



Coastal Species of Concern Predation Management Plan

Finding of No Significant Impact

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National Park Service
U.S. Department of the Interior
Southeast Regional Office

FINDING OF NO SIGNIFICANT IMPACT
Coastal Species of Concern Predation Management Plan
and Programmatic Environmental Assessment

Approved:

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Date

INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared a programmatic environmental assessment (PEA) for a coastal species of concern predation management plan for coastal park units in the NPS Southeast Region. The predation management tools and methods evaluated in the PEA were developed based on depredation issues specific to coastal park units in North Carolina, South Carolina, Georgia, Florida, Mississippi, Puerto Rico, and the U.S. Virgin Islands; however, the PEA is needed to address depredation issues in all Southeast Region park units where there is a need to protect coastal species of concern.

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the PEA and the associated decision file. To the extent necessary, relevant sections of the PEA, which is available at <https://parkplanning.nps.gov/sero>, are incorporated by reference below.

SELECTED ACTION AND RATIONALE FOR THE DECISION

The National Park Service has selected Alternative B (the preferred alternative identified in the PEA; hereinafter referred to as the “selected action”) as the Southeast Region’s predation management plan. A summary of the selected action is below (see Chapter 2 of the PEA or Attachment 4 to this FONSI for a full description).

Predation Management

Under the selected action all park units in the NPS Southeast Region will have a suite of tools and methods available to them to manage predators threatening coastal species of concern, including tools and methods that were not previously used by some park units in the region. The selected action will streamline the approach for predation management by providing programmatic NEPA compliance across the region, allowing park units to implement the included tools and methods in a timely and efficient manner. The selected action establishes the programmatic framework for the use of predation management tools and methods. Park unit-specific depredation efforts will be proposed and evaluated in subsequent NEPA reviews that “tier” to the PEA, as mentioned in Chapter 1 of the PEA.

Under the selected action, predation management activities will be selective in order to reduce the likelihood of adverse impacts. As described in Chapter 1 of PEA, predators that have been observed depredating or have the potential to depredate coastal species of concern may be targeted for removal. After identifying target predators, park staff will use the most effective and humane tools and methods available to deter or remove predators. The National Park Service may use its own employees, a private contractor, another federal agency, a state agency, or skilled volunteers under the direct supervision of the National Park Service for predation management actions.

The early investigation of and investment in emerging technologies may help to further advance predation management throughout the Southeast Region. Therefore, the National Park Service will continue to research and use, where appropriate, emerging technologies for protecting coastal species of concern. Before implementing emerging technologies or other tools not covered in the PEA, the National Park Service will complete additional NEPA analysis, as appropriate.

As determined necessary by the Southeast Region, park units that implement predation management under the PEA will develop park-specific data collection programs that provide for regionally consistent reporting of information on predation management efforts. Any such programs would include standardized data collection protocols, consistent with National Park Service, State, and U.S. Fish and Wildlife Service (USFWS) recommendations and requirements, to the extent practicable. This consistency is intended to help inform the management of coastal species of concern and the decision framework for predation management tools and methods regionwide.

Nonlethal Control and Management Tools and Methods

Under the selected action, nonlethal control tools and methods include: relocating feral cats to shelters; fencing single shorebird nests and colonies; installing screens or cages on sea turtle nests; installing perch deterrents; and providing chick shelters. A detailed description of nonlethal tools and methods is found in Chapter 2 of the PEA and in Attachment 4 to this FONSI.

Lethal Control and Management Tools and Methods

Under the selected action, lethal control tools and methods include: foothold traps; snares; walk-in cage traps; dog-proof traps; box, cage, and corral traps; shooting; euthanasia via carbon dioxide gas, toxicant DRC-1339 specific to avian predators, and manual removal and Fripp traps specific to ghost crabs. A detailed description of lethal tools and methods is found in Chapter 2 of the PEA and in Attachment 4 to this FONSI.

Rationale

Alternative B was selected as the Southeast Region's predation management plan because it will provide park units with the tools and guidance necessary for a comprehensive, collaborative approach to predation management that best promotes the continued protection and conservation of coastal species of concern. It will also provide the opportunity to facilitate and streamline planning, interagency coordination, and program management across all park units. The inclusion of a standardized data collection program will allow park units to assess the efficacy of the tools and methods implemented and use these results to adjust predation management, thereby enhancing the National Park Service's ability to protect coastal species of concern.

MITIGATION MEASURES

As described in the PEA starting on page 9, the National Park Service will apply regionally consistent Best Management Practices (BMPs) and mitigation measures to reduce the likelihood of adverse impacts associated with the implementation of predation management tools. This includes minimizing human disturbance near coastal species of concern and ensuring proper training and experience of personnel authorized to lethally remove a predator species (See Chapter 2 of the PEA).

Mitigation measures such as conducting cultural and archaeological surveys and implementing avoidance measures would be applied before implementing predation management. If any cultural or archaeological resources were inadvertently discovered during a predation management activity, all work would be halted until the resources could be evaluated and an appropriate mitigation strategy developed to preserve the information and artifacts to the fullest extent. Additionally, if an NPS unit proposes an action in the future related to coastal species of concern protection that will impact archaeological resources, site-specific compliance and

consultation will be conducted, as appropriate, under NEPA and Section 106 of the National Historic Preservation Act.

