest left in place, or relocated, would be protected by 30 feet by 30 feet (approximately) posted closure during the incubation period. These small closures would be expanded to the surf line 55 days into incubation the

same as identified under alternative A; however, in areas where recreation occurs, the closure area would be expanded to 600 feet around the nest.

Under alternative B, some turtle habitat would be totally closed 24 hours per day to recreation use from April 1 to November 15 to research the effect of management of human recreation on nesting rate, hatching success, sea-finding by hatchlings (prevalence of misorientation and trapping by obstacles), proportion of false crawls, presence of potential predators and their tracks or burrows (mammals, birds, and ghost crabs), and nest site characteristics (intertidal zone slope, backshore slope, percent vegetation in the backshore, distance from nests to tide line, distance from nest to dune, and sand grain size in intertidal zone and backshore).

Seabeach Amaranth. All potential seabeach amaranth habitat would be surveyed in April with an annual survey occurring in August for new plants or seedlings. Although existing habitat is generally within proposed year-round resource closures related to piping plover protection, potential new habitat would be surveyed. Staff would record all locations of individual plants or plant clusters using a GPS.

RECREATION USE

Management of protected species under alternative B, would follow the same requirements as those listed under alternative A; however, as previously stated, ORVs would be prohibited at Bodie Island Spit; Green Island; Cape Point, South Beach, and Hatteras Spit on Hatteras Island; and, North Ocracoke (inlet area) and South Ocracoke on Ocracoke Island year-round (see appendix A). Additional closures would be established around recent American oystercatcher and Wilson's plover breeding habitat and around historic colonial waterbird breeding areas. The closure area would be demarcated by symbolic fencing. In areas outside the spits, the current 150-foot ORV corridor would be reduced to a narrower corridor between the average high tide line and the edge of the zone of protected backshore, if necessary. The protected backshore zone is an area at least 30-feet wide that runs the length of the ORV corridor. These areas would be observed for potential new piping plover, American oystercatcher, and colonial waterbird nesting sites. Piping plover closures could occur within these breeding areas potentially restricting ORV and pedestrian use. If other protected bird species established nests in these areas, ORV access could be further modified in the vicinity of these nests or colonies to ensure adequate buffers are maintained around nesting areas.

Pedestrian access would be restricted to a 150-foot corridor along the oceanside shoreline around bird closure areas. Pedestrians would be prohibited from entering any nest buffers.

Along the shoreline where piping plover and colonial waterbird closures occur (Bodie Island Spit, Cape Point, South Beach, Hatteras Spit, North Ocracoke, South Ocracoke), signage would be erected warning boaters of species protection in the area. Boats would be prohibited within the entire extent of the seashore's jurisdiction, 150 feet from the shoreline. Boats are prohibited from landing outside of designated areas within the seashore.

Sea turtle nests would be protected from disturbance with the posting of symbolical fencing providing a 150-foot buffer around the nest. This buffer could be expanded if multiple violations of the protected area are observed, expanding the buffer to 300 feet, then 600 feet, if necessary. When turtle eggs are ready to hatch, turtle closures would be expanded from the nest to the surf as described in alternative A. Where possible, ORV routes would be provided duneward of the nests. Night driving on the beach would be prohibited within the seashore from 8:00 PM to 6:00 AM March 15 through November 15 (turtle nesting and hatching season); this would also protect chicks foraging at night.

ORV and pedestrian access would be restricted to a corridor within 75 feet of the ocean mean tide in areas where historic seabeach amaranth populations existed or where new suitable habitat has been created from April 15 to November 30. If a seedling or plant is found in an area open to ORV and/or pedestrian access, staff would erect a 30 square foot buffer around the plant.

Pets would be prohibited, even if on leash, from the landward side of the white posts delineating use areas for vehicles on the “flats” at the spits (Bodie, Hatteras, Ocracoke). In addition, pets would be prohibited within ¼ mile of symbolic fencing around any bird closure.

Other recreational uses such as kite flying and ball and Frisbee tossing would be prohibited from all sites being used by piping plover and American oystercatcher, during any part of the year. Kite flying would be prohibited within 600 feet of any nesting colonial waterbirds between April 1 and August 31.

COST OF IMPLEMENTATION

Costs of implementing alternative B would include the costs described under alternative A (no-action alternative), plus the cost of hiring additional resource management staff and obtaining additional materials for interpretation. In addition, there would be opportunity costs as staff duties in the Interpretation and Law Enforcement divisions would be reprogrammed to cover responsibilities under the interim strategy (see table 7). Although there would be an increase in the number of law enforcement personnel, it would not be sufficient to provide the complete and continuous coverage required under alternative B (see item 12 under “Elements Common to All Action Alternatives”).

TABLE 7: COST ESTIMATE – ALTERNATIVE B: UNDISTURBED AREA FOCUS

| Action | Assumptions | Annual Costs |
|-----------------------------|--|---|
| Natural Resource Management | 6 full-time staff, no additional funding required. Part-time staff increased from 4 seasonal personnel and 5 Student Conservation Association interns to 13 seasonal positions. All current available funds used for full-time positions, part-time positions would require new funding. | Staff: \$181,057 Materials: \$55,400 Additional annual cost = \$236,457 Total annual costs = \$459,806 |
| Interpretation | Duties of existing staff would be reprogrammed to meet all interpretation needs. Additional materials and supplies required. | Additional annual cost = \$11,000 Total annual costs = \$64,237 |
| Law Enforcement | Existing 16 commissioned staff positions would be filled and no extra funds would be required. 4 additional part-time law enforcement seasons would be hired. No additional materials or supplies required. | Additional annual costs = \$73,711 Total annual costs \$195,901 |
| TOTAL ANNUAL COST | | Additional Cost: \$321,168 Total Cost: \$719,944 |

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. Additional 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.

SPECIES SURVEYING AND MANAGEMENT

Birds. Species observation activities would be similar to those described under alternative A but with defined start dates and data gathering requirements (see "Table 1: Alternatives Elements Summary—Species Observation"). For example, as with alternative B, staff would use GPS to record the location of piping plover nests for incorporation into a GIS system. This would provide additional data for adapting resource management in following years. Under alternative C, seasonal closure areas would be established with symbolic fencing to minimize human disturbance in areas used by piping plover and/or colonial waterbirds during the past 10 breeding seasons (defined as historic breeding habitat; see appendix A, "Alternative C: Piping Plover Pre-Nesting Closures"). Under alternative C, historic breeding habitat would also be closed to the public with symbolic fencing beginning in April each year. This would include Bodie Island Spit; Green Island; Cape Point, South Beach, and Hatteras Spit on Hatteras Island; and, North Ocracoke (inlet area) and South Ocracoke on Ocracoke Island. Recent American oystercatcher and Wilson's plover breeding areas would be closed by posting symbolic fencing. Staff would survey recent breeding areas three times per week, or every other day. A range of observations would occur for each bird species by qualified staff across all life stages. Staff would observe species activities and potentially close areas, outside of defined pre-nesting closures, being used by other protected bird species. If no birds occupy an existing closure at all during the breeding seasons, excluding those year-round closures identified for piping plover, closures would be removed by July 15.

When nests are found in existing or newly established closure areas, seashore staff would collect a variety of data (see "Table 1: Alternatives Elements Summary—Species Observation"). Nest buffers would vary according to the species; 150-foot buffers that could be incrementally increased would be established for piping plover and Wilson's plover and 600-foot buffers would be established for American oystercatcher and colonial waterbirds.

Management of adult bird foraging areas would occur as defined under alternative A. Unfledged chick, or brood, activity could initiate the expansion of closure areas. Piping plover broods would be protected by a 600- to 3,000-foot buffer, depending on the bird behavior; a 600-foot buffer would be established around American oystercatcher and Wilson's plover chicks, and a 300-foot buffer around colonial waterbird colony if only least terns are present and 600 feet if other species are present. This buffer would move with the chicks as they move between nests and foraging sites.

Like alternative A, closures and buffers would be removed once all of the chicks have fledged or are lost. A 150-foot buffer would be established around interior and soundside spit habitat to during the spring and fall migration period and wintering period for piping plover. In addition, American oystercatcher non-breeding areas would be observed and posted with a 300-foot buffer during the non-breeding season.

Sea Turtles. Cape Hatteras National Seashore would follow the management guidelines defined by the North Carolina Wildlife Resources Commission in its Handbook for Sea Turtle Volunteers in North Carolina (2002). An annual permit would be required. Under alternative C, beaches would be patrolled daily beginning at dawn each day between May 15 and August 31 in search of sea turtle crawls and nests. Staff would collect the same data as identified under alternative A (see “Table 1: Alternatives Elements Summary—Species Observation”).

Like alternative A, nests would be left in place or relocated for environmental reasons. Any single nest left in place, or relocated, would be protected by an approximately 30 feet by 30 feet posted closure during the incubation period. These small closures would be expanded to the surf line 55 days into incubation the same as identified under alternative A.

Seabeach Amaranth. Alternative C would be the same as alternative B. All potential seabeach amaranth habitat would be surveyed in April with an annual survey occurring in August for new plants or seedlings. Although existing habitat is generally within proposed year-round resource closures related to piping plover protection, potential new habitat would be surveyed. Staff would record all locations of individual plants or plant clusters using a GPS.

RECREATION

Under alternative C, Bodie Island Spit; Green Island; Cape Point, South Beach, and Hatteras Spit on Hatteras Island; and, North Ocracoke (inlet area) and South Ocracoke on Ocracoke Island (see appendix A, Alternative B Piping Plover Pre-Nesting Closure Maps) would be closed to ORV access starting April 1 through July 15, if no birds are observed in the area, or until the area has been abandoned for two weeks, whichever is later. ORV and pedestrian access would be maintained within a 150-foot corridor along the oceanside shoreline where conditions and space permit (see appendix A). Resource protection areas outside the spits and Cape Point that would be closed for bird breeding activity include the upper beach area from Ramp 59 to 72 along Ocracoke Island. The size of species management closures would be adjusted to be responsive to bird behavior. If an ORV corridor is not feasible for safety reasons or because bird behavior (i.e., intertidal foraging) requires a full-beach closure, an alternate ORV route (i.e., another access ramp, an existing interdunal road, or NC-12), would be identified. If an alternate route is not feasible, the 150-foot corridor would be closed to ORV access.

Turtle nests would be protected with buffer areas and symbolic fencing as described in alternative A. If a beach closure threatened access to the spits or Cape Point, access would be provided via an ORV alternate route if available. Where possible, ORV traffic would be routed around the nest on the duneward side, maintaining a buffer of 45 feet, where possible, but no less than 30 feet. When turtle eggs are ready to hatch, beach closures would be expanded from the nest to the surf as described in alternative A. Where possible, an ORV corridor would be maintained; however, if the nest location would block access to the spits and/or Cape Point, the seashore would attempt to identify an alternate ORV route such as an existing interdunal road or NC-12. If no alternate ORV route is available a bypass route on the duneward side of the nest may be established. The criteria for establishing a short-term bypass route around a sea turtle closure would include:

- a. The bypass area would be routed around dunes and vegetation if possible. If necessary, ground leveling, consistent with the state coastal management program, may be considered if dune fields do not exceed 36 inches in height. Leveling would be done by hand (no machinery would be used).
- b. The bypass would take advantage of natural terrain (e.g., blowouts) to minimize ground altering disturbance to the natural areas and avoid impacts to wetlands.
- c. The bypass would meet minimum requirements to allow one ORV to safely pass or a maximum of two lanes if “line of sight” vision were compromised.

- d. Natural area disturbance to accommodate avoidance of turtle or bird nesting would not exceed approximately 6,000 ft².
- e. Minimal vegetation impact would be allowed.
 - i. Federal or state listed plants or plants falling under the category of special concern (e.g., sea beach amaranth, dune blue curls) would not be compromised.
 - ii. Vegetation in altered areas would be expected to recover within the following growing season. If vegetation does not recover within one growing season, or by other natural process (such as overwash creating habitat), the seashore would initiate restoration of vegetation.
 - iii. Any vegetation removal would be performed with hand tools (no machinery would be used).

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

If no possible bypass route is available behind a turtle nest within its hatching window, a shoreline bypass may be considered in front of turtle nest (along the tideline) only during daylight hours if the following criteria can be met.

- ORVs would be allowed to pass as long as a trained observer is stationed at the site. Observer would be responsible for closing the bypass down in case of a daytime hatchling emergence.
- ORV tracks and ruts would be smoothed over every night.

Night driving would be prohibited from 10:00 PM to 5:00 AM from May 15 through August 31. Beachfires would be prohibited on the oceanside May 15 through August 31.

Similar to alternative B, seabeach amaranth occurring outside of existing species management closures would be protected from ORV access. From April 15 to November 30, ORV and pedestrian access would be restricted to a corridor 150 feet duneward of the ocean mean tide where historic or extant populations are known to occur. Areas would be reopened, if no other species are documented in the area, September 1 or after the plants have died, whichever is later.

COST OF IMPLEMENTATION

Costs of implementing alternative C would include the same costs described under alternative A (no-action alternative, continuation of 2004 management), plus costs of hiring additional resource management staff and materials for interpretation. In addition to financial costs, there would also be opportunity costs as duties of staff in the Interpretation and Law Enforcement divisions are reprogrammed to cover responsibilities under the interim strategy (see table 8). Although there would be an increase in the number of law enforcement personnel, it would not be sufficient to provide the complete and continuous coverage required under alternative B (see item 14 under “Elements Common to All Action Alternatives”).

TABLE 8: COST ESTIMATE – ALTERNATIVE C: TAILORED MANAGEMENT FOCUS

| Action | Assumptions | Annual Costs |
|-----------------------------|--|---|
| Natural Resource Management | 6 full-time staff, no additional funding required. Part-time staff increased from 4 seasonal personnel and 5 Student Conservation Association interns to 13 seasonal positions. All current available funds used for full-time positions, part-time positions would require new funding. | Staff: \$181,057 Materials: \$55,400 Additional annual cost = \$236,457 Total annual costs = \$459,806 |
| Interpretation | Same as alternative B. | Additional annual cost = \$11,000 Total annual costs = \$64,237 |
| Law Enforcement | Existing 16 commissioned staff positions would be filled and no extra funds would be required. 2 additional part-time seasonal law enforcement staff would be hired. No additional materials or supplies required. | Additional annual costs = \$36,884 Total annual costs = \$159,041 |
| TOTAL ANNUAL COST | | Additional Cost: \$284,341 Total Cost: \$683,084 |

ALTERNATIVE D: ACCESS / RESEARCH COMPONENT FOCUS (PREFERRED ALTERNATIVE)

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 D would provide for adaptive management in that an alternate ORV route, (another access ramp, an existing interdunal road, and/or 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. Additional management would include continued predator removal, additional recreation use restrictions, and public outreach.