FINDING OF NO SIGNIFICANT IMPACT

As described in Chapter 1 of the PEA, the selected action may impact predators and coastal species of concern. Predator species analyzed in the PEA include the following: mammalian predators (coyote, feral swine, nine-banded armadillo, feral cat, gray fox, mink, Virginia opossum, raccoon, red fox), and avian and other non-mammalian predators (corvids, gull species, Atlantic ghost crab). Coastal species of concern analyzed in the PEA include the following: sea turtles (green sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, loggerhead sea turtle), shorebirds (American oystercatcher, black skimmer, common tern, gull-billed tern, least tern, piping plover, red knot, roseate tern, snowy plover, Wilson's plover), and beach mice (Anastasia Island beach mouse, Perdido Key beach mouse, Southeastern beach mouse). Most of these coastal species of concern are federally listed as endangered or threatened under the Endangered Species Act (ESA) of 1973, as amended. Additionally, several of these species are included on state lists in the planning area and are protected by other laws or regulations, such as the Migratory Bird Treaty Act (MBTA). On February 4, 2019, the USFWS concurred with the NPS determinations that the coastal species of concern predation management plan may affect, but is not likely to adversely affect species that are protected under the ESA.

The potential for significant adverse impacts on these species have been analyzed, taking into account the context and the relevant intensity considerations required by CEQ Regulations at 40 CFR 1508.27(b), including: impacts that may be both beneficial and adverse; whether the action is related to other actions with individually insignificant but cumulatively significant impacts; and the degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973. As described below, the National Park Service has determined there will be no significant adverse impacts to these species as a result of implementing the selected action. This determination is consistent with the purpose and significance of each of the Southeast Region coastal park units.

Predators

As described beginning on page 40 of the PEA, nonlethal tools and methods will prevent predator species from accessing individual coastal species of concern and their nests, eggs, and hatchlings. However, these nonlethal tools and methods are not expected to impact the ability of predator species to locate food sources, as all mammalian predator species considered in the PEA are opportunistic omnivores or carnivores that can adapt to different prey. Additionally, the coastal species of concern analyzed in the PEA are found in extremely limited numbers and most do not contribute substantially to the diet of predator species. While some tools and methods such as fencing or screening, may impact the ability of predator species to access localized habitats to find food, all mammalian predator species considered in the PEA have home ranges extending between tens to thousands of acres. Consequently, the use of exclusion fencing or screening ranging from 16 square feet to 2 acres would result in an average reduction of less than 4% of foraging habitat within the home range of armadillos, which have the smallest home range, and less than 1% for species with very large home ranges, like coyotes, raccoons, and feral swine. Research has shown that these species can forage in large home ranges outside of excluded habitats to find alternative food sources and typically reinvade quickly. Moreover, fencing or screening will only occur during nesting and breeding season (February to August for shorebirds, and May to October for sea turtles).

While the nonlethal capture and relocation of feral cats to shelters is expected to reduce population sizes within park units, feral cats are not considered native in the NPS Southeast Region and per NPS Management Policies, exotic or nonnative species that are not maintained to meet an identified park purpose are to be managed, up to and including eradication. Therefore, any reduction in park unit populations of feral cats will be consistent with National Park Service policy. The selected action is not expected to impact feral cat populations on a regionwide basis because there is an extremely large population and Southeast Region park units comprise less than 1% of the total area of the region.

Lethal control tools and methods will result in direct impacts on individual predators and local predator populations from stress and direct mortality, as described in the PEA. For example, the use of the toxicant DRC-1339 for the lethal control of corvids could cause stress after ingestion. However, because DRC-1339 is very highly toxic to target species (Eisemann et al. 2003), it is anticipated that the corvid would die within 12-72 hours indicating that stress will not be prolonged. As DRC-1339 is not a commonly used chemical, DRC-1339 will likely only be used as necessary in limited situations and in few park units limiting the corvids subject to this toxin. The limited use of this chemical for targeted control of specific, known avian predators by wildlife management officials from the US Department of Agriculture's Animal and Plant Health Inspection Service (or others certified as a licensed pesticide applicator) will ensure the chemical is used appropriately and minimize undue stress on the target animal. Although predators may experience stress from lethal control tools and methods for relatively short periods of time, the tools and methods included in the selected action are designed to decrease the amount of stress experienced by predators. For example, although foothold traps may cause stress to predators, modern trap designs, such as those with lamination or padding (AFWA 2006), minimize injury and stress to captured animals. Likewise, available modifications for snares reduce tension-related stress on captured target animals. Offset jaws may be used on traps to reduce clamping pressure to improve animal welfare while in the trap. To be most humane, park units will also continue to use the AFWA adopted standard international BMPs to evaluate traps, based on animal welfare, efficiency, selectivity, practicality, and safety, in order to decrease stress on captured target animals (AFWA 2006; White 2015). Traps will be placed in sheltered areas with enough natural cover to protect animals from adverse weather conditions and to reduce stress levels. Additionally, captured target animals will be dispatched quickly (within 24 hours) once captured in traps or snares, thus reducing the amount of stress these animals will experience.

The total number of predators removed using lethal methods represents only a small proportion compared to the total estimated regional populations or state harvest levels in the states where the park units conducting removal are located (See **Table 5** below from the PEA). Consistent monitoring and reporting of the number and type of predators removed, as described in Chapter 2 of the PEA, will help ensure that the number of predators removed is at a level that would not significantly impact park or regional populations.

**Table 5.
Estimated Lethal Control of Predators under the Selected Action**

Species	Estimated Number Removed at Each Park Unit	Number of Park Units	Total Estimated NPS Lethal Removal Numbers Regionwide	Total Annual Regionwide Hunter and Trapper Harvest Data or Population Estimate	NPS Removal Compared with State Harvest or Population (%)
Coyote	12	10	120	68,000 individuals over three states	Less than 1%
Feral swine	100	10	1,000	375,000 individuals over four states	Less than 1%
Armadillo	6	10	60	N/A	N/A
Red and gray fox	4	10	40	17,000 individuals over four states	Less than 1%
Mink	8	5 ²	40	800 individuals over three states	5%
Opossum	67	10	670	33,405 individuals over three states	2%
Raccoon	70	10	700	150,000 individuals over four states	Less than 1%
Corvid	20	10	200	9,461 American crow (estimated population)	2%
Gull Species	0	N/A	N/A	N/A	N/A
Ghost crab	20 (5,600 at Cape Hatteras)	10	5,800 ¹	N/A	N/A

¹ 5,600 ghost crabs removed at Cape Hatteras National Seashore plus 200 ghost crabs removed from other park units

² Mink will not be lethally removed from any park units in Florida, so it is assumed that 5 park units would remove mink under the proposed action

While predator species that depredate coastal species of concern will be adversely impacted from implementation of the selected action, these species are abundant throughout the Southeast Region and lethal removal efforts for all species represent a small percentage (less than 5%) of total regional populations or hunter and trapper harvest numbers. In fact, the population numbers of many of the predator species listed in the PEA are increasing, and most are designated as species of least concern by the IUCN, indicating they are at lowest risk of extinction and considered widespread and abundant. Furthermore, these predator species are hunted extensively outside of park units throughout the Southeast Region, indicating robust populations that would require a substantial percentage of removal in order to have a large impact on state and regionwide population numbers. Based on the discussion above and the analysis in the PEA, the National Park Service has determined that implementation of the selected action will not significantly affect predators across the Southeast Region.

As described in detail beginning on page 42 of the PEA, state hunting and trapping activities and APHIS management actions could contribute adverse cumulative impacts to predator populations. State hunting and trapping would contribute to the most take of predator species, resulting in an adverse impact on populations subject to hunting at the regional/state level. However, in the United States, wildlife is managed to ensure the long-term sustainability of populations. As discussed in the PEA, state wildlife management agencies do not consider hunting to be an activity that meaningfully suppresses predator population numbers. Therefore, continued hunting would not contribute to substantial population declines for the species included in the PEA. APHIS management would continue to allow for and increase lethal predation management of several predator species covered in the PEA. Such actions would have a slight adverse impact on predator species by causing direct mortality and potentially contributing to local population declines in areas where they are damaging public and environmental resources. However, as with hunting, actions taken by APHIS are not expected to contribute to substantial population declines.

Overall, implementation of the selected action by the National Park Service is not expected to contribute cumulative impacts to predators in a meaningful way. Despite an increase in the number of park units that could lethally remove predators compared to current conditions, lethal removal by the National Park Service will represent only a small proportion of the annual harvested population for these species. As a result, while local populations of some species will be reduced, there will not be significant adverse cumulative impacts to predator populations.

Coastal Species of Concern

As described beginning on page 50 of the PEA, impacts to coastal species of concern are primarily beneficial, with some adverse impacts expected during implementation of the selected action. Adverse impacts generally include disturbance and displacement from noise and human presence during installation and implementation of nonlethal and lethal tools and methods. These activities, described in Chapter 2 of the PEA, could temporarily disturb foraging and nesting habitat as well as nesting sites for various coastal species of concern. For beach mice in particular, increased human presence and foot traffic during the installation of fences may potentially disturb sensitive dune habitat or crush burrows; however, park units will concentrate activities adjacent to dune habitat rather than directly within habitat, will only use experienced park personnel knowledgeable of beach mice patterns, and will use these methods infrequently (e.g., weekly to monthly). Increased human activity and noise from installing fencing, setting traps, and other management tools and methods near shorebird colonies may increase egg and chick depredation by disturbing adults off their nests and by increasing the number of human-associated predators in the area, such as raccoons and feral cats. However, while individual birds may be temporarily displaced during implementation of predation management actions, they will return after management actions are completed; consequently, population stability and viability will not be significantly impacted by management actions.

Noise and human activity from installation and implementation of both nonlethal and lethal tools and methods will be infrequent, lasting for a few consecutive days or several times a week during the first week or two of breeding seasons when fences, screens, or exclosures are erected, and potentially several times per week during the breeding season for trapping and dispatching. These impacts will be short-term lasting minutes to hours for the installation of fencing, setting traps, screening, chick shelters, and perch deterrents, and only seconds when firearms are used. Displaced animals are expected to return after management actions are completed. Additionally, these impacts will be localized, disturbing less than approximately 2 acres for fencing, screening, chick shelters, and perch deterrents. Lethal management activities will be located away from the immediate vicinity of coastal species of concern nests. For these

reasons, noise and human activity associated with the selected action will not significantly impact coastal species of concern or decrease the reproductive success or survivability of these species.