SPECIES SURVEYING AND MANAGEMENT

Birds. Species observation activities would be similar to those described under alternative A but with defined start dates and data gathering requirements (see “Table 1: Alternatives Elements Summary—Species Observation”). For example, as with alternative B, staff would use GPS to record the location of piping plover nests for incorporation into a GIS system. This would provide additional data for adapting resource management in following years. Under alternative D, seasonal closure areas would be established with symbolic fencing to minimize human disturbance in areas used by all protected bird species during the past 3 breeding seasons (defined as recent breeding habitat; see appendix A, “Alternative D: Piping Plover Pre-Nesting Closures”). Under alternative D, recent breeding habitat would also be closed to the public with symbolic fencing beginning in April each year. This would include Bodie Island Spit; Green Island; Cape Point, South Beach, and Hatteras Spit on Hatteras Island; and North Ocracoke (inlet area) and South Ocracoke on Ocracoke Island. Staff would survey recent breeding areas three times per week, or every other day. A range of observations would occur for each bird species by qualified staff across all life stages. Staff would observe species activities and potentially close areas, outside of defined pre-nesting closures, being used by other protected bird species. If no birds occupy an existing closure at all during the breeding seasons, excluding those year-round closures identified for piping plover, closures would be removed by July 15.

When nests are found in existing or newly established closure areas, seashore staff would collect a variety of data (see “Table 1: Alternatives Elements Summary—Species Observation”). Nest buffers would vary according to the species; 150-foot buffers that could be incrementally increased would be established for piping plover and Wilson’s plover and 300- to 450-foot buffers would be established for American oystercatcher and colonial waterbirds. All of these buffers could be adjusted based on observed bird behavior.

Management of adult bird foraging areas would occur as defined under alternative A. Unfledged chick, or brood, activity could initiate the expansion of closure areas. Piping plover and Wilson’s plover broods would be protected by a 600- to 3,000-foot buffer, depending on the bird behavior; a 300-foot buffer would be established around American oystercatcher chicks, and a 300-foot buffer around colonial waterbird colony if only least terns are present and 600 feet if other species are present. Based on plover behavior, the buffer could be reduced after the first week to no less than 300 feet, but may require expansion up to 3,000 feet. This buffer would move with the chicks as they move between nests and foraging sites. Again, all of these buffers could be adjusted based on observed bird behavior.

Like alternative A, closures and buffers would be removed once all of the chicks have fledged or are lost. Suitable interior habitats at the spits and Cape Point would be closed year-round to provide for resting and foraging for all species. At present, such suitable habitat includes ephemeral ponds and moist flats at Bodie Island Spit, Cape Point, Hatteras Spit, and Ocracoke. The actual locations of suitable foraging and resting habitat may change periodically due to natural processes (i.e., overwashes).

In addition, the following conservation measures would be proposed in compliance with Section 7 of the Endangered Species Act as they relate to piping plover only:

- Observe abundance and distribution of known wintering piping plover through specific winter surveys.
- Identify how young and adult piping plovers utilize nesting and feeding habitat (breeding, migration, and winter seasons) through observation and data collection on the frequency of feeding and distances traveled from nests to foraging areas.
- Determine survival rates of young in nest, post-fledge, immature, and adult birds.
- Provide observation data to the U.S. Fish and Wildlife Service so that the information may be combined with data from other monitoring efforts to determine the significance of Cape Hatteras breeding or wintering population segments to the state, region (middle Atlantic coast), or Atlantic coast wide population changes and trends.
- Document the levels of ORV, pedestrian traffic, and leashed and unleashed pets in piping plover habitat.
- Observe piping plover breeding activities at nesting sites to identify factors that may be limiting abundance of nesting piping plovers and/or productivity.

Funds would be sought to provide for intensive research studies and surveys would be developed and implemented to address the following:

- Identify factors limiting the quantity and quality of habitat or its use by piping plovers at specific wintering sites. Collect information which characterizes wintering piping plover foraging and roosting habitat and determine level of site fidelity by birds.
- Identify factors which limit the size and distribution of breeding and non-breeding populations.
- Survey to determine the responses of piping plovers to recreational disturbances (pedestrians, dogs, ORVs, etc.) both day and night and document flushing distances caused by the disturbance.

Sea Turtles. Cape Hatteras National Seashore would follow the management guidelines defined by the North Carolina Wildlife Resources Commission in its Handbook for Sea Turtle Volunteers in North Carolina (2002). An annual permit would be required. Under alternative D, beaches would be patrolled daily beginning at dawn each day between May 15 and August 31 in search of sea turtle crawls and nests. Staff would collect the same data as identified under alternative A (see “Table 1: Alternatives Elements Summary—Species Observation”).

Like alternative A, nests would be left in place or relocated for environmental reasons. When a nest is found, staff would assess its vulnerability to frequent erosion or frequent flooding, and/or if its location may have a direct impact on recreation access to beach spits and points when the nest and hatchling access to the sea is fenced. If the nest may impact recreational access and an alternate or bypass route is not feasible, the nest would be relocated, if permitted by NCWRC.

Any single nest left in place, or relocated, would be protected by an approximately 30 feet by 30 feet posted closure during the incubation period. These small closures would be expanded to the surf line 55 days into incubation the same as identified under alternative A.

In addition, the following conservation measures would be proposed in compliance with Section 7 of the Endangered Species Act:

- Establish surveys and monitoring regimes for recording levels of nighttime driving on the beach. The surveys and monitoring will provide information to determine the level of visitor use and possible impacts to sea turtles and shorebirds. Monitor and record the number of ORVs on Cape Hatteras National Seashore beach during sea turtle nesting season to determine if night time driving prohibitions may be warranted in the long-term ORV Management Plan.
- Support ongoing research efforts to determine the sex ratio of turtles at Cape Hatteras National Seashore and the influences of temperature to sex determinations of hatchlings.
- Compare Cape Hatteras National Seashore sea turtle sex ratios to Pea Island National Wildlife Refuge (ongoing study by USFWS) and/or to nearby dredged islands, including beach temperatures and compaction of sand which influence sex determination. Recent studies by South Carolina Department of Natural Resources show that cool beaches like those in North and South Carolina are more likely to produce male sea turtles while warmer beaches like those in Florida produce more females, since sex is determined by the temperature at which eggs are incubated. Thus, for populations that are threatened or endangered like those species occurring at Cape Hatteras National Seashore, it is of critical importance to know the male and female production in order to be able to model and understand long-term population recovery prospects.
- Assess the number of nesting females and their reproductive success so that the current contribution of Cape Hatteras National Seashore to regional population dynamics can be better understood, since Cape Hatteras National Seashore is at or near the northern limit of the breeding range for all three species of sea turtle that nest there.
- Analyze the backlog of data collected by Cape Hatteras National Seashore on occurrences and locations of false crawls by all species of sea turtles.

Funds would be sought to provide for intensive research studies and surveys would be developed and implemented to address the following issues relative sea turtles:

- Survey additional observations of plovers or other shorebirds being attracted to lights from night driving.
- Monitor and document the proportion of closure violations that occur by pedestrians and ORVs between sundown and sunrise on Cape Hatteras National Seashore beaches.
- Survey how much ORV and pedestrian traffic occurs in turtle nesting habitat at Cape Hatteras National Seashore, and how does this differ between day and night.
- Determine the effect of recreation on detectability of turtle crawls through monitoring during nesting season by all species of sea turtles.
- Survey and collect data on the impact of ghost crabs on emerging hatchlings at Cape Hatteras National Seashore. Compare and investigate the density of effects in ORV use areas to sites which are ORV-free areas. Determine if there is a change in ghost crab demographics caused by ORV driving.
- Monitor and determine impacts (if any) of filter (silt) fencing on sea turtle hatchlings. Previous monitoring at the seashore has indicated that hatchlings get caught in the fibers or material of

fencing. Additionally, determine if the presence or particular placement of the cloth cause potential problems with predators by eliminating escape routes.

Seabeach Amaranth. Alternative D would be the same as alternative B. All potential seabeach amaranth habitat would be surveyed in April with an annual survey occurring in August for new plants or seedlings. Although existing habitat is generally within proposed year-round resource closures related to piping plover protection, potential new habitat would be surveyed. Staff would record all locations of individual plants or plant clusters using a GPS.

In addition, the following conservation measures would be proposed in compliance with Section 7 of the Endangered Species Act:

- Document population sizes of seabeach amaranth in areas where beach nourishment and or beach stabilization has occurred, compared to sites which have not been impacted.

Funds would be sought to provide for intensive research studies and surveys would be developed and implemented to address the following issues relative to seabeach amaranth:

- Conduct surveys to determine the effects of off-season pedestrian and ORV traffic on seabeach amaranth seeds.
- Identify factors limiting seed and seedling success by conducting survivorship studies on seedlings found or planted on Cape Hatteras National Seashore beaches. Such work could identify the most critical phase of the species life-history and limiting factors. This could be complemented with studies that examine natural seed storage, viability, and long distance transport.
- Establish a long-term amaranth population monitoring program to determine and assess effects of both natural and human disturbances to the species at Cape Hatteras National Seashore.

RECREATION

Between March 15 and April 1, depending upon species, and September 30 each year, a 100-ft wide ORV corridor would be designated above the mean high tide line in all species breeding areas used within the past three years. Breeding areas outside the ORV corridor used within the past three years would be closed to pedestrian access using symbolic fencing at the same time. The ORV corridor would be delineated with posts above the wrack line and below the dune line, maintaining a 100-foot corridor where possible. Where it is not possible to delineate an ORV corridor with posts above the wrack line, signs would be posted asking visitors to stay off. In areas without a well-defined wrack line, the corridor would be delineated only with posts placed up to 100 feet above the high tide line. Education would be provided for visitors regarding the wildlife values and susceptibility of the wrack to foot and ORV traffic. In areas of reduced corridor width (i.e., narrower than 100 feet) a reduced speed limit of 5 mph would be posted. Additionally, periodic patrols to observe and enforce compliance with closures would occur.

Pedestrian access would be maintained outside of the symbolically fenced areas. If no bird activity is seen by July 15, or if the area is abandoned for two weeks, whichever is later, the closure area would be reopened to recreation use.

Because closure zones would adjust to individuality in bird behavior, an ORV corridor may not be feasible for safety reasons or due to insufficient area. In these cases, Cape Hatteras National Seashore would attempt to identify an alternate ORV route. If no alternate route is available, a bypass would be considered using the bypass criteria outlined under alternative C. An ORV closure would be implemented in the event an alternate route or bypass is unavailable.

Recent breeding habitats within the spits and Cape Point would be closed to ORVs and pedestrians beginning in mid-March (oystercatchers) or April 1 (piping plovers and colonial waterbirds). An ORV and pedestrian corridor would provide access around these closures, unless foraging chicks or safety issues required that the access route be closed. If a closure was required, the decision-making process for ensuring continued ORV access would include consideration of an alternate ORV route or a bypass. If a turtle nest hatching could lead to the blocking of access to the spits, Cape Point, or South Beach, access would be provided via alternate route, bypass, or relocation of the nest if permitted by the North Carolina Wildlife Resources Commission.

Seabeach amaranth occurring outside of existing species management closures would be protected from ORV and pedestrian access. From April 15 to November 30, ORV and pedestrian access would be restricted to a corridor 150 feet duneward of the ocean mean tide where historic or extant populations are known to occur. Areas would be reopened, if no other species are documented in the area, September 1 or after the plants have died, whichever is later.

STAFFING/COST

Costs of implementing alternative D would include the same costs described under alternative A (no-action alternative, continuation of 2004 management), plus costs of hiring additional resource management staff and materials for interpretation. In addition to financial costs, there would also be opportunity costs as duties of staff in the Interpretation and Law Enforcement divisions are reprogrammed to cover responsibilities under the interim strategy (see table 9).

TABLE 9: COST ESTIMATE – ALTERNATIVE D: ACCESS/RESEARCH COMPONENT FOCUS (PREFERRED ALTERNATIVE)

| Action | Assumptions | Annual Costs |
|-----------------------------|--|---|
| Natural Resource Management | 6 full-time staff, no additional funding required. Part-time staff increased from 4 seasonal personnel and 5 Student Conservation Association interns to 16 seasonal positions. All current available funds used for full-time positions, part-time positions would require new funding. | Staff: \$220,665 Materials: \$56,600 Additional costs = \$277,255 Total annual costs = \$500,604 |
| Interpretation | Duties of existing staff would be reprogrammed to meet all interpretive needs. Additional materials and supplies required. | Additional Cost = \$11,000 Total annual costs = \$64,237 |
| Law Enforcement | Duties of existing 16 staff positions would be reprogrammed to meet all law enforcement needs. | Additional Cost = \$0 Total annual costs: \$112,130 |
| TOTAL ANNUAL COST | | Additional Cost = \$288,255 Total Cost: \$676,971 |

HOW ALTERNATIVES MEET OBJECTIVES

As stated in the “Purpose and Need for Action” chapter, all action alternatives selected for analysis must meet all objectives to a large degree. The action alternatives must also address the stated purpose of taking action and resolve the need for action; therefore, the alternatives, and the effects they would have in the study area were individually assessed in light of how well they would meet the objectives of this strategy/environmental assessment as compared to alternative A, the no action alternative. Alternatives that did not meet the objectives were not analyzed further (see the “Alternatives Eliminated from Further Consideration” section in this chapter).

The strategy’s objectives are to:

- 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.
 - 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.

Tables 1, 2, and 3 summarize the elements of the alternatives being considered, while table 4 compares how each of the alternatives described in this chapter would meet the above-listed objectives. The “Environmental Consequences” chapter describes the effects on each impact topic under each of the alternatives, including the impact on recreational values and visitor experience. These impacts are summarized in table 5. These tables are at the end of this chapter.

ALTERNATIVES CONSIDERED BUT REJECTED

During the public scoping period the NPS received a number of suggestions for alternatives. As a result changes were made to the preliminary alternative concepts presented at public scoping.

LONG-TERM ORV MANAGEMENT PLAN

Some suggested alternatives or elements of alternatives received during public scoping or suggested during internal NPS scoping have been carried forward for consideration as alternatives under the long-term ORV management plan/EIS planning process rather than being included as fully analyzed alternatives for this interim protected species management strategy/EA. These include:

- **Creating New Habitat.** The creation of new habitat outside of existing high use areas was not considered for this Strategy/EA due to the time constraints on the strategy. Creation of new habitat would be a longer-term process than the scope of this strategy.
- **Escort Program.** In 2005, a 0.1-mile “pass through only” section of the ORV corridor at Bodie Island spit was allowed to reduce disturbance to piping plovers foraging at ephemeral pools close to the original corridor boundary. The corridor was patrolled by seashore rangers during daylight hours only, and ORV use was allowed after dark without rangers present. Pedestrians were not allowed in the pass-through zone. At Cape Point, a resource closure was created around a complex of ephemeral pools to protect an American oystercatcher brood (the closure extended to approximately 50 feet from the edge of the pools). This closure was later used by a piping plover brood. At hatching, an additional 0.05 miles between the Cape Point closure and the nest site was temporarily closed to ORVs to allow the brood safe passage to Cape Point where it was believed the brood would forage. This was reopened when the brood established itself at Cape Point. Public access to the eastern side of Cape Point was restricted after the piping plover brood moved to the eastern side of the ephemeral pool area. At Hatteras Spit, ORV traffic was only permitted in the ORV corridor once per hour in convoys escorted by bird monitors, to reduce the risk of mortality to an American oystercatcher brood and to reduce disturbance to an incubating plover nest. ORVs were permitted to park at the tip of the spit, west of the escort corridor. The spit was closed to recreation at night. Once the piping plover eggs hatched, Hatteras Spit was closed to ORV traffic until the chicks fledged.

During internal and public scoping, an alternative to provide a revised escort program was originally proposed. Upon further analysis, this alternative was dismissed as a feasible alternative for the implementation of a protected species management strategy. Although some version of this alternative may be applicable to the long-term ORV management plan/EIS, it was determined that the available funding and staffing levels for the interim protected species management strategy/EA would not be sufficient to implement such an alternative at this time.

- **Closing Areas in Front of Villages for Longer Time Period.** This is not applicable to the Interim Protected Species Management Strategy/EA but would be considered under the long-term ORV management plan/EIS.
- **Regulating Number of Vehicles on Beach.** This is not applicable to the Interim Protected Species Management Strategy/EA but would be considered under the long-term ORV management plan/EIS.
- **Establishing Beach Shuttles.** This is not applicable to the Interim Protected Species Management Strategy/EA but would be considered under the long-term ORV management plan/EIS.

CAPTIVE REARING OF PIPING PLOVERS AND TURTLES

Wildlife managers use captive breeding/rearing of threatened/ endangered species to provide an opportunity to restore populations where direct translocation may risk the persistence of the donor population (Gilpin and Soule 1986), as a last resort in cases (e.g., California condor) where most or all of the entire remaining wild population are brought to a captive breeding facility with the goal of avoiding extinction and breeding enough individuals for eventual reintroduction into the wild (Gilpin and Soule 1986). The Kemp's ridley sea turtle hatchery at Padre Island National Seashore is an example of a last resort captive rearing facility used to restore a population. None of the above situations applies to piping plover or nesting loggerhead, leatherback or green sea turtles at Cape Hatteras National Seashore.

NEST RELOCATION FOR BIRDS AND TURTLES

During the public scoping it was suggested to relocate nests to areas of the beach already closed to ORV use as well as relocating nests to compact areas to observe and control. In addition, it was suggested that the NPS relocate seabeach amaranth to Pea Island National Wildlife Refuge or other areas. These alternatives have been considered but are not carried forward as discussed below.

BIRDS

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

TURTLES

Individual Nest Relocation

Turtles do not face the same nest abandonment issues as those described for birds. Parental investment in the young ends with the laying and burying of eggs. However, the eggs, subsequent hatchlings, and overall species may face additional problems related to nest relocation. Studies indicate that the determination of the hatchling sex ratio depends on the temperature at which the eggs incubate. Changes in these temperatures due to moving eggs may result in changes to the sex ratio, having implications for the species as a whole. In addition, handling eggs can result in increased hatch failure. When relocating nests, there is always a risk of disrupting the membranes inside the egg, which can kill the embryo. Typically nest relocation is seen as part of an attempt to keep the species from going extinct, whereas, allowing for natural breeding and nesting is the ideal option whenever available. Currently in North Carolina, the state permits sea turtle nest relocations for research or when there is an imminent threat and potential loss of the nest due to erosion and/or frequent flooding, but not to accommodate recreational uses. Nests in some states may also be moved to avoid damage from contemporaneous beach nourishment or in highly developed urban areas (e.g., along some urban areas of Florida's Atlantic coast). Consequently routine relocation of all nests laid in areas open to ORV driving has been rejected from further analysis. However, relocation of an individual nest for which no alternative route or bypass would be available at hatching to continue vehicle access to a spit or Cape Point, if allowed by the State of North Carolina in the park's permit, is analyzed as an element of alternative D.

Turtle Hatcheries

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

These species are all currently listed pursuant to the Endangered Species Act. Any actions that would increase the likelihood of reduced productivity and species decline would frustrate the purpose of the Act.

SEABEACH AMARANTH

The suggestion was made to move all the seabeach amaranth in the seashore to Pea Island National Wildlife Refuge. This is inconsistent with section 4.4.2.1 of the NPS *Management Policies 2001*, which says that NPS actions that remove plants and animals will be management to prevent them from interfering broadly with

- Natural habitats, natural abundances, and natural distributions of native species and natural processes;
- Rare, threatened, and endangered plant or animal species or their critical habitats;
- Scientific study, interpretation, environmental education, appreciation of wildlife, or other public benefits;
- Opportunities to restore depressed populations of native species; or
- Breeding or spawning grounds of native species.

In addition management action that would deliberately extirpate a native species such as seabeach amaranth which is uniquely adapted to the beach environment from the seashore is inconsistent with the seashore’s enabling legislation and with the responsibilities of the NPS as stated in the Organic Act and the seashore’s responsibilities under the Endangered Species Act to protect the ecosystems upon which endangered and threatened species depend.

NO SPECIES CLOSURES IN THE SUMMER

During the public meeting it was suggested that an alternative include no species closures in the summer. This action would result in the entire seashore populations of Endangered Species Act-listed species and Migratory Bird Treaty Act-protected species being subject to increased rates of disturbance and mortality. Breeding is essential for a species to perpetuate itself through time and typically occurs in spring and summer. For example, the piping plover breeding season begins in March and April and extends through August, when most of the newly hatched chicks have fledged. Loggerhead sea turtles mate during late March through early June, with nesting occurring throughout the summer. Similarly leatherback sea turtles nest from February through July; whereas the green sea turtle nests from June through November. Failure to adequately protect breeding individuals, nests, and young using measures such as closures would result in further species decline. In addition, any unauthorized harm, injury, or mortality of

Endangered Species Act-protected species would result in a violation of federal law, potential fines, and other criminal charges. For the reasons identified above, this element has been considered but eliminated from further analysis.

OPEN CLOSED AREAS AFTER BREEDING SEASON IS OVER

It was also suggested that any closed areas should be reopened after the breeding season ends. Closed areas would likely be reopened after the breeding season if they do not provide important migrating and wintering habitat for seashore populations of protected species. Therefore some areas may be reopened but automatically opening all closed areas after breeding season is over would be inconsistent with the seashore's responsibility under various statutes, including its enabling legislation and the NPS Organic Act and the NPS *Management Policies 2001*, section 4.4.2.3.

NO PRENESTING CLOSURES FOR AMERICAN OYSTERCATCHERS AND COLONIAL WATERBIRDS

Prenesting closures are needed in areas previously used for nesting to allow the birds a chance to begin reproductive behavior. At this point in the breeding cycle, these birds are very susceptible to human disturbance, which may cause them to abandon those areas where they would be most likely to nest successfully.

ROUND THE CLOCK ENFORCEMENT

The seashore has no source of funding to provide for round-the-clock enforcement in all areas at all times. This suggested level of enforcement is not the norm for any national seashore. The action alternatives provide for increased outreach and education to help improve voluntary compliance and for the seashore to hire the additional law enforcement rangers in its already approved staffing plan to provide for better enforcement than under alternative A.

GIVE PREFERRED STATUS TO HUMAN VISITORS

The NPS has a dual mission to protect park natural and cultural resources and to provide for visitor enjoyment. The courts have held that, in the case of conflict, resource conservation must be predominant (refer to "Guiding Laws, Regulations, and Policies" in the previous chapter). The seashore believes that it can both conserve seashore resources and provide for visitor enjoyment.

MOVE HATCHED CHICKS TO PEA ISLAND NATIONAL WILDLIFE REFUGE

This conflicts with NPS responsibilities under the Endangered Species Act, Migratory Bird Treaty Act, and NPS Organic Act [see discussion above] and the NPS management policies. This is not a feasible alternative as the chicks must remain with their parents until they fledge for foraging and protection. Shorebirds and their chicks are an important component of the unique flora and fauna of the seashore and removing them would not meet the objectives of the strategy/EA.

FENCE CHICKS AWAY FROM THE ORV CORRIDOR

Unfledged chicks of any species need access to the intertidal zone and moist substrate habitat for foraging. Fencing chicks away from these areas would essential prevent them from eating; therefore, this was not considered a reasonable alternative.

DISCOURAGE NESTING

Allow activities that discourage nesting in low lying areas subject to overwash, including discontinuing the 150-foot corridor implemented in the inlet areas and south beach and discontinuing the practice of closing beaches less than 100-feet wide.

These areas are important for wildlife activities such as foraging. Activities that would discourage nesting would discourage other wildlife activities as well. Moreover some flooding can be tolerated by nesting species.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

In addition to identifying the preferred alternative, the NPS has also identified 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. After completing the environmental impact analysis, the NPS identified alternative B as the environmentally preferred alternative in this EA because it best meets the definition established by the U.S. Council on Environmental Quality.

TABLE 1: ALTERNATIVES ELEMENTS SUMMARY—SPECIES OBSERVATION

| Activity | 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) |
|---|--|--|---|--|
| Piping plover (PIPL), American oystercatcher (AMOY), colonial waterbird (CWB), Wilson's plover (WIPL), and red knot (REKN)¹ | | | | |
| Survey Time and Frequency PRE-Nesting Closure Areas | AMOY: March 25 Survey recent (past 3 seasons) breeding areas and potential new habitat for AMOY 3 times per week (every other day). PIPL/WIPL: April 1 Survey recent (past 3 seasons) breeding areas and potential new habitat for PIPL and WIPL (during PIPL observation) 3 times per week. CWB: May 1 Survey recent (past 3 seasons) breeding areas and potential new habitat for CWB times per week. | All Species: March 15 Survey recent breeding areas for all bird species 3 times per week. All Species: March 15-June 15 Survey historic (past 10 seasons) breeding areas outside recent areas and potential new habitat for PIPL, AMOY, and CWB 2 times per week March 15-May 1 increasing to 3 times per week May 1-June 15. | All Species: April 1 Survey recent breeding areas for all bird species 3 times per week. All Species: April 1-June 15 Survey historic (past 10 seasons) breeding areas outside recent areas and potential new habitat for PIPL, AMOY, and CWB 2 times per week April 1-May 1 increasing to 3 times per week May 1-June 15. | All Species: April 1 Survey historic (past 10 seasons) breeding areas for all bird species 3 times per week. All Species: March 15-June 15 Survey potential new habitat 2 times per week for PIPL (April 1-June 15), AMOY (March 15-June 15), and CWB (April 1-June 15) 2 times per week. |
| Survey Time and Frequency Life Stages | Courtship/Mating: If/when species observed exhibiting territorial or courtship behavior during surveys, search area for scrapes or eggs. If none found, revisit area every 2 to 7 days to observe. | Courtship/Mating: If/when species observed exhibiting territorial or courtship behavior in historic or new potential habitat during 2 consecutive surveys, increase observations 3 times per week. | Courtship/Mating: If/when species observed exhibiting territorial or courtship behavior in historic or new potential habitat during 2 consecutive surveys, increase observations 3 times per week. | Courtship/Mating: If/when species observed exhibiting territorial or courtship behavior during 2 consecutive surveys in historic habitat, observe 3 times per week. If scrapes or eggs observed, survey three times a week. Survey potential new habitat 2 times per week. |

¹ Red knot occurs at the seashore only during migration.

TABLE 1: ALTERNATIVES ELEMENTS SUMMARY—SPECIES OBSERVATION

| Activity | 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) |
|----------|--|---|---|--|
| | <p>Nesting: PIPL: Approach nests once a week to observe and record data. All Species: When eggs present, view from a distance every 1-2 days during incubation.</p> | <p>Nesting: PIPL: Approach nests once a week to observe and record data. CWB: Observe least tern nests at least 3 times per week June 5-June 20. Continue surveys after June 20 if a major change occurs due to storms. Minimize entering colony May-early June. All Species: When eggs present, view from a distance every 1-2 days during incubation.</p> | <p>Nesting: PIPL: Approach nests once a week to observe and record data. CWB: Observe least tern nests at least 3 times per week June 5-June 20. Continue surveys after June 20 if a major change occurs due to storms. Minimize entering colony May-early June. All Species: When eggs present, view from a distance every 1-2 days during incubation.</p> | <p>Nesting: PIPL: Approach nests once a week to observe and record data. CWB: Observe least tern nests at least 3 times per week June 5-June 20. Continue surveys after June 20 if a major change occurs due to storms. Minimize entering colony May-early June. All Species: When eggs present, view from a distance every 1-2 days during incubation.</p> |
| | <p>Unfledged Chicks: Observe PIPL, AMOY, and CWB at 1-2 day intervals and record data. Observations cease when all chicks have fledged. WIPL broods are not monitored.</p> | <p>Unfledged Chicks: PIPL: Observe brood at least once every 2 days. AMOY: When chicks are 1-2 days old, survey at least 2 times per week. CWB: After hatching begins (late June) visit twice – once two weeks after hatching and 8 to 10 days later, to count chicks. WIPL: After hatching, observe brood at 1-2 day intervals. All Species: All observations end when all chicks have fledged or September 30, whichever comes first.</p> | <p>Unfledged Chicks: PIPL: During first week, observe brood continually during daylight hours. If the closure is the same after first week, keep continuous observation. If the closure is enlarged, observe once daily. Include intermittent nighttime observations. AMOY: Observe brood once daily. CWB: Observe broods at 1-2 day intervals. WIPL: After hatching, observe brood at 1 to 2 day intervals. All Species: All observations end when all chicks have fledged or September 30, whichever comes first.</p> | <p>Unfledged Chicks: PIPL: During first week, observe continually during daylight hours. If the closure is the same after week 1, keep continuous observation. If the closure is enlarged, observe once daily. Include intermittent nighttime observations. AMOY: Observe once daily. CWB: Observe broods at 1-2 day intervals and record data. WIPL: After hatching, observe brood at 1 to 2 day intervals. All Species: When broods are mobile, provide more frequent observation and enforcement presence. All observations end when all chicks have fledged.</p> |