Installation of some management tools may cause behavioral wariness for avian coastal species of concern from the introduction of new structures (i.e., nest exclosures, screening, and perch deterrents). However, park personnel will use such tools infrequently (approximately once or twice per 1- to 2- acre area at the beginning of the breeding season) and in a way that minimizes direct disturbance to coastal species of concern (e.g., by avoiding direct disturbance to nests). For exclosures, once installed these structures have the potential to impact coastal species of concern through nest abandonment and mortality from entanglement and attracting predators to exclosures, although these occurrences are very rare (NPS 2015b).

The use of the toxicant, DRC-1339, may potentially have negative impacts on individual shorebirds. Because the specific effects from this toxicant on shorebirds species covered in the PEA have not been studied, the exact response is unknown; it is possible that consuming the toxicant will cause illness or death. However, the likelihood of a shorebird coastal species of concern consuming the toxicant is low, for several reasons. First, the food items baited with the toxicant (i.e., coastal species of concern eggs) would not be the same types of food that shorebird species feed on (typically marine invertebrates) and are intended for consumption by specific avian predator species. Second, only personnel trained and certified in the use of toxicants will be allowed to apply DRC-1339, which will reduce the risk of improper application and spread. Finally, DRC-1339 is unstable in the environment and has a half-life¹ in biologically active soil of 25 hours (USDA 2001), meaning that it will not linger long in the environment. Toxic eggs would most likely first be consumed by aggressive, opportunistic predators such as corvids that are selectively preying on shorebird nests (eggs and chicks). Consequently, impacts to shorebirds from the use of DRC-1339 will not be significant. The use of toxicants will positively affect coastal species of concern by reducing depredation by avian species that feed on eggs and hatchlings, which will help to increase reproductive success of these species by allowing more eggs to hatch and hatchlings to survive.

Some tools and methods used could increase predation on coastal species of concern in limited, localized, circumstances. For example, once erected, fences may serve as hunting perches for avian predators preying on beach mice. However, any depredation associated with an increase in perches will still be less than current levels as the fences will exclude predator species, particularly feral cats and foxes, from beach mice habitat, subsequently increasing the viability of the population and potentially creating self-sustaining populations. While these types of impacts could occur in more park units than under current conditions, overall the potential for increased use of both nonlethal and lethal tools and methods in more park units regionwide will reduce the loss of eggs or young and increase availability of safe habitat for nesting, foraging, and reproducing for coastal species of concern. This will have a beneficial effect by increasing reproductive success and survival of coastal species of concern regionwide, as well as helping to meet the recovery goals for some of these species under the ESA.

Overall, increasing control and removal of predator species that have the potential to or are known to prey on coastal species of concern will benefit these species by increasing reproductive success through the reduction of loss of eggs or young, directly protecting nests or colonies, and increasing the availability of safe habitat for nesting, foraging, and reproducing. Given that the nonlethal and lethal management tools are intended to protect coastal species of

¹ The time required for the concentration of a chemical to decrease by half.

concern, will be limited in their use and duration, and will be implemented by experienced park personnel, any adverse impacts to coastal species of concern will not be significant.

As with predator species, the actions outside the park units covered in this PEA and in surrounding regions that would have cumulative impacts on coastal species of concern are state hunting and trapping and APHIS management. Hunting and trapping and APHIS management activities have the potential to adversely impact coastal species of concern through noise and human presence in areas where trapping and shooting occur. These actions occur statewide and would not be concentrated in coastal habitat used by coastal species of concern. It is unknown what proportion of statewide hunting or trapping and APHIS management actions occur on coastal habitat; however, NPS Southeast Region park units comprise only a small area of the region (less than 1%), while actions would be distributed across the region. Furthermore, sensitive areas such as shorebird colonies, sea turtle nest sites, and coastal dunes are often closed to public use.

Overall, the selected action will contribute only a very small incremental adverse impact to the overall cumulative impacts and will contribute a meaningful beneficial incremental impact to the overall cumulative impacts on coastal species of concern across the NPS Southeast Region due to the expected increase in the number of park units employing the tools and methods contained in the selected action. Because of the limited nature of impacts that are expected to coastal species of concern, the USFWS concurred with the NPS determinations that the selected alternative may affect, but is not likely to adversely affect species that are protected under the ESA.

CONCLUSION

As described above, the selected action does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The National Park Service has determined that the selected action will not have a significant effect on the human environment.

Based on the foregoing, it has been determined that an EIS is not required for this project and, thus, will not be prepared.

- Attachment 1: Non-impairment Determination
- Attachment 2: Errata to the PEA
- Attachment 3: Response to Substantive Public Comments
- Attachment 4: Programmatic Implementation Plan

Attachment 1: Non-impairment Determination

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the US Department of the Interior and the National Park Service to manage units “to conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (54 USC 100101). NPS *Management Policies 2006*, Section 1.4.4, explains the prohibition on impairment of park resources and values:

“While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.”

An action constitutes impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values” (NPS 2006, Section 1.4.5). To determine impairment, the National Park Service must evaluate the “particular resources and values that will be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.” An impact on any park resource or value may constitute impairment, but an impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- identified in the park’s general management plan or other relevant NPS planning documents as being of significance (NPS 2006, Section 1.4.5).

The significance and importance of each resource is discussed under the analyzed resource sections below.