TABLE 1: ALTERNATIVES ELEMENTS SUMMARY—SPECIES OBSERVATION

| Activity | 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) |
|-----------------------|---|--|---|---|
| | Non breeding/wintering: PIPL: Survey and reconfigure closures for wintering PIPL during Fall months. AMOY, CWB, WIPL, and REKN: Winter/Non-breeding habitat not surveyed. | Non breeding/wintering: PIPL, AMOY, WIPL, and REKN: Follow observations protocols for wintering PIPL and other shorebirds, being developed by NPS Inventory and Monitoring Program. Observe Bodie Island Spit, Cape Point and South Beach, Hatteras Spit, North Ocracoke, and South Ocracoke at least 3 times per week July 1 - May 30. CWB: Survey at least twice during late July - late September. Survey Bodie Island south spit, Green Island and north end of Pea Island, Hatteras Island (from Cape Point southwest to Hatteras Spit) and Ocracoke Island 3 - 5 times. | Non breeding/wintering: PIPL/AMOY: July 15 - May 15 Observe 2 - 3 times per week. CWB: August 1 - September 30 Observe 2 - 3 times per week. WIPL and REKN: Survey following observations protocols for wintering PIPL and other shorebirds, being developed by NPS Inventory and Monitoring Program. | Non breeding/wintering: PIPL/AMOY: July 15 - May 15 Observe 2 - 3 times per week. CWB: August 1 - September 30 Observe 2 - 3 times per week. WIPL and REKN: Survey following observations protocols for wintering PIPL and other shorebirds, being developed by NPS Inventory and Monitoring Program. |
| Data Collected | Record behavior of adults and presence of predators. | Use GPS to document breeding areas and nest locations. Record presence and abundance of birds. Record locations on a map where charging and/or other territorial/courtship behavior are observed with the date of observation. During nesting, record behavior of adults and presence of predators. Collect data on nest distance from high tide line, habitat, description of | Use GPS to document breeding areas and nest locations. Record presence and abundance of birds. Use GPS to document breeding areas and nest locations. Record presence and abundance of pre- nesting birds. Record locations where territorial/courtship behavior occurs. | Use GPS to document breeding areas and nest locations. Record presence and abundance of birds. Use GPS to document breeding areas and nest locations. Record presence and abundance of pre-nesting birds. Record locations where territorial/courtship behavior occurs |

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| Activity | 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) |
|----------------------------------|--|--|--|--|
| | | <p>substrate, number of eggs, status of the nest (laying, incubating, lost, abandoned, hatching, hatched), number of adults, presence of potential predator, human, or ORV tracks within 90-ft of nest, evidence of potential predator trails within 30-ft of the nest, and suspected causes, date and time of nest check of egg or nestling loss, and detailed description of area if nest is lost.</p> <p>Record observations of chicks (i.e., location of brood, number of chicks, brood behavior, presence and behavior or adult birds, etc.).</p> | | |
| Sea Turtles | | | | |
| Survey Time and Frequency | <p>June 1 - August 31</p> <p>Conduct daily morning surveys for crawls and nests by ATV and some ORV on all beaches. Once light filter fence erected, nests monitored daily for signs of hatchling emergence.</p> | <p>May 15 - August 31</p> <p>Conduct daily morning surveys for crawls and nests by ATV and some ORV on all beaches prior to onset of heavy public ORV use.</p> <p>Daily surveys for nests end August 31; nest observations stop when all nests have hatched.</p> <p>Once light filter fence erected, nests monitored daily for signs of hatchling emergence.</p> | <p>May 15 - August 31</p> <p>Conduct daily morning surveys for crawls and nests by ATV and some ORV on all beaches prior to onset of heavy public ORV use.</p> <p>Daily surveys for nests end August 31; nest observations stop when all nests have hatched.</p> <p>Once light filter fence erected, nests monitored daily for signs of hatchling emergence.</p> | <p>May 15 - August 31</p> <p>Conduct daily morning surveys for crawls and nests by ATV and some ORV on all beaches prior to onset of heavy public ORV use.</p> <p>Daily surveys for nests end August 31; nest observations stop when all nests have hatched.</p> <p>Once light filter fence erected, nests monitored daily for signs of hatchling emergence.</p> |
| Data Collected | <p>Follow NCWRC Handbook record:</p> <p>Turtle species</p> | <p>Follow NCWRC Handbook record:</p> <p>Turtle species</p> | <p>Follow NCWRC Handbook record:</p> <p>Turtle species</p> <p>Nest vs. false crawl</p> | <p>Follow NCWRC Handbook record:</p> <p>Turtle species</p> |

TABLE 1: ALTERNATIVES ELEMENTS SUMMARY—SPECIES OBSERVATION

| Activity | 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) |
|--------------------------------------|---|--|---|--|
| | Nest vs. false crawl Location If eggs present If nest needs to be relocated and, if so, where Necessary protective measures for nest and/or hatchlings Information regarding any post hatching nest excavation and analysis All nests examined after hatching to determine productivity rates. Nests excavated at a minimum of 72 hours after hatching event. In cases where hatching events or dates were unknown, nest cavities unearthed 80-90 days after the lay date. | Nest vs. false crawl Location If eggs present If nest needs to be relocated and, if so, where Necessary protective measures for nest and/or hatchlings Information regarding any post hatching nest excavation and analysis All nests examined after hatching to determine productivity rates. Nests excavated at a minimum of 72 hours after hatching event. In cases where hatching events or dates were unknown, nest cavities unearthed 80-90 days after the lay date. | Location If eggs present If nest needs to be relocated and, if so, where Necessary protective measures for nest and/or hatchlings Information regarding any post hatching nest excavation and analysis All nests examined after hatching to determine productivity rates. Nests excavated at a minimum of 72 hours after hatching event. In cases where hatching events or dates were unknown, nest cavities unearthed 80-90 days after the lay date. | Nest vs. false crawl Location If eggs present If nest needs to be relocated and, if so, where Necessary protective measures for nest and/or hatchlings Information regarding any post hatching nest excavation and analysis All nests examined after hatching to determine productivity rates. Nests excavated at a minimum of 72 hours after hatching event. In cases where hatching events or dates were unknown, nest cavities unearthed 80-90 days after the lay date. |
| Other | -- | Staff avoid driving over wrack line during surveys. | Staff avoid driving over wrack line during surveys. | Staff avoid driving over wrack line during surveys. |
| Seabeach Amaranth | | | | |
| Survey Time and Frequency | During other species surveys | April 15 Survey all potential habitat identified and defined as historic and extant populations within the past 10 years 1-2 times per week. June 1 Survey for new seedlings or juvenile plants. August Annual survey of potential habitat (some bird closure areas may not be surveyed due | April 1 During bird and turtle surveys, note any seedlings or plants and record location. April 15 All potential habitat identified and defined as historic and extant populations within the past 10 years. August Annual survey of potential habitat (some bird closure areas may not be surveyed due to potential to | April 1 During bird and turtle surveys, note any seedlings or plants and record location. April 15 All potential habitat identified and defined as historic and extant populations within the past 10 years. August Annual survey of potential habitat (some bird closure areas may not be surveyed due to |

TABLE 1: ALTERNATIVES ELEMENTS SUMMARY—SPECIES OBSERVATION

| Activity | 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) |
|-----------------------|---|---|--|---|
| | | to potential to disturb nesting birds). Late September Survey to examine survivorship and seed production. April – September Prior to opening any species closure or identifying alternate ORV corridors, survey for seedling/plants. Observations would cease when all plants are dead. | disturb nesting birds). April – September Prior to opening any species closure or identifying alternate ORV corridors, survey for seedling/plants. Observations would cease when all plants are dead. | potential to disturb nesting birds). April – September Prior to opening any species closure or identifying alternate ORV corridors, survey for seedling/plants. Observations would cease when all plants are dead. |
| Data Collected | Presence of plants and/or seedlings. | Record location of all individual plants or plant clusters using a GPS with sub-meter accuracy and note if the plant is located in an area open or closed to recreational use. | Record location of all individual plants or plant clusters using a GPS with sub-meter accuracy and note if the plant is located in an area open or closed to recreational use. | Record location of all individual plants or plant clusters using a GPS with sub-meter accuracy and note if the plant is located in an area open or closed to recreational use. |

TABLE 1: ALTERNATIVES ELEMENTS SUMMARY—SPECIES OBSERVATION

| Activity | 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) |
|------------------------------------|---|---|---|---|
| Essential Vehicle Use (EVU) | | | | |
| Bird Surveys | -- | <p>PIPL: If/when a courting pair or a set of courtship scrapes is located; vehicles used during surveying should not pass through the prospective territory until the nest is discovered. Vehicle should be parked at least 600 ft from the suspected center of territorial activity (farther away if the area of scraping is more extensive) and observations of that area conducted on foot. Once a nest is discovered, vehicle use may resume until the nest is lost and the pair begins attempting to renest, or the nest hatches. In case of hatch, if an ORV is used it should be parked at least 300 ft from the last known brood location, and the rest of the observations conducted on foot until the brood is at least 35 days old.</p> <p>CWB: In the spring (Apr 15 - late May) and fall migration (Aug – Sept 30) periods, all vehicles and personnel (NPS, researchers) should try to avoid tips of spits and inlet areas where colonial waterbirds often stage or court (spring migration).</p> | <p>PIPL: If/when a courting pair or a set of courtship scrapes is located; vehicles used during surveying should not pass through the prospective territory until the nest is discovered. Vehicle should be parked at least 600 ft from the suspected center of territorial activity (farther away if the area of scraping is more extensive) and observations of that area conducted on foot. Once a nest is discovered, vehicle use may resume until the nest is lost and the pair begins attempting to renest, or the nest hatches. In case of hatch, if an ORV is used it should be parked at least 300 ft from the last known brood location, and the rest of the observations conducted on foot until the brood is at least 35 days old.</p> <p>CWB: In the spring (Apr 15 - late May) and fall migration (Aug – Sept 30) periods, all vehicles and personnel (NPS, researchers) should try to avoid tips of spits and inlet areas where colonial waterbirds often stage or court (spring migration).</p> | <p>PIPL: If/when a courting pair or a set of courtship scrapes is located; vehicles used during surveying should not pass through the prospective territory until the nest is discovered. Vehicle should be parked at least 600 ft from the suspected center of territorial activity (farther away if the area of scraping is more extensive) and observations of that area conducted on foot. Once a nest is discovered, vehicle use may resume until the nest is lost and the pair begins attempting to renest, or the nest hatches. In case of hatch, if an ORV is used it should be parked at least 300 ft from the last known brood location, and the rest of the observations conducted on foot until the brood is at least 35 days old.</p> <p>CWB: In the spring (Apr 15 - late May) and fall migration (Aug – Sept 30) periods, all vehicles and personnel (NPS, researchers) should try to avoid tips of spits and inlet areas where colonial waterbirds often stage or court (spring migration).</p> |

TABLE 2: ALTERNATIVES ELEMENTS SUMMARY—SPECIES MANAGEMENT

| Activity | 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) |
|--|---|---|--|--|
| Piping plover (PIPL), American oystercatcher (AMOY), colonial waterbirds (CWB), Wilson's plover (WIPL), and red knot | | | | |
| Closures/ Buffers | <p>Pre-Nesting: AMOY: March 25 Closures are activated if a territory is established or a nest located. PIPL: first week in April Close recent breeding areas to the public by posting symbolic fencing. WIPL managed when they occur in an existing PIPL closure. CWB: May 1 Closures are activated if a territory is established or a nest located. All species: All closures subject to Superintendent's approval. Closures removed when areas have been abandoned for a two week period.</p> | <p>Pre-Nesting: PIPL: Year-round Close historic breeding areas by posting symbolic fencing including all potential nesting, roosting, and foraging habitat including Bodie Island flats, Cape Point, South Beach, Hatteras Spit, North Ocracoke, South Ocracoke. AMOY: March 15 Close recent breeding areas (upper beach, not to shoreline) by posting symbolic fencing including Bodie Island flats, Cape Point, South Beach, Hatteras Inlet, and Ocracoke Island (ramp 59 - ramp 72). CWB: April 15 - September 30 Close historic breeding areas by posting symbolic fencing including all potential breeding, roosting, and foraging habitat at Bodie Island Spit, Green Island, Cape Point, South Beach, Hatteras Spit, and North (inlet area) and South Ocracoke. WIPL: April 1 Close recent breeding areas using symbolic fencing. All species: A pedestrian corridor would be maintained</p> | <p>Pre-Nesting: AMOY: March 15 Close recent breeding areas (upper beach, not to shoreline) by posting symbolic fencing including Bodie Island flats, Cape Point, South Beach, Hatteras Inlet, and Ocracoke Island (ramp 59 - ramp 72). PIPL: April 1 Close historic breeding areas by posting symbolic fencing including all potential nesting, roosting, and foraging habitat including Bodie Island Spit, Cape Point, South Beach, Hatteras Spit, North Ocracoke, South Ocracoke. CWB: April 15 - September 30 Close historic breeding areas by posting symbolic fencing including all potential breeding, roosting, and foraging habitat at Bodie Island Spit, Green Island, Cape Point, South Beach, Hatteras Spit, and North (inlet area) and South Ocracoke. WIPL: April 1 Close recent breeding areas using symbolic fencing. All species: Closures removed</p> | <p>Pre-Nesting: AMOY: March 15 – September 30 Close recent breeding areas by posting symbolic fencing. PIPL, CWB, WIPL: April 1- September 30 Close recent breeding areas by posting symbolic fencing. All species: Closures removed if no bird activity seen by Jul 15 or when area has been abandoned for a 2 week period, whichever comes later. Pedestrian corridor would be maintained outside of symbolically fenced area. A 100-ft wide ORV and pedestrian corridor would be designated. Outside of ORV corridor, pedestrian access to breeding areas would be prohibited beyond the symbolic fencing. Where possible, delineate ORV corridor with posts above the wrack line and below the dune line with signs asking visitors to stay off. In areas without a well-defined wrack line, the corridor would be delineated only with posts placed up to 100 feet above the high tide line. In areas of reduced corridor width (i.e., narrower than 100 feet), a reduced speed limit of 5 mph would be posted.</p> |

TABLE 2: ALTERNATIVES ELEMENTS SUMMARY—SPECIES MANAGEMENT

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| | | outside of symbolically fenced areas. Closures established for species other than PIPL removed if no bird activity is seen in the area during the observations period, by Jul 15 or until area abandoned for two weeks, whichever is later. | if no bird activity seen by July 15 or when area has been abandoned for a 2 week period, whichever comes later. A 150 ft wide ORV and pedestrian corridor would be maintained along oceanside shoreline (excluding southwest side of Cape Point) for all species and, if infeasible, the seashore would identify an alternate ORV route. If an alternate route is unavailable, area would be closed to ORV access. Pedestrian corridor would be maintained outside of symbolically fenced area. | |
| | Courtship/Mating: All species: If territorial or courting birds observed outside of existing closures, based on bird behavior and suitable habitat, buffers expanded to accommodate the birds. | Courtship/Mating: PIPL: If courtship and/or copulations observed outside of existing closures, post and symbolically fence the area of activity and associated suitable habitat, establishing a 150 foot buffer. CWB/WIPL: If courtship and/or copulations observed outside of existing closures during two consecutive survey days, post with symbolic fencing, establishing a 150 foot buffer excluding all recreation activity (only persons engaged in observations, management, or research activities would enter posted areas). Closures would | Courtship/Mating: PIPL: If courtship and/or copulations observed outside of existing closures, post and symbolically fence the area of activity and associated suitable habitat, establishing a 150 foot buffer. CWB/WIPL: If courtship and/or copulations observed outside of existing closures during two consecutive survey days, post with symbolic fencing, establishing a 150 foot buffer excluding all recreation activity (only persons engaged in observations, management, or research activities would enter posted areas). Closures would | Courtship/Mating: All species: If courtship and/or copulations observed outside of existing closures, post and symbolically fence the area of activity and associated suitable habitat, establishing a 150 foot buffer. If/when additional closures are created around courtship/mating areas, adjust the ORV corridor whenever possible to allow vehicle passage (see bypass criteria, table 3). Allow management to be responsive to individual bird behavior when determining adequacy of closure size. Pedestrian corridor maintained outside of symbolically fenced area. |

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| | | <p>occur along upper beach, not to shoreline.</p> <p>AMOY: If courtship and/or copulations observed outside of existing closures on two consecutive survey days, or if banding data exists that indicates return of a breeding pair to a former nest site, nesting area would be posted by symbolic fencing, establishing a 300 foot buffer unless staff observations indicate that the buffer needs to be larger due to bird behavior (not to exceed 600 feet).</p> <p>All species: PIPL pre-nesting closures at Bodie Island Spit, Cape Point, South Beach, Hatteras Spit, North Ocracoke, South Ocracoke remain year-round. Pedestrian corridor maintained outside of symbolically fenced area.</p> | <p>occur along upper beach, not to shoreline.</p> <p>AMOY: If courtship and/or copulations observed outside of existing closures on two consecutive survey days, or if banding data exists that indicates return of a breeding pair to a former nest site, nesting area would be posted by symbolic fencing, establishing a 300 foot buffer unless staff observations indicate that the buffer needs to be larger due to bird behavior (not to exceed 600 feet).</p> <p>All species: If/when additional recreation closures are created around courtship/mating areas, adjust the ORV corridor whenever possible to allow vehicle passage. Allow management to be responsive to individual bird behavior when determining closure size. Pedestrian corridor maintained outside of symbolically fenced area.</p> | |
| | <p>Nesting:</p> <p>PIPL, CWB, WIPL: 150 ft buffer/closure around nests or colony. AMOY: Buffer/closure established based on adult's reaction to human disturbance.</p> | <p>Nesting:</p> <p>PIPL: If nest occurs outside of an existing closure, provide 150 feet buffer/closure. Reevaluate buffers/closures and expand in 150 ft increments in cases where observations indicates the standard closure zones are</p> | <p>Nesting:</p> <p>PIPL/WIPL: Establish 150 ft. buffer/closure around PIPL nests occurring outside existing closures. Expand closures using flexible expansions in up to 150 foot increments dependent on observed bird</p> | <p>Nesting:</p> <p>PIPL/WIPL: Establish 150 ft. buffer/closure around PIPL nests occurring outside existing closures. Expand closures using flexible expansions in 150 foot increments dependent on observed bird behavior. AMOY/CWB: Establish a 300-450 ft</p> |

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| | <p>Closures vary in size dependant on best professional judgment. All species: If nest is lost/abandoned, buffers/closures remain in place 2-3 weeks.</p> | <p>deemed inadequate to protect incubating adults and/or unfledged chicks from harm or disturbance.</p> <p>If the lay-date of the last egg is known, expand the closure area at day 26 to at least 600 feet around nests in anticipation of hatching. Within one week of the expected hatch date, prohibit ORV in PIPL habitat within 3000 ft of the nest. Reduce buffer zone back to 150 ft 1 week after nest is lost if renesting attempts are not observed. Such modifications should be made only with the consent of the USFWS and NCWRC, on a case by case basis.</p> <p>AMOY: 35 days after nesting observed, establish a 600 foot buffer around the nest. Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones around nests and chicks.</p> <p>CWB: When nests observed with eggs establish a 600 foot buffer from nests at outside edge of colony. If/when recreation closures are created around nests outside of existing PIPL closures, adjust the ORV corridor whenever possible to</p> | <p>behavior.</p> <p>AMOY: 35 days after nesting observed, establish a 450 ft closure from the nest. If/when closures are created around nests outside of existing closures, adjust the ORV corridor whenever possible to allow vehicle passage. Staff will be responsive to individuality in bird behavior when determining adequate size of closure zones around nests and chicks.</p> <p>CWB: Provide 300 ft buffer from nests at outside edge of colony (if only least terns in colony); 600 ft from outside edge of colony, if other tern species or black skimmer nests in colony.</p> <p>All species: If nest is lost, buffers remain in place 2-3 weeks after nest is lost to determine if pair will renest, if no other species nesting in area.</p> | <p>buffer, while maintaining ORV corridor. If the buffer and the corridor overlap each other, then staff will look for an alternate ORV route. If none is available, then a bypass would be considered (see bypass criteria) through the area only if it can be used without disturbing nesting birds. Maintain a nest buffer of at least 150 ft from the ORV corridor which may increase depending on terrain and if disturbance is noted. Bypass creation for AMOY would be approached as a research opportunity to gather data useful for interim management and for the long-term ORV management plan to test for distance at which vehicle disturbance to nesting AMOY occurs.</p> <p>All species: If/when recreation closures are created around nests, adjust ORV corridor whenever possible to allow vehicle passage. Reduce width of ORV corridor if necessary. In areas in which the buffer zone would eliminate the ORV corridor, identify alternate ORV routes if available or provide a bypass (see bypass criteria) if possible. If adjustments are needed in corridor to keep access open, allow vehicles to cross wrack line at 60-90 degree angles. Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones around nests.</p> <p>If nest is lost, buffers remain in place 2-3 weeks after nest is lost to determine if</p> |

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| | | <p>allow vehicle passage. Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones around nests and chicks</p> <p>WIPL: Establish 150 foot buffer/closure around nest. Expand by 150 foot increments if flushing is observed.</p> <p>All species: If nest is lost, buffers remain in place 2-3 weeks after nest is lost to determine if pair will renest, if no other species nesting in area.</p> | | <p>pair will renest, if no other species nesting in area.</p> |
| | <p>Adult Foraging:</p> <p>PIPL: For foraging areas occurring outside of a closure, expand buffer to include foraging site, extending closure to soundside and inlet shoreline.</p> <p>CWB, AMOY, and WIPL: No additional buffers/closures.</p> | <p>Adult Foraging:</p> <p>PIPL/WIPL: For foraging areas occurring outside of a closure, expand buffer to include foraging site, extending closure to soundside and inlet shoreline.</p> <p>CWB/AMOY: No additional buffers/closures.</p> | <p>Adult Foraging:</p> <p>PIPL: For foraging areas occurring outside of a closure, expand buffer to include foraging site, extending closure to soundside and inlet shoreline.</p> <p>CWB, AMOY, and WIPL: No additional buffers/closures.</p> | <p>Adult Foraging:</p> <p>PIPL: For foraging areas occurring outside of a closure, expand buffer to include foraging site, extending closure to soundside and inlet shoreline.</p> <p>CWB, AMOY, and WIPL: No additional buffers/closures.</p> |
| | <p>Unfledged Chicks:</p> <p>PIPL: Establish 3,000 ft buffer on either side of nest from oceanside low water line to soundside.</p> <p>AMOY: Establish buffer around nests determined on a case</p> | <p>Unfledged Chicks:</p> <p>PIPL: Within 1 week of the expected hatch date of a nest, prohibit ORV in all plover habitat within 3000 ft of the nest. After hatch, the closed area should be 3000 ft on either side of the brood's center of</p> | <p>Unfledged Chicks:</p> <p>PIPL: Establish a 600-3000 ft buffer on either side of PIPL brood based on observed behavior. Identify alternate ORV routes, where available.</p> <p>AMOY: 600 ft buffer around broods for 35 days after</p> | <p>Unfledged Chicks:</p> <p>PIPL and WIPL: Establish a 600 ft.—3000 ft buffer on either side of brood based on observation of bird behavior and terrain conditions at site. Based on observed behavior, buffer area may require expansion to 3000 ft if initially established smaller. Based on</p> |

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| | <p>by case basis, as approved by the Superintendent.</p> <p>CWB: 150 ft closure around nests:</p> <p>WIPL: No buffers/closures.</p> | <p>activity. Maintain this protection until all chicks have fledged or are 35 days of age. 3000 ft buffer on either side of PIPL brood from oceanside low water line to soundside—Buffer moves with chicks (if outside of existing closures).</p> <p>AMOY: 600 ft buffer around broods for 35 days after hatching. Buffer moves with chicks. After hatching, and based on intensive observations of adult and nestling foraging behavior, the area between nest sites and foraging sites would be closed to recreation. AMOY chicks are considered fledged at 35 days of age.</p> <p>CWB: After hatching, and based on intensive observations of adult and nestling foraging behavior, establish a 600 ft buffer from colony during foraging. CWB chicks are considered fledged at 35 days of age.</p> <p>WIPL: 600 ft buffer around broods for 35 days after hatching. Buffer moves with chicks.</p> | <p>hatching. Buffer moves with chicks. After hatching, and based on intensive observations of adult and nestling foraging behavior, the area between nest sites and foraging sites would be closed to recreation. AMOY chicks are considered fledged at 35 days of age.</p> <p>CWB: 300 ft CWB from colony if only least terns present 600 ft CWB from colony if other terns or black skimmer present.</p> <p>WIPL: 600 ft buffer around broods for 35 days after hatching. Closure moves with chicks.</p> | <p>observed behavior (i.e., mobility of the brood) and the capability to continually observe mobility and behavior, buffer zone can be reduced after the first week to no less than 300 ft, but may require expansion up to 3000 ft. Buffer moves with chicks. Close bypass route at night if buffer zone, is less than 3000 ft.</p> <p>AMOY: 300 ft buffer zone when unfledged chicks present. Adjust buffer zone as needed if/when chicks are mobile.</p> <p>CWB: 300 ft CWB from colony if only least terns present¹ 600 ft CWB from colony if other terns or black skimmer present.</p> <p>For all species: If/when recreation closures are created around broods, adjust the ORV corridor whenever possible to allow vehicle passage). Reduce ORV corridor if necessary. In areas in which the buffer zone would eliminate the ORV corridor identify alternate ORV routes if available. If there are no alternate ORV routes, then if possible establish a bypass (see bypass criteria). Close beach to recreation access down to the waterline, if necessary to allow chicks access to foraging areas.</p> <p>Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones around broods.</p> <p>Reopen 100-ft wide ORV corridor in recent or current nesting areas after</p> |

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| | | | | chicks fledge. Areas outside of corridor, including the upper beach and wrack line remain available for protected species use. Re-establish 150 ft ORV corridor on October 1. |
| Non Breeding/ Wintering Closures | PIPL: Symbolic fencing remains in place until Nov 1 at Bodie, Hatteras, and Ocracoke Spit for migrating and wintering PIPL. Areas include soundside shoreline. Sites are reconfigured, and reduced for wintering PIPL in fall months. AMOY, CWB, WIPL, and REKN: Winter habitat not posted. | PIPL: Historic PIPL breeding areas closed to ORV access 24 h/day, year-round, see pre-nesting closures. AMOY: Active winter habitat posted with a 300 ft buffer. CWB/WIPL: Observe PIPL closure areas. REKN: Winter habitat not posted. | PIPL: February 25 – May 15 (spring migration) and July 15 – November 30 (fall migration), provide 150 ft buffer around interior and soundside spit habitat and interior and southside shoreline habitat of Cape Point from which all recreational use prohibited. Maintain an ORV corridor (oceanside) unless PIPL observed using area; then reduce ORV corridor if disturbance observed. Close overwash/blowout areas from soundside to oceanside ORV corridor with a 150 ft buffer on north and south side of the overwash/blowout. Reduce ORV corridor if disturbance is observed. December 01 – February 14 (wintering) provide 150 ft buffer around interior and soundside spit habitat and interior and southside shoreline of Cape Point from which ORV access prohibited (open to pedestrians). Maintain ORV oceanside corridors. AMOY: Active winter habitat | For all species: Suitable interior habitats at spits and at Cape Point closed year-round to all recreational users to provide for resting and foraging for all species. For example at present, such suitable habitats include ephemeral ponds and moist flats at Cape Point, Hatteras Spit, Ocracoke, and Bodie Island spit. Actual locations of suitable foraging and resting habitat may change periodically due to natural processes. After chicks fledge (all species), in areas where breeding and non breeding habitat overlap, open all shoreline at Cape Point and spits. |

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| | | | <p>posted with a 300 ft buffer.</p> <p>CWB and REKN: Winter habitat not posted.</p> <p>For all species: If/when recreation closures are created around wintering/migrating habitat, adjust the ORV corridor whenever possible to allow vehicle passage. Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones around areas. After October 31 (end of migration) open all shoreline at Cape Point and spits.</p> | |
| Sea Turtles | | | | |
| Nest Closures/ Buffers | <p>If nest found, establish 30 ft² buffer with symbolic fencing and signage around nest.</p> <p>50 days into incubation, closures expanded to the surf line. The width of the closure based on the type and level of use in the area of the beach where the nest was laid:</p> <ol style="list-style-type: none"> vehicle-free areas with little or no pedestrian traffic – 75 ft wide; villages or other areas with high levels of day use – 150 ft wide; areas with ORV traffic – 375 ft wide. | <p>If nest found, establish 30 ft² buffer with symbolic fencing and signage around nest.</p> <p>50 days into incubation, closures expanded to the surf line. The width of the closure based on the type and level of use in the area of the beach where the nest was laid:</p> <ol style="list-style-type: none"> vehicle-free areas with little or no pedestrian traffic – 75 ft wide; villages or other areas with high levels of day use – 150 ft wide; areas with ORV traffic – 375 ft wide. | <p>If nest found, establish 30 ft² buffer with symbolic fencing and signage around nest.</p> <p>50 days into incubation, closures expanded to the surf line. The width of the closure based on the type and level of use in the area of the beach where the nest was laid:</p> <ol style="list-style-type: none"> vehicle-free areas with little or no pedestrian traffic – 75 ft wide; villages or other areas with high levels of day use – 150 ft wide; areas with ORV traffic – 375 ft wide. | <p>Establish 30 ft² buffer with symbolic fencing and signage around nest.</p> <p>50 days into incubation, closures expanded to the surf line. The width of the closure based on the type and level of use in the area of the beach where the nest was laid:</p> <ol style="list-style-type: none"> vehicle-free areas with little or no pedestrian traffic – 75 ft wide; villages or other areas with high levels of day use – 150 ft wide; areas with ORV traffic – 375 ft wide. <p>Opposite the surf line on the upper end of the closure, the closed area expanded to a minimum 45 ft duneward from the nest. Traffic detours behind the nest area clearly marked with signs and</p> |