The resource impact topics carried forward and analyzed for the NPS selected action in the programmatic environmental assessment and for which an impairment determination is contained in this attachment are predators and coastal species of concern. Each resource or value for which non-impairment is assessed and the reasons why impairment will not occur is described below. This non-impairment determination has been prepared for the selected action, as described in the Finding of No Significant Impact for the Coastal Species of Concern Predation Management Plan and Programmatic Environmental Assessment (PEA).

PREDATORS

Nonlethal tools and methods implemented under the selected action are not expected to impact the ability of predator species to locate food sources, as most of the coastal species of concern analyzed in the PEA are found in extremely limited numbers and most do not contribute substantially to the diet of predator species. Further, while some tools and methods, such as

fencing or screening, may impact the ability of predator species to access localized habitats to find food, all mammalian predator species considered in this PEA have home ranges extending between tens to thousands of acres. Additionally, all predator species analyzed in the PEA are opportunistic omnivores or carnivores that can adapt to different prey based on availability and have large home ranges to find food elsewhere. Research has shown that these species can forage in large home ranges outside of excluded habitats to find alternative food sources and typically reinvade quickly. Consequently, nonlethal tools and methods are not expected to impact habitat access for predator species in a meaningful way.

The lethal control tools and methods under the selected action will have direct impacts on individual predators and local predator populations from stress and direct mortality; however, the total number of predators removed represents a small proportion compared to the total estimated regional populations or state harvest levels in the states where the park units conducting removal are located. While lethal management will periodically reduce localized predator populations, such actions are not expected to reduce regional predator populations or habitat use and availability for predators. For park units on barrier islands not connected to the mainland via bridges, the annual removal of the estimated number of the species may result in slightly longer-lasting impacts locally because it is harder for these species to repopulate barrier islands due to geographical constraints. These impacts would not impair predator species because only a small number of predators are anticipated to be removed from barrier islands, only predator species known to prey on coastal species of concern will be removed, and these predator species are considered widespread and abundant in the region, indicating they will likely return to the barrier island.

Both nonlethal and lethal tools and methods under the selected action are intended to reduce local predator populations that are known to prey on coastal species of concern. These predator species are considered widespread and abundant and the selected action will not affect the overall status or stability of predator populations across Southeast Region coastal park units. The selected action may result in some adverse impacts to predator species by preventing predators from accessing individual coastal species of concern and reducing predator population numbers; however, it is not expected that the selected action will reduce regional predator populations or meaningfully interfere with habitat use and availability for predators overall. Consequently, predators will continue to be present in Southeast Region park units for the enjoyment of future generations, and therefore the selected action will not impair predator species.

COASTAL SPECIES OF CONCERN

The nonlethal and lethal tools and methods implemented under the selected action are intended to target predator species and will be limited in their use and duration, as described in the PEA. Adverse impacts on coastal species of concern primarily include noise and disturbance associated with increased human presence as tools and methods are implemented or constructed, and could include limited, localized increases in hunting perches from fence installation or accidental ingestion of the toxicant DRC-1339. The implementation of some nonlethal and lethal management tools and methods may cause disruption to habitat and behavior for some coastal species of concern, as well as displacement during implementation. However, due to the localized and infrequent use of nonlethal and lethal tools and methods on predators, impacts on coastal species of concern are not expected to be widespread, frequent, or long-lasting. Additionally, lethal management activities will be located away from the immediate vicinity of coastal species of concern nests. Consequently, these tools and methods

will not affect coastal species of concern in a meaningful way or decrease the reproductive success or survivability of these species.

The increased use of nonlethal and lethal tools and methods on predator species that have the potential to or are known to prey on coastal species of concern under the selected action will benefit these species by decreasing predation, increasing reproductive success through the reduction of loss of eggs or young, and increasing the availability of safe habitat for nesting, foraging, and reproducing. While the selected action may result in some adverse impacts to the coastal species of concern analyzed in the PEA as described above, the potential for increased use of nonlethal and lethal tools and methods in more park units regionwide will provide a large beneficial impact to coastal species of concern overall. Implementing a regionwide effort to protect these species during the most critical phase of survivorship (nesting, hatching, and fledging) will increase the potential for species continued existence and recovery and help their populations become more resilient to other threats through their range. As a result, coastal species of concern will continue to be present in the Southeast Region for the enjoyment of future generations, and their overall condition should improve compared to current conditions. Therefore, there will be no impairment of coastal species of concern in park units throughout the NPS Southeast Region.

CONCLUSION

The National Park Service has determined that implementation of the selected action will not constitute an impairment of the resources or values of the coastal park units in the NPS Southeast Region. This conclusion is based on consideration of the purpose and significance of the park units in the NPS Southeast Region, a thorough analysis of the environmental impacts described in the PEA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS *Management Policies 2006*.

Attachment 2: Errata to the PEA

CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

Page 1, Introduction: The sentences about predation at Canaveral National Seashore and Archie Carr National Wildlife Refuge have been replaced with the following text: “For example, from 2007 to 2018, between 4.7 percent (in 2017) and 26.1 percent (in 2018) of sea turtle nests were lost to predation at Canaveral National Seashore (see Table B-13 in Appendix B).”

Page 1, Introduction: The National Park Service has added the following text to a footnote on page 1, Chapter 1 of the PEA: “Colony collapse refers to a self-sustaining shorebird/seabird nesting colony that ceases to function due to an extreme drop in the number of fledglings, chicks, and eggs produced as a result of negative factors in the environment (predation, wash-outs). The nesting site may be completely abandoned for the season, or a few remaining individuals may try to continue nesting but are generally not successful. While least tern habitat at Fort Matanzas is always changing incrementally, significant storm events may change the habitat drastically. Predator monitoring and attempts at deterrence (e.g., live-trapping, olfactory perimeter) were implemented in the past in this area.”