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| | <p>150 ft wide; c. areas with ORV traffic – 375 ft wide.</p> <p>Opposite the surf line on the upper end of the closure, the closed area expanded to a minimum 45 ft duneward from the nest. Traffic detours behind the nest area clearly marked with signs and reflective arrows.</p> <p>Where present within closure, vehicle tracks manually smoothed with rakes or a steel mat attached to an ATV, so as not to impede hatchlings attempting to reach the surf.</p> <p>Silt fence sometimes used behind nests nearing hatch dates to block light pollution from the villages and vehicles operating on the beach after dark.</p> | <p>Opposite the surf line on the upper end of the closure, the closed area expanded to a minimum 45 ft duneward from the nest. Traffic detours behind the nest area clearly marked with signs and reflective arrows.</p> <p>Where present within closure, vehicle tracks manually smoothed with rakes or a steel mat attached to an ATV, so as not to impede hatchlings attempting to reach the surf.</p> <p>Silt fence sometimes used behind nests nearing hatch dates to block light pollution from the villages and vehicles operating on the beach after dark.</p> <p>For all nests more than 50 days into incubation, in areas where recreation occurs expand the buffer zone to 600 ft.</p> | <p>Opposite the surf line on the upper end of the closure, the closed area expanded to a minimum 45 ft duneward from the nest. Traffic detours behind the nest area clearly marked with signs and reflective arrows.</p> <p>Where present within closure, vehicle tracks manually smoothed with rakes or a steel mat attached to an ATV, so as not to impede hatchlings attempting to reach the surf.</p> <p>Silt fence sometimes used behind nests nearing hatch dates to block light pollution from the villages and vehicles operating on the beach after dark.</p> | <p>nest area clearly marked with signs and reflective arrows.</p> <p>Where present within closure, vehicle tracks manually smoothed with rakes or a steel mat attached to an ATV, so as not to impede hatchlings attempting to reach the surf.</p> <p>Silt fence sometimes used behind nests nearing hatch dates to block light pollution from the villages and vehicles operating on the beach after dark.</p> |
| Nest Relocation | If nest determined to be imperiled by erosion or flooding, then relocate following NCWRC guidelines. | If nest determined to be imperiled by erosion or flooding, then relocate following NCWRC guidelines. | If nest determined to be imperiled by erosion or flooding, then relocate following NCWRC guidelines. | When a nest is found, staff assess its vulnerability to frequent erosion or frequent flooding, and/or if its location may have a direct impact on recreation access to beach spits and points when the nest and hatchling access to the sea is fenced. |

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| | | | | If the nest may impact recreational access and an alternate or bypass route (table 3) is not feasible, the nest would be relocated if permitted by NCWRC. If it is determined the nest would not be relocated for either reason, it would be immediately protected with a symbolic fence measuring 30 ft ² and signage. |
| Light Management | None.+ | Enact turtle friendly lighting regulations for all seashore structures. Encourage concessionaires to install turtle friendly lighting. Prohibit beach fires March 15 – November 15. Prohibit night driving 8:00 PM to 6:00 AM April – November 15 or until hatchlings from last known nest have emerged, whichever is later. | Enact turtle friendly lighting regulations for all seashore structures. Encourage concessionaires to install turtle friendly lighting. Prohibit beach fires May 15 – August 31. Prohibit night driving 10:00 PM to 5:00 AM May 15 – August 31 to avoid causing false crawls. | Enact turtle friendly lighting regulations for all seashore structures. Encourage concessionaires to install turtle friendly lighting. |

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| Research | None beyond existing observations and management. | Close segments of sea turtle nesting habitat to recreation Apr 1 - Nov 15 to determine the effect of management of human recreation on nesting rate, hatching success, sea-finding by hatchlings (prevalence of misorientation and trapping by obstacles), proportion of false crawls, presence of potential predators and their tracks or burrows (mammals, birds, and ghost crabs), and nest site characteristics (intertidal zone slope, backshore slope, % vegetation in the backshore, distance from nest to tide line, distance from nest to dune, sand grain size in intertidal zone and backshore). Support research efforts looking at the sex ratios of turtles. | Support research efforts looking at the sex ratios of turtles. | Support research efforts looking at the sex ratios of turtles. |
| Sea Beach Amaranth (SBA) | | | | |
| Buffers | No proactive management. If a plant/seedling is found outside an existing closure, 10 ft ² buffer would be placed around plant using bird signs to prevent trampling until the plant dies. | April 15 – November 30 Close all potential habitat (historic and extant populations within the last 10 years) to ORV traffic. This could include areas already closed for bird management. If a plant/seedling is found in an area open to recreation, the seashore would erect symbolic fencing with signage creating a | April 15 – November 30 Close all potential habitat (historic and extant populations within the last 10 years) to ORV traffic. This could include areas already closed for bird management. If a plant/seedling is found in an area open to recreation, the seashore would erect symbolic fencing with signage creating a | April 15 – November 30 If a plant/seedling is found outside of an existing closure, the seashore would erect symbolic fencing with signage creating a 30 ft ² buffer around the plant. If plants are located next to each other, the area would be expanded to create one enclosure protecting several plants. If a SBA is found during the survey prior to reopening a bird closure to ORV and/or pedestrian use, the seashore will |

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|----------------------------|--|--|---|---|
| | | <p>30 ft² buffer around the plant. If plants are located next to each other, the area would be expanded to create one enclosure protecting several plants.</p> <p>If a plant/seedling is found prior to reopening a bird closure to recreational use, the seashore would protect the SBA as described above and reopen the areas of the bird closure where no plants exist.</p> <p>All individuals of beach vitex found in the seashore would be eliminated, as this species grows in similar habitats and competes with SBA.</p> <p>Areas reopened if no plants are present by September 1. Where plants occur, the closed areas would be reopened after the plants have died.</p> | <p>30 ft² buffer around the plant. If plants are located next to each other, the area would be expanded to create one enclosure protecting several plants.</p> <p>If a SBA is found during the survey prior to reopening a bird closure to ORV and/or pedestrian use, the seashore will protect the SBA as described above and reopen the areas of the bird closure where no plants exist.</p> <p>All individuals of beach vitex found in the seashore would be eliminated, as this species grows in similar habitats and competes with SBA.</p> <p>Areas reopened if no plants are present by September 1. Where plants occur, the closed areas would be reopened after the plants have died.</p> | <p>protect the SBA as described above and reopen the areas of the bird closure where no plants exist.</p> <p>All individuals of beach vitex found in the seashore would be eliminated, as this species grows in similar habitats and competes with SBA.</p> <p>Areas reopened if no plants are present by September 1. Where plants occur, the closed areas would be reopened after the plants have died.</p> |
| General | | | | |
| Predator Management | <p>Late May - mid-July PIPL: Predator exclosures erected when nest found with 3 or 4 eggs.</p> <p>USDA trappers would target red and gray fox for removal.</p> <p>AMOY/CWB: Nests surveyed to count eggs</p> | <p>Late May - mid-July PIPL: Predator exclosures erected when nest found with 3 or 4 eggs.</p> <p>USDA trappers would target red and gray fox for removal.</p> <p>AMOY/CWB: Nests surveyed to count eggs and look for predator tracks.</p> <p>Turtles: Predator exclosures</p> | <p>Late May - mid-July PIPL: Predator exclosures erected when nest found with 3 or 4 eggs.</p> <p>USDA trappers would target red and gray fox for removal.</p> <p>AMOY/CWB: Nests surveyed to count eggs and look for predator tracks.</p> <p>Turtle: Predator exclosures</p> | <p>Late May - mid-July PIPL: Predator exclosures erected when nest found with 3 or 4 eggs.</p> <p>USDA trappers would target red and gray fox for removal.</p> <p>AMOY/CWB: Nests surveyed to count eggs and look for predator tracks.</p> <p>Turtle: Predator exclosures placed over nests if predator tracks or nest predation is evident.</p> |

TABLE 2: ALTERNATIVES ELEMENTS SUMMARY—SPECIES MANAGEMENT

| Activity | 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) |
|------------------------------|---|---|---|---|
| | and look for predator tracks. Turtle: Predator exclosures placed over nests if predator tracks or nest predation is evident. SBA: No predator management. | placed over nests if predator tracks or nest predation is evident. SBA: Locate and eliminate all beach vitex. Protect seabeach amaranth from webworm depredation by picking off the caterpillars before they metamorphose. | placed over nests if predator tracks or nest predation is evident. SBA: No predator management. All Species: Predator management would be the same as alternative A until a Predator Management Plan can be drafted, approved, and implemented. | SBA: No predator management. All Species: Predator management would be the same as alternative A until a Predator Management Plan can be drafted, approved, and implemented. |
| Conservation Measures | -- | -- | -- | See description of alternative D. |
| Costs | \$388,367 | \$719,944 | \$683,084 | \$676,971 |

¹ Management, Observations, and Protection Protocols for Colonial Nesting Waterbirds at Cape Hatteras National Seashore, North Carolina, p. 13.

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|---------------------------------|--|---|---|---|
| ORV | | | | |
| Pre-Nesting Closures | <p>March 25 Close to ORV recent (past 3 seasons) AMOY breeding areas with symbolic fencing upon Superintendent's approval when a territory is established or a nest is located.</p> <p>April 1 Close to ORV recent (past 3 seasons) PIPL breeding areas with symbolic fencing upon Superintendent's approval.</p> <p>May 1 Close recent (past 3 seasons) CWB breeding areas with symbolic fencing upon Superintendent's approval when a territory is established or a nest is located.</p> <p>Closures removed when areas have been abandoned for a two week period.</p> | <p>Year-round No ORV access at Bodie Island Spit, Green Island, Cape Point, South Beach, and Hatteras Spit, and North Ocracoke (inlet area) and South Ocracoke to protect potential PIPL nesting, roosting, and foraging habitat.</p> <p>March 15 Close recent (past 3 seasons) AMOY breeding areas (upper beach, not to shoreline) to ORV with symbolic fencing.</p> <p>April 1 Close recent (past 3 seasons) WIPL breeding areas (upper beach, not to shoreline) to ORV with symbolic fencing.</p> <p>April 15 – September 30 Close historic (past 10 seasons) CWB breeding areas to ORV with symbolic fencing.</p> <p>Areas remain closed through July 15, if no bird activity is seen during surveying, or until area is abandoned for two weeks,</p> | <p>March 15 Close recent (past 3 seasons) AMOY breeding areas (upper beach, not to shoreline) to ORV with symbolic fencing.</p> <p>April 1 Close historic (past 10 seasons) PIPL breeding areas to ORV with symbolic fencing.</p> <p>April 1 Close recent (past 3 seasons) WIPL breeding areas (upper beach, not to shoreline) to ORV with symbolic fencing.</p> <p>April 15 – September 30 Close historic (past 10 seasons) CWB breeding areas to ORV with symbolic fencing.</p> <p>Areas remain closed through July 15, if no bird activity is seen during surveying, or until area is abandoned for two weeks, whichever is later.</p> <p>Closures outside of year-round PIPL closures removed when areas have been abandoned for a two week period or July 15, whichever is later. Close all potential breeding, roosting, and foraging habitat to ORV traffic and boat landings, at all sites where any terns or black</p> | <p>Between identified pre-nesting closures dates (see table 1), designate a 100 ft wide ORV corridor along oceanside and soundside shoreline (excluding southwest side of Cape Point) in recent breeding areas. Where possible, delineate ORV corridor with posts above the wrack line and below the dune line with signs asking visitors to stay off. In areas without a well-defined wrack line, the corridor would be delineated only with posts placed up to 100 feet above the high tide line. In areas with a reduced corridor width due to species management actions, maintain the corridor with a posted speed limit of 5 mph.</p> |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|---------------------------------|--|---|---|---|
| | | whichever is later. | skimmers have nested in the past decade, from Apr 15 - Sept 30 to include Bodie Island Spit, Green Island, Hatteras Island, including Cape Point, South Beach, and Hatteras Spit, and Ocracoke Island, including North Ocracoke (inlet area), and South Ocracoke. | |
| ORV Corridors and Access | All: Beach areas seaward of a line 20 ft east or southeast of the toe of the dunes or vegetation line or 150 ft west or northwest of the existing tide, whichever is less, or between marked posts and existing tide are open to ORV use except in certain circumstances | PIPL: Areas occurring outside existing year-round ORV closures (PIPL), narrow current 150 ft ORV corridor such that a zone of ocean backshore at least 30 ft wide and running the length of the area is free of ORV traffic. This zone should be adjacent to the toe of the primary dune wherever a primary dune exists (i.e., recreation should be restricted to a corridor between the average high tide line and the edge of the zone of protected backshore. Management should revert to closures if PIPL are documented in other areas. AMOY/CWB: If a CWB | Between identified closure dates (see above), designate a 150-foot wide ORV corridor around closures along oceanside shoreline (excluding southwest side of Cape Point) around recent breeding areas for all species. If an ORV corridor is not feasible for safety reasons or insufficient space, identify an alternate route (e.g., existing interdunal road, NC-12). If an alternate route is not available, area would be closed to ORV access. Allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones. | April 01 – September 30 All bird species: Designate 100-ft wide ORV corridor above mean high tide line in all species breeding areas used within past three years (except in AMOY areas, begin Mar 15). Where possible, delineate ORV corridor with posts above the wrack line and below the dune line with signs asking visitors to say off. In areas without a well-defined wrack line, the corridor would be delineated only with posts placed up to 100 feet above the high tide line. In areas of reduced corridor width (i.e., less than 100 feet), post traffic signs and 5 mph speed limit. Adjust the ORV corridor whenever possible to allow vehicle passage. If an ORV corridor is not feasible for safety reasons or insufficient area, identify alternate ORV route if possible. If |

² See bypass criteria, alternative C, page 56.