Page 3, Table 1 – Coastal Species of Concern Analyzed in this PEA: The status of the snowy plover has been revised from Federally Threatened (FT) to State Listed (ST). The status of the Wilson’s plover has been revised from Not Listed (NT) to State Listed (ST).

Page 3, Table 2 – Predators Analyzed in this PEA: The “Great black-backed gull” line item has been revised to read: “Gull species.” The “armadillo” line item has been revised to read: “Nine-banded armadillo.”

Page 4, Introduction: A footnote with the following text has been added to the bottom of page 4: “Colony collapse refers to a self-sustaining shorebird/seabird nesting colony that ceases to function due to an extreme drop in the number of fledglings, chicks, and eggs produced as a result of negative factors in the environment (e.g., predation, wash-outs). The nesting site may be completely abandoned for the season, or a few remaining individuals may try to continue nesting but are generally not successful. While least tern habitat at Fort Matanzas is always changing incrementally, significant storm events may change the habitat drastically. Predator monitoring and attempts at deterrence (e.g., live-trapping, olfactory perimeter) were implemented in the past in this area.”

Page 4, Issues and Impact Topics: the text has been revised as follows: “Predators - Predation management could affect individual predator species, either through direct removal or through impacting their foraging potential.”

Page 5, Nonlethal Control Tools and Methods: Under the subheading “Fencing single nests and colonies of shorebirds,” the following text has been added after the fourth sentence in the paragraph: “Further, the use of exclosures may result in higher adult mortality in shorebirds in some circumstances. However, using exclosures to protect shorebird nests and colonies has also been shown to result in increased nest productivity and clutch survival for shorebirds overall (See the Piping Plover Decision Support Tool at <https://catalog.data.gov/dataset/decision-support-population-modeling-for-piping-plover-recovery>).”

Page 6, Nonlethal Control Tools and Methods: Under the subheading “Installing screens or cages on sea turtle nests,” the following text has been added at the end of the paragraph: “While cages are not always effective against coyotes, cages may be recommended in

situations where coyotes are observed digging under screens, and where park resources would allow. Park units that manage high-density sea turtle nesting beaches may not have the resources to cage all sea turtle nests, as installing and removing cages can be very labor intensive.”

Page 6, Nonlethal Control Tools and Methods: Under the subheading “Providing chick shelters,” the section has been revised as follows: “Shorebirds may use various items on the beach for shade. However, chick shelters typically follow a specific design. They are a type of cage or enclosure placed near individual bird nests to prevent depredation (Figure 4 in Appendix A). They are usually used in areas devoid of vegetation to provide both shade and act as a cover against avian predators. Materials and design of the shelters vary but may include small wooden A-frames, pallets, or pallets on top of bricks. Shelters can be approximately 8-inches high and 12-inches across the base. Shelters are typically placed at or near brood-rearing areas. They should be placed so as to minimize the attraction of predators to the nest, particularly for solitary nesters. Shelters are prone to attracting predators such as ghost crabs, which also prefer the shaded microclimate.”

Page 6, Nonlethal Control Tools and Methods: Under the subheading “Using effigies,” the following text has been added at the end of the paragraph: “Most effigies used for predation management are in the form of a bird, such as crows, hawks, etc. While scarecrows are frequently used for agriculture, they are not recommended for coastal species of concern that are also sensitive to human disturbance.”

Page 6, Nonlethal Control Tools and Methods: Under the subheading “Using conditioned taste aversion,” the last sentence of the paragraph has been revised as follows: “Predators may associate the taste of the coastal species of concern with the illness symptoms and avoid the species. However, the effect of the taste aversion is not permanent. Further, taste aversion may be effective only on certain types of predators.”

Page 6, Nonlethal Control Tools and Methods: Under the subheading “Using biological odor repellants,” the following text has been added at the end of the paragraph: “However, little is known about the effectiveness of repellants or how long scents will remain in a particular habitat. Repellants may need to be reapplied regularly, particularly in rainy environments.”

Page 7, Nonlethal Control Tools and Methods: Under the subheading “Using frightening devices,” the following text has been added at the end of the paragraph: “However, harassment and frightening devices should be used with sensitivity to avoid disruption to coastal species of concern.”

Page 7, Lethal Control Tools and Methods: Under the subheading “Foothold traps,” the following text has been added after the second sentence of the second paragraph on page 7: “Foothold traps can also be placed as part of a ‘blind-set’ without baits and lures. Blind sets are critical as a tool for trapping to avoid training trap-wise individuals, particularly coyote. Additionally, ghost crabs can be disruptive for trapping by digging up baits and lures, exposing traps and making them ineffective. The use of blind-sets allows for trapping effectively in these situations.”

Page 7, Lethal Control Tools and Methods: Under the subheading “Snares,” the following text has been added after the fourth sentence in the paragraph: “However, even with the use of ‘stops’, non-target animals may be caught in snares. For this reason, staff should use caution in

the placement of snares in locations where pets are known to be common, even if they are not permitted at the location.”