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|----------|---|--|--|---|
| | | <p>colony or AMOY nest becomes established outside of an existing PIPL closure, ORV access may need to be modified for a section of beach to allow required buffer distances to be established. Recreation closures can be suspended if surveying shows that adults and chicks have abandoned the nest site.</p> <p>Sea Turtles: May 15 – Aug 31</p> <p>ORV use would be restricted to a corridor 150 ft duneward of the mean high tide line or 30 ft seaward of the toe of the dunes or vegetation line, whichever is less. A 150 ft buffer zone of signed, stringed fencing would be placed around each nest in any place where recreation occurs.</p> | <p>Sea Turtles: May 15 – Aug 31</p> <p>ORV use would be restricted to a corridor 150 ft duneward of the mean high tide line or 30 ft seaward of the toe of the dunes or vegetation line, whichever is less. A 150 ft buffer zone of signed, stringed fencing would be placed around each nest in any place where recreation occurs. Where possible, ORV traffic would be routed around the nest on the duneward side, maintaining a buffer of 45 ft where possible, but no less than 30 ft. If a minimum buffer is not possible, the beach would be closed to ORV.</p> <p>If a hatchling corridor would block access to spits and Cape Point, identify an alternate route (e.g., existing interdunal road, NC-12). If an alternate route is not available, an attempt would be made to identify a bypass route² on the duneward side of the nest.</p> | <p>there is no alternate route available, seashore staff would consider establishing a bypass route (see bypass criteria in table 3). Seashore staff would allow observations to be responsive to individuality in bird behavior when determining adequate size of closure zones.</p> <p>If alternate route or bypass is not feasible, initiate an ORV closure.</p> <p>Sea Turtles: May 15 – Aug 31</p> <p>ORV use would be restricted to a corridor 150 ft duneward of the mean high tide line or 30 ft seaward of the toe of the dunes or vegetation line, whichever is less. A 150 ft buffer zone of signed, stringed fencing would be placed around each nest in any place where recreation occurs. Where possible, ORV traffic would be routed around the nest on the duneward side, maintaining a buffer of 50 ft where possible, but no less than 30 ft.</p> <p>If a hatchling corridor would block access to spits and Cape Point, identify an alternate route (e.g., existing interdunal road, NC-12). If an alternate route is not available, an attempt would be made to identify a bypass route³ on the duneward side of the nest.</p> |

³ See bypass criteria, alternative C, page 56.

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|---|---|--|---|--|
| Night Driving | No restrictions. | March 15 - November 15 (turtle nesting and hatching season) 8:00 pm to 6:00 am—no public driving access on seashore Essential use vehicles would use bare minimum lighting in the performance of their duties, including performance of sea turtle management activities. Whenever possible, and safety permitting, minimum lighting would include the use of parking lights or red filters over the headlights. Enforcement would include the use of law enforcement night patrols, physical barriers, or informational signage at ramps | March 15 - August 31 (turtle nesting season) 10:00 pm to 5:00 am—no public driving access on seashore Essential use vehicles would use bare minimum lighting in the performance of their duties, including performance of sea turtle management activities. Whenever possible, and safety permitting, minimum lighting would include the use of parking lights or red filters over the headlights. Enforcement would include the use of law enforcement night patrols, physical barriers, or informational signage at ramps | No restrictions. The seashore would seek funds to study level and impacts of night driving at seashore. Information obtained would be used to develop management techniques for consideration in the long term ORV management planning process. The seashore would provide periodic night time patrols to observe and enforce compliance with regulations and closures. |
| Pedestrian | | | | |
| Pedestrian Access in Bird Closures | Pedestrian access allowed except inside nest areas and in ORV resource closures before discovery of nests. | PIPL: In areas seasonally closed to vehicles, symbolic fence would be erected around active nesting areas. If nests appear in these areas, pedestrian access corridors would be defined outside a buffer around the nests. If chicks present, a recreation-free 150 ft buffer would be defined around chicks as | PIPL: In areas seasonally closed to vehicles, symbolic fence would be erected around active nesting areas. If nests appear in these areas, pedestrian access corridors would be defined outside a buffer around the nests. If chicks present, a recreation- free 150 ft buffer would be defined around chicks as described in the USFWS | PIPL: In areas seasonally closed to vehicles, symbolic fence would be erected around active nesting areas. If nests appear in these areas, pedestrian access corridors would be defined outside a buffer around the nests. If chicks present, a recreation- free 150 ft buffer would be defined around chicks as described in the USFWS Northeast Region Guidelines (1994). The pedestrian corridor should be |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|----------|---|---|---|---|
| | | <p>described in the USFWS Northeast Region Guidelines (1994). The pedestrian corridor should be narrowed or closed to provide a recreation-free buffer 150-ft wide (or the distance recommended for other bird species using the area, whichever is greatest) around all areas of moist substrate habitat (MOSH), all overwash corridors, and any place that courtship behavior or scrapes are observed. The buffer zones would immediately be widened to 300 ft any place that disturbance of PIPL is observed, then to 600 ft if disturbance persists. Furthermore, the corridor would be narrowed or closed to provide a recreation-free zone in the ocean backshore at least 30 ft wide and running the length of the site, wherever backshore habitat occurs. AMOY: In areas of seasonal vehicle closures in from the towns, erect symbolic fence around historic nesting areas. Limit walking corridors to 150-ft from high</p> | <p>Northeast Region Guidelines (1994). The pedestrian corridor should be narrowed or closed to provide a recreation-free buffer 150-ft wide (or the distance recommended for other bird species using the area, whichever is greatest) around all areas of MOSH, all overwash corridors, and any place that courtship behavior or scrapes are observed. The buffer zones would immediately be widened to 300 ft any place that disturbance of PIPL is observed, then to 600 ft if disturbance persists. Furthermore, the corridor would be narrowed or closed to provide a recreation-free zone in the ocean backshore at least 30 ft wide and running the length of the site, wherever backshore habitat occurs. AMOY: In areas of seasonal vehicle closures in from the towns, erect symbolic fence around historic nesting areas. Limit walking corridors to 150-ft from high tide line. If nests appear in these areas, define pedestrian access corridors as a buffer around nests sites. If chicks exist, define a 600 ft buffer around chicks in</p> | <p>narrowed or closed to provide a recreation-free buffer 150-ft wide (or the distance recommended for other bird species using the area, whichever is greatest) around all areas of MOSH, all overwash corridors, and any place that courtship behavior or scrapes are observed. The buffer zones would immediately be widened to 300 ft any place that disturbance of PIPL is observed, then to 600 ft if disturbance persists. Furthermore, the corridor would be narrowed or closed to provide a recreation-free zone in the ocean backshore at least 30 ft wide and running the length of the site, wherever backshore habitat occurs. AMOY: In areas of seasonal vehicle closures in from the towns, erect symbolic fence around historic nesting areas. Limit walking corridors to 150-ft from high tide line. If nests appear in these areas, define pedestrian access corridors as a buffer around nests sites. If chicks exist, define a 600 ft buffer around chicks in pedestrian areas. Discourage and warn pedestrians about walking above the wrack line, which could cause destruction of bird eggs. Encourage pedestrians to quickly move through the area by placing warning signs, e.g., "migratory bird nesting area..." and directional signs, e.g., "do not stop in bird</p> |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|----------|---|---|--|---|
| | | <p>tide line. If nests appear in these areas, define pedestrian access corridors as a buffer around nests sites. If chicks exist, define a 600 ft buffer around chicks in pedestrian areas. Discourage and warn pedestrians about walking above the wrack line, which could cause destruction of bird eggs. Encourage pedestrians to quickly move through the area by placing warning signs, e.g., "migratory bird nesting area...", and directional signs, e.g., "do not stop in bird nesting areas, move quickly to reduce disturbance to nesting birds."</p> <p>CWB: Allow pedestrians within a narrow walking corridor at the high tide line from sunrise to sunset around species management closure areas. This corridor may be narrowed if it infringes upon a nesting colony. Pedestrian use closures around nests and colonies can be suspended if surveying shows chicks have fledged the site(s)</p> | <p>pedestrian areas. Discourage and warn pedestrians about walking above the wrack line, which could cause destruction of bird eggs. Encourage pedestrians to quickly move through the area by placing warning signs, e.g., "migratory bird nesting area...", and directional signs, e.g., "do not stop in bird nesting areas, move quickly to reduce disturbance to nesting birds."</p> <p>CWB: Allow pedestrians within a narrow walking corridor at the high tide line from sunrise to sunset around species management closure areas. This corridor may be narrowed if it infringes upon a nesting colony. Pedestrian use closures around nests and colonies can be suspended if surveying shows chicks have fledged the site(s) (*nest sites would be considered abandoned if intensive monitoring shows CWB not in attendance for 10 consecutive surveys).</p> | <p>nesting areas, move quickly to reduce disturbance to nesting birds."</p> <p>CWB: Allow pedestrians within a narrow walking corridor at the high tide line from sunrise to sunset around species management closure areas. This corridor may be narrowed if it infringes upon a nesting colony. Pedestrian use closures around nests and colonies can be suspended if surveying shows chicks have fledged the site(s) (*nest sites would be considered abandoned if intensive monitoring shows CWB not in attendance for 10 consecutive surveys).</p> |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|---|---|---|---|---|
| | | (*nest sites would be considered abandoned if intensive monitoring shows CWB not in attendance for 10 consecutive surveys). | | |
| Pedestrian Access in Turtle and Seabeach Amaranth Closures | Pedestrian access prohibited in closures. | Pedestrians allowed 24 hour access to all seashore beaches outside of existing closures for sea turtle nests. Pedestrians may use light sources with red filters. Pedestrian access prohibited within SBA closures. | Pedestrians allowed 24 hour access to all seashore beaches outside of existing closures for sea turtles. April 15 Pedestrian use restricted in areas containing potential SBA habitat to a corridor within 150 ft of the mean high tide line. The corridor would be reevaluated after the annual August survey and the closed areas reopened if no plants occur. Where plants occur, the closed areas would be reopened after the plants die. | Pedestrians allowed 24 hour access to all seashore beaches outside of existing closures for sea turtles. Pedestrian access prohibited within SBA closures. |
| Other Recreation | | | | |
| Boat Access | 36 CFR 3.6 prohibits launching non-commercial, recreational boats/vessels except at the boat ramps located at Oregon Inlet Fishing Center and Ocracoke Marina parking area. Permits may be issued for commercial fishing allowing boat access but not to areas closed for resource protection. | 36 CFR 3.6 prohibits launching non-commercial, recreational boats/vessels except at the boat ramps located at Oregon Inlet Fishing Center and Ocracoke Marina parking area. Permits may be issued for commercial fishing allowing boat access but not to areas closed for resource protection. | 36 CFR 3.6 prohibits launching non-commercial, recreational boats/vessels except at the boat ramps located at Oregon Inlet Fishing Center and Ocracoke Marina parking area. Permits may be issued for commercial fishing allowing boat access but not to areas closed for resource protection. Along shoreline where PIPL and CWB pre-nesting and nesting closures occur, keep | 36 CFR 3.6 prohibits launching non-commercial, recreational boats/vessels except at the boat ramps located at Oregon Inlet Fishing Center and Ocracoke Marina parking area. Permits may be issued for commercial fishing allowing boat access but not to areas closed for resource protection. Along shoreline where PIPL and CWB pre-nesting and nesting closures occur, keep boats 150 ft |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|-------------|---|--|---|--|
| | | <p>Along shoreline where PIPL and CWB closures occur (Bodie Island Spit, Cape Point, South Beach, Hatteras Spit, North Ocracoke, South Ocracoke), keep boats 150 ft from the habitat, the extent of seashore jurisdiction.</p> <p>Erect signs around the perimeter of nesting colonies and/or closures to alert boaters of closure.</p> | <p>nesting closures occur, keep boats 150 ft from the habitat, the extent of seashore jurisdiction. Where chicks or adults foraging (breeding/winter), nest to close to water, area could be posted out into water based on location of birds (typically Bodie Island spit, Cape Point, and Hatteras spit, Isabel overwash, and cove under the Oregon Inlet bridge).</p> <p>Erect signs around the perimeter of nesting colonies and/or closures to alert boaters of closure.</p> | <p>closures occur, keep boats 150 ft from the habitat, the extent of seashore jurisdiction. Where chicks or adults are foraging (breeding/winter), nest too close to water, area could be posted out into water based on location of birds (typically Bodie Island spit, Cape Point, and Hatteras spit, Isabel overwash, and cove under the Oregon Inlet bridge).</p> <p>Erect signs around the perimeter of nesting colonies and/or closures to alert boaters of closure.</p> |
| Pets | <p>36 CFR 2.15 Pets: pets must be crated, caged, restrained on a leash, or otherwise physically confined at all times in all areas of the seashore.</p> <p>Pets prohibited, even if on leash, from the landward side of the white posts delineating use areas for vehicles on the “flats” at the spits (Bodie, Hatteras, Ocracoke).</p> | <p>36 CFR 2.15 Pets: pets must be crated, caged, restrained on a leash, or otherwise physically confined at all times in all areas of the seashore.</p> <p>Pets prohibited, even if on leash, from the landward side of the white posts delineating use areas for vehicles on the “flats” at the spits (Bodie, Hatteras, Ocracoke).</p> <p>Pets prohibited within ¼ mile of symbolic fencing around any bird closure area.</p> | <p>36 CFR 2.15 Pets: pets must be crated, caged, restrained on a leash, or otherwise physically confined at all times in all areas of the seashore.</p> <p>Pets prohibited, even if on leash, from the landward side of the white posts delineating use areas for vehicles on the “flats” at the spits (Bodie, Hatteras, Ocracoke).</p> <p>Pets prohibited within ¼ mile of symbolic fencing around any bird closure area.</p> | <p>36 CFR 2.15 Pets: pets must be crated, caged, restrained on a leash, or otherwise physically confined at all times in all areas of the seashore.</p> <p>Pets prohibited, even if on leash, from the landward side of the white posts delineating use areas for vehicles on the “flats” at the spits (Bodie, Hatteras, Ocracoke).</p> <p>Pets prohibited within ¼ mile of symbolic fencing around any bird closure area.</p> |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|------------------------------|--|--|--|--|
| Other | Kite flying and ball and Frisbee tossing prohibited within all PIPL closures year-round. 36 CFR 2.38 Explosives: all fireworks are prohibited in the seashore at all times. | Kite flying and ball and Frisbee tossing prohibited within all PIPL and AMOY closures year-round. Kite flying prohibited within 600-feet of nesting CWB April 1 - August 31. 36 CFR 2.38 Explosives: all fireworks are prohibited in the seashore at all times. | Kite flying and ball and Frisbee tossing prohibited within all PIPL and AMOY closures year-round. Kite flying prohibited within 600-feet of nesting CWB April 1 - August 31. 36 CFR 2.38 Explosives: all fireworks are prohibited in the seashore at all times. | Kite flying and ball and Frisbee tossing prohibited within all PIPL and AMOY closures year-round. Kite flying prohibited within 600-feet of nesting CWB April 1 - August 31. 36 CFR 2.38 Explosives: all fireworks are prohibited in the seashore at all times. |
| Seashore Management | | | | |
| Additional Compliance | | Random spot checks would be made at all sea turtle nest closures during the day and at night to detect and prevent violations by recreationists. If more than 3 violations of the protected area around a particular nest are observed, the buffer distance would be expanded to 300 feet, then 600 feet if necessary. | | |
| Essential Vehicle Use | When chicks present, vehicles travel through habitat only during daylight hours trained staff present. Use of open 4-wheel motorized ORV or non-motorized all-terrain bicycles recommended for observations and law enforcement. Essential vehicles should | Essential vehicles allowed in closures subject to guidelines in Essential Vehicles section of Piping Plover Recovery Plan, Appendix G (USFWS 1996a). Essential vehicles would drive only in the intertidal zone whenever possible, and accompanied by | Essential vehicles allowed in closures subject to guidelines in Essential Vehicles section of Piping Plover Recovery Plan, Appendix G (USFWS 1996a). Essential vehicles would drive only in the intertidal zone whenever possible, and accompanied by trained staff whenever possible. If this is not possible, observations by ORV | Essential vehicles allowed in closures subject to guidelines in Essential Vehicles section of Piping Plover Recovery Plan, Appendix G (USFWS 1996a). Essential vehicles would be accompanied by trained staff whenever possible. If this is not possible, observations by ORV should not be conducted at that time. Essential vehicles would avoid driving |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|----------------------------------|--|--|--|---|
| | avoid the wrack line. Travel should be infrequent to avoid creating deep ruts. | trained staff whenever possible. If this is not possible, observations by ORV should not be conducted at that time. Essential vehicles would avoid driving in sea turtle habitat from sunset to sunrise, unless absolutely necessary (see Night Driving). When driving in sea turtle habitat at night, trained staff would accompany the essential vehicle whenever possible. Essential vehicles would try to avoid driving in the vicinity of a turtle nest from 55 days of nest lay until hatching but, if it is necessary, they would try to avoid driving between the nest and the sea and would consult with trained staff regarding other protected species. | should not be conducted at that time. Essential vehicles would avoid driving in sea turtle habitat from sunset to sunrise, unless absolutely necessary (see Night Driving). When driving in sea turtle habitat at night, trained staff would accompany the essential vehicle whenever possible. Essential vehicles would try to avoid driving in the vicinity of a turtle nest from 55 days of nest lay until hatching but, if it is necessary, they would try to avoid driving between the nest and the sea and would consult with trained staff regarding other protected species. | in sea turtle habitat from sunset to sunrise, unless absolutely necessary (see Night Driving). When driving in sea turtle habitat at night, trained staff would accompany the essential vehicle whenever possible. Essential vehicles would try to avoid driving in the vicinity of a turtle nest from 55 days of nest lay until hatching but, if it is necessary, they would try to avoid driving between the nest and the sea and would consult with trained staff regarding other protected species. |
| Essential Vehicles: Speed | Not to exceed 5 mph within any closures. | Not to exceed 5 mph, whenever possible. | Not to exceed 5 mph, whenever possible. | Not to exceed 5 mph, whenever possible. |
| Outreach and Compliance | | | | |
| | General: Provide information about endangered species at the visitor centers. Provide articles regarding | General: Provide information about endangered species at the visitor centers. Enforce proper trash | I General: Provide information about endangered species at the visitor centers. Enforce proper trash disposal | General: Provide information about endangered species at the visitor centers. Enforce proper trash disposal (pack |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|----------|---|--|--|---|
| | <p>other protected species management in the seashore's summer and winter newspaper and on the seashore website.</p> <p>Notify the public of species management closures that would temporarily limit ORV traffic. Send a press release to local and regional newspapers and contact local tackle shops and ORV organizations when species closures established or reopened.</p> <p>Sea Turtles:</p> <p>Conduct educational programs during the sea turtle hatching season where public school students could learn about sea turtles by participating in post-hatching nest examinations.</p> <p>Continue to provide a 12-minute television program to be used to educate the public about nesting sea turtles and measures taken by the seashore to protect nests and hatchlings.</p> | <p>disposal (pack in/pack out) and anti-wildlife feeding regulations throughout the seashore, including proper disposal of fishing bait and filleted fish carcasses. Provide education and outreach materials regarding the impacts of trash-disposal, wildlife-feeding, fireworks, and pets on sensitive seashore species. Enlist local volunteer and community organizations to distribute these materials.</p> <p>Solicit from interested parties means to convey information about the species management program.</p> <p>Notify the public of species management closures that would temporarily limit ORV traffic. Send a press release to local and regional newspapers and contact local tackle shops and ORV organizations when species closures established or reopened.</p> <p>Bird Species:</p> <p>Following the nesting season and the end of the hurricane season, publish an annual report on the</p> | <p>(pack in/pack out) and anti-wildlife feeding regulations throughout the seashore, including proper disposal of fishing bait and filleted fish carcasses. Provide education and outreach materials regarding the impacts of trash-disposal, wildlife-feeding, fireworks, and pets on sensitive seashore species.</p> <p>Solicit from interested parties means to convey information about the species management program.</p> <p>Notify the public of species management closures that would temporarily limit ORV traffic. Send a press release to local and regional newspapers and contact local tackle shops and ORV organizations when species closures established or reopened.</p> <p>Sea Turtles:</p> <p>Conduct educational programs during the sea turtle hatching season where public school students could learn about sea turtles by participating in post-hatching nest examinations.</p> <p>Continue to provide a 12-minute television program to be used to educate the public about nesting sea turtles and measures taken by the</p> | <p>in/pack out) and anti-wildlife feeding regulations throughout the seashore, including proper disposal of fishing bait and filleted fish carcasses. Provide education and outreach materials regarding the impacts of trash-disposal, wildlife-feeding, fireworks, and pets on sensitive seashore species.</p> <p>Solicit from interested parties means to convey information about the species management program.</p> <p>Notify the public of species management closures that would temporarily limit ORV traffic. Send a press release to local and regional newspapers and contact local tackle shops and ORV organizations when species closures established or reopened.</p> <p>Provide information to the public on how to protect the wrack line for wildlife use by avoiding parking or driving on it.</p> <p>Provide periodic patrols to observe and enforce compliance with PIPL closures</p> <p>Sea Turtles:</p> <p>Conduct educational programs during the sea turtle hatching season where public school students could learn about sea turtles by participating in post-hatching nest examinations.</p> <p>Continue to provide a 12-minute television program to be used to</p> |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|----------|---|--|---|--|
| | | <p>an annual report on the seashore website providing data on number of nests, number of fledglings, etc.</p> <p>Provide an initial posting plan for the upcoming season outlining active nesting areas on the seashore website in March but no later than April 1. Throughout the breeding and nesting season, update and modify a central map of closures to be provided in the visitor centers, to the District Resource Managers, and made available on the seashore website. When possible, the seashore would provide the public with notification of closures and other restrictions prior to the closure of an area.</p> <p>Continue posting all symbolic fence lines with signs that clearly indicate the species being protected. Post signs detailing species biology and the reasons for protecting the species at points where visitors are likely to first encounter restricted areas.</p> <p>Provide information to the</p> | <p>measures taken by the seashore to protect nests and hatchlings.</p> <p>Seabeach Amaranth: Erect interpretive signs about the trampling susceptibility of seabeach amaranth at all ORV entry points and at seashore kiosks. At least 2 weeks before Apr 15, provide public notice of where ORV/pedestrian corridor restrictions would be implemented. After the annual August survey, notify the public of areas of any reopened areas.</p> | <p>educate the public about nesting sea turtles and measures taken by the seashore to protect nests and hatchlings.</p> <p>Seabeach Amaranth: Erect interpretive signs about the trampling susceptibility of seabeach amaranth at all ORV entry points and at seashore kiosks. At least 2 weeks before Apr 15, provide public notice of where ORV/pedestrian corridor restrictions would be implemented. After the annual August survey, notify the public of areas of any reopened areas.</p> |