Page 9, Lethal Control Tools and Methods: The subheading “Use of firearms or shooting” has been moved from under the “Dispatching of captured animals” heading so that it is now a stand-alone lethal control method.

CHAPTER 2: ALTERNATIVES

Page 11, Traps and Snares: The following text has been added to the top of page 11: “Trained wildlife experts would conduct the release of non-target predator species from traps and snares on a case-by-case basis after considering the circumstances at the time of potential release.”

The following text has been added at the end of the first full paragraph on page 11: “However, buried carcasses may attract predator species to sea turtle nesting sites; therefore, trained wildlife experts will determine when and where carcasses will be left on a case-by-case basis.”

The following text has been added at the end of the second full paragraph on page 11: “Signage may be posted as necessary, with these determinations made on a case-by-case basis.”

Page 12, Lethal Control Tools and Methods: The following text has been added to the end of the first paragraph under the heading “Lethal Control Tools and Methods” on page 12: “Wildlife management officials from the US Department of Agriculture’s Animal and Plant Health Inspection Service may utilize DRC-1339 for targeted control of specific, known avian predators. As DRC-1339 is not a commonly used chemical, DRC-1339 would likely only be used as necessary in limited situations and in few park units. Management officials would identify target species and usage patterns in the area where damage is occurring, apply pre-baiting techniques, determine the appropriate concentration of DRC-1339, place treated bait, observe targeted species use of bait sites (including bait ingestion amounts), and remove any treated bait according to label instructions. Management officials would carefully consider the presence of any nearby non-target native species, complete any necessary registrations to use this toxicant, and ensure that public entrance into areas where poisons may be used would be controlled as appropriate.”

Page 13, Lethal Control Tools and Methods: The following text has been added to the end of the first paragraph under the heading “Lethal Control Tools and Methods” on page 13: “A pre-baiting period would establish use patterns and identification of any non-target concerns. Toxic baits would be monitored and removed from the site when not monitored.”

Page 13, Lethal Control Tools and Methods: A citation to the Florida Park Service Ghost Crab Removal and Beach Nesting Shorebird Survival Report has been added to the end of the first full paragraph on page 13.

Pages 13-14, Table 3 – Factors for Consideration Regarding Predation Management Tools and Methods: The text in the “Factors for Consideration, Such as Time and Location” section of Table 3 has been revised to read as follows:

- Under the “Factors for Consideration” section in the “Fencing single nests and colonies” heading, the following text has been added: “While adult mortality of shorebirds may increase with the use of exclosures in some circumstances, overall, using exclosures to

protect shorebird nests and colonies has been shown to result in increased nest productivity and clutch survival for shorebirds.”

- Under the “Factors for Consideration” section in the “Installing screens or cages” heading, the following text has been added: “While cages are not always effective against coyotes, cages may be recommended in situations where coyotes are observed digging under screens, and where park resources would allow. Park units that manage high-density sea turtle nesting beaches may not have the resources to cage all sea turtle nests, as installing and removing cages can be very labor intensive.”
- Under the “Factors for Consideration” section in the “Managing perches” heading the following text has been added: “Naturally occurring predator perches, such as snags or encroaching trees that occur in close proximity to nesting habitat, may be considered.”
- Under the “Factors for Consideration” section in the “Chick shelters” heading, the National Park Service edited the text to read as follows: “Used after chicks have hatched in areas devoid of vegetation. Weather is a consideration, as chick shelters can blow over. Chick shelters may attract predators, so they must be monitored. May disturb colony during placement and should be placed before chicks emerge from nests. Although chick shelters can blow over, shelters can also be elevated or weighed to minimize these concerns. Chick shelters can specifically attract predators like ghost crabs, who are attracted to the shade that shelters provide. Additionally, chick shelters may need to be moved frequently given the movement patterns of plover chicks.”
- Under the “Factors for Consideration” section in the “Snares” heading, the following text has been added: “Use caution when pets are known to be present.”

Pages 13-14, Table 3 – Factors for Consideration Regarding Predation Management

Tools and Methods: Two new rows for DRC-1339 and Fripp traps have been added to Table 3.

Page 15, Considerations for Use of Predation Management Tools and Methods: The following text has been added before the last paragraph on page 15, Chapter 2 of the PEA: “The National Park Service may use a private contractor, another federal agency, state agency, or skilled volunteers for predation management. The National Park Service would require that those parties operate under a park unit standard operating procedure (SOPs) in addition to those SOPs specific to that party. If the National Park Service uses the United States Department of Agriculture (USDA) Animal Plant Health Inspection Service (APHIS) for predation management, that park unit and USDA would develop a blanket SOP as part of the interagency agreement document. The National Park Service would require that all parties engaged in predation management do so under the direct supervision of the National Park Service. The use of a private contractor, another federal agency, state agency, or skilled volunteers would be determined at the park unit level, during tiered park-specific NEPA compliance.”

Page 16, Monitoring and Data Collection: The text in this section has been revised to read as follows: “As determined necessary by the Southeast Region, park units that implement predation management under the PEA would develop park-specific data collection programs that provide for regionally consistent reporting of information on predation management efforts. Any such programs would include standardized data collection protocols, consistent with National Park Service, State, and U.S. Fish and Wildlife Service (USFWS) recommendations and requirements, to the extent practicable. This consistency is intended to help inform the management of coastal species of concern and the decision framework for predation management tools and methods nationwide. This program could include, but would not be limited to: the types of tools and methods implemented, number and type of depredation events, number and type of predators removed and/or relocated, and percentage of successful coastal

species of concern reproductive events reported annually to determine effectiveness of predation management tools and methods. Based on results, management techniques may be altered at the park level to determine the best types and/or combination of management tools and methods to be utilized for subsequent years. Results from these programs would be shared among NPS Southeast Region park units tiering to this PEA to contribute to regionwide effective management strategies, track numbers of predators removed, and record coastal species of concern reproductive success.”