TABLE 3: ALTERNATIVES ELEMENTS SUMMARY—RECREATION AND OTHER SEASHORE MANAGEMENT

| Activity | 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) |
|----------|--|---|--|--|
| | | <p>public on how to protect the wrack line for potential feeding and roosting by avoiding parking or driving on it.</p> <p>Sea Turtles:</p> <p>Educate villages about turtle biology and turtle friendly practices (e.g., using light timers, shielding and not directing lights onto the beach, not leaving beach furniture on the beach over night, etc.) through town meetings and/or brochure mailings.</p> <p>Encourage beachside home owners to use turtle friendly lighting.</p> <p>Inform the public about turtle closure regulations.</p> <p>Encourage volunteering for turtle observations.</p> <p>Seabeach Amaranth:</p> <p>Erect interpretive signs about the trampling susceptibility of seabeach amaranth at all ORV entry points and at seashore kiosks.</p> | | |

TABLE 4: ANALYSIS OF HOW ALTERNATIVES MEET THE OBJECTIVES

| Objectives in Taking Action | 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) |
|---|---|---|---|---|
| Management Methodology | | | | |
| Establish adaptive interim management practices and procedures that have the ability to respond to changes in the seashore's dynamic physical and biological environment. | Meets objective to some degree. Current resource management practices are relatively static in responding to protection and recreational use. | Meets objective to a large degree. Protected species management measures would be provided for protection in relation to the seashore's dynamic habitat, but would be less adaptive to recreational uses. | Meets objective to a large degree. Protected species management measures would be provided for protection in relation to the seashore's dynamic habitat, but would be less adaptive to recreational uses. | Meets objective to a large degree. Protected species management measures would be adaptive and provide for more recreational uses, but would be less adaptive to changes in the seashore's dynamic habitat. |
| Establish procedures for prompt and efficient public notification of protected species management actions and the reasons for these actions. | Meets objective to a moderate degree. Public notification procedures are in place, but are not effective or prompt. | Fully meets objective. The existing notification methods would be expanded upon and greater species protection and closure information provided. | Fully meets objective. The existing notification methods would be expanded upon and greater species protection and closure information provided. | Fully meets objective. The existing notification methods would be expanded upon and greater species protection and closure information provided. Under this alternative, the potential for constant change in the closures would make prompt and efficient notification more difficult. |

TABLE 4: ANALYSIS OF HOW ALTERNATIVES MEET THE OBJECTIVES

| Objectives in Taking Action | 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) |
|--|---|---|---|---|
| Establish an ongoing and meaningful dialogue with the multiple publics interested in and affected by protected species management to ensure development of an implementable strategy. | Meets objectives to some degree. Although community outreach has occurred, discontent with this alternative may hinder implementation. | Meets objective to a moderate degree. Communication and outreach with the community would be increased. Increased species related closures may create discontent with the community and hinder implementation. | Meets objective to a moderate degree. Communication and outreach with the community would be increased. Increased species related closures may create discontent with the community and hinder implementation. | Meets objective to a moderate degree. Communication and outreach with the community would be increased. The provision for greater range management flexibility could increase compliance with the closures and result in a more implementable strategy. |
| Visitor Experience | | | | |
| Provide for continued recreational use and access consistent with required management of protected species. | Meets objective to a large degree. All types of recreational use are provided for. | Meets objective to a moderate degree. Resource protection activities may limit certain recreational uses, including ORVs, in areas of the seashore. | Meets objective to a moderate degree. Resource protection activities may limit certain recreational uses, including ORVs, in areas of the seashore. | Meets objective to a large degree. Allows for a greater range of recreational uses, while providing resource protection. |
| 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. | Meets objective to a moderate degree. Employees have contact with the public, but it is limited. Opportunities to increase public awareness and understanding about protected species management are limited, but do occur through television programs, printed materials, and other methods. | Meets objective to a large degree. Opportunities to increase public awareness and understanding about protected species management would increase. In addition to the existing television programs and printed materials, other educational opportunities would be present. | Meets objective to a large degree. Opportunities to increase public awareness and understanding about protected species management would increase. In addition to the existing television programs and printed materials, other educational opportunities would be present. | Meets objective to a large degree. Opportunities to increase public awareness and understanding about protected species management would increase. In addition to the existing television programs and printed materials, other educational opportunities would be present. |

TABLE 4: ANALYSIS OF HOW ALTERNATIVES MEET THE OBJECTIVES

| Objectives in Taking Action | 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) |
|--|--|---|---|---|
| Threatened, Endangered, and Other Protected Species | | | | |
| Provide threatened, endangered, and other protected species (e.g., state-listed species) and their habitats protection from adverse impacts related to recreational uses as required by laws and policies, such as the Migratory Bird Treaty Act, Endangered Species Act, and NPS management policies. | Meets objective to a moderate degree. Surveying is occurring, but not at the necessary levels. | Meets objective to a large degree. Provides a higher level of protection over the current condition. The level of surveying and management, including resource related closures, minimizes the amount of risk to the species. | Meets objective to a moderate degree. Provides a higher level of protection over the current condition. The level of surveying and management still leaves room for some risk to the species. | Meets objective to a moderate degree. Provides a higher level of protection over the current condition. The level of surveying and management still leaves room for some risk to the species. Increased recreational access also results in increased risk. |
| Consult with the USFWS to ensure that NPS management actions comply with the requirements of the Endangered Species Act. | Fully meets objective. As mandated by NPS management policies and other regulations, the seashore will fully comply with the Endangered Species Act. | Fully meets objective. As mandated by NPS management policies and other regulations, the seashore will fully comply with the Endangered Species Act. | Fully meets objective. As mandated by NPS management policies and other regulations, the seashore will fully comply with the Endangered Species Act. | Fully meets objective. As mandated by NPS management policies and other regulations, the seashore will fully comply with the Endangered Species Act. |
| Seashore Operations | | | | |
| Provide for effective protected species management while maintaining other seashore operations. | Meets objective to a moderate degree. Seashore operations are maintained, but protected species management is not occurring at appropriate levels. | Meets objective to a moderate degree. Additional protected species management demands may have some impact on other seashore operations, but these operations would be maintained. With larger areas to enforce, extra demands may be placed on the law enforcement division. | Meets objective to a large degree. Additional protected species management demands may have some impact on other seashore operations, but these operations would be maintained. | Meets objective to a large degree. Additional protected species management demands may have some impact on other seashore operations, but these operations would be maintained. |

TABLE 5: 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 5: 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 5: 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 5: 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 5: 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. |

TABLE 5: 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) |
|------------------------|---|--|--|--|
| 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. |

TABLE 5: 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) |
|---------------------------------------|--|---|---|---|
| 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 | 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 | 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 | 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 |

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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) |
|---------------|--|--|---|--|
| | <p>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.</p> <p>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.</p> <p>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</p> | <p>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.</p> <p>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.</p> <p>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</p> | <p>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 the current level of impacts, which is not known.</p> <p>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.</p> <p>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</p> | <p>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.</p> <p>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.</p> <p>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</p> |

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|--------------------|--|---|---|--|
| | and other bird species would not occur. | species. Impairment of invertebrates and other bird species would not occur. | negligible adverse impacts to other bird species. Impairment of invertebrates and other bird species would not occur. | 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 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 | 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 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 | 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 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 | 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 likelihood of a closure along spit access routes. Therefore, impacts to visitor use and experience would be the same as alternative C. |

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|---------------|--|--|--|---|
| | <p>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.</p> | <p>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.</p> | <p>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.</p> | |

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| Socioeconomic Resources | Implementation of alternative A would likely adversely affect some tourist-related businesses located on Hatteras Island in southern Dare County. Future economic losses 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 | 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 | 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 | 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 |

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| | <p>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 in long-term, moderate adverse impacts. The cumulative impacts under alternative A would be short-term, moderate and long-term, minor to moderate adverse.</p> | <p>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 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.</p> | <p>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 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.</p> | <p>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 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.</p> |