CHAPTER 3: AFFECTED ENVIRONMENT

Page 19, Mink: A new paragraph has been added at the end of the mink section with the following text: “In Florida, where the mink is uncommon, the mink is listed as a Species of Greatest Conservation Need. Consequently, park units in Florida will not target mink for removal. If future mink removal is required in order to protect coastal species of concern, Florida park units will work with the Florida Fish and Wildlife Conservation Commission on mink removal.”

Page 21, Great Black-Backed Gull: The “Great Black-Backed Gull” section heading has been revised to “Gull Species.” The following text has been added on the current condition and trends of the laughing gull:

Laughing gulls breed and/or winter throughout the Atlantic coast, including the entire NPS Southeast Region. This species inhabits coasts, bays, estuaries, and rarely large inland bodies of water. The laughing gull’s diet includes small fishes, worms in wet fields, crabs, insects, and sometimes eggs and young of sea birds. They will also eat trash if available. Predation on eggs and chicks may be harmful to tern species².

Laughing gulls are an IUCN least concern species, and populations are increasing overall³. Data from the North American Breeding Bird Survey indicate increases in both long-term (1966–present) and short-term (2005–2015) population trends survey-wide and in the US⁴.

Page 26, Gull-Billed Tern: The following text has been added at the end of the last paragraph: “It should be noted that the gull-billed tern is a known predator to other coastal species of concern, including the snowy plover, piping plover, and least tern.”

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Page 39, Table 4 - Estimated Lethal Control of Predators under Alternative A: The “Estimated Number Removed at Each Park Unit,” “Number of Park Units,” and “Total Estimated NPS Lethal Removal Numbers” has been updated to exclude Florida park units for mink.

² NatureServe. 2018. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Internet website: <http://explorer.natureserve.org>.

³ BirdLife International 2018. *Larus atricilla*. The IUCN Red List of Threatened Species 2018. Internet website: <http://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T22694455A132552784.en>.

⁴ Sauer, J. R., D. K. Niven, J. E. Hines, D. J. Ziolkowski, Jr, K. L. Pardieck, J. E. Fallon, and W. A. Link. 2017. The North American Breeding Bird Survey, Results and Analysis 1966 - 2015. Version 2.07.2017 USGS Patuxent Wildlife Research Center, Laurel, MD.

APPENDIX A: FIGURES

Page A-2, Figure 4: The figure was replaced with a more accurate depiction of a standard chick shelter. See the end of this errata for revised figure.

Page A-7, Figure 13: A figure of a Fripp Trap was added to Appendix A. See end of this errata for added figure.

APPENDIX C: ACRONYMS, GLOSSARY, AND REFERENCES

Page C-2, Glossary: The “chick shelter” definition in Appendix C has been revised to read: “A type of covering which provides shade or protection from the elements, allowing chicks to avoid depredation in the nest.”



Figure 4. Chick Shelter



Figure 13. (top photo): Fripp traps for installation on all-terrain vehicle; (bottom photo): Fripp trap installed on the beach

Attachment 3: Response to Substantive Public Comments

IMPACTS ANALYSIS: SCOPE OF EFFORT AND STUDY AREA

Concern 1: Commenters requested that the National Park Service expand the coastal species of concern and predator species analyzed in the PEA. Specifically, commenters recommended the following actions:

- Add the hawksbill sea turtle in Table 1 of the PEA.
- Add the mongoose as a predator species in Table 2 of the PEA.
- Change “great black backed gull” to “gull species” to account for regional gull predation issues or add a line item specific to “laughing gulls” to the list.
- Add a line item for “gull-billed tern.”
- Add a line item for either “generic raptor species” or specifically for “great horned owl.”

Response. A list of coastal species of concern and predator species analyzed in the PEA can be found in Chapter 1 (See Chapter 1, page 3). The National Park Service created this list by determining which coastal species of concern were at greatest risk from predation events regionwide and which predator species have been observed depredate or have the potential to depredate coastal species of concern regionwide. The species listed in the concern, specifically the hawksbill sea turtle and the mongoose, do not fit within these categories. The National Park Service acknowledges that this is not a complete list of either coastal species of concern or predator species regionwide, but rather those species that occur in most coastal park units. Park units have the ability to tier future predation management actions to this PEA to address impacts to additional coastal species of concern or from predator species specific to their park unit. For these reasons, the inclusion of these species listed by the commenters to this PEA is not merited at this time, and no changes were made to the PEA.

The request to specifically list general raptor species or the great horned owl as a predator species in the PEA is not merited at this time. While a limited number of park units have observed great horned owls depredate coastal species of concern in certain areas, the extent of great horned owl depredation on coastal species of concern is unknown and not prevalent region-wide. Likewise, the extent and prevalence of depredation on coastal species of concern by general raptor species is not well-known. As stated above, park units have the ability to tier to this PEA to address any potential impacts to coastal species of concern or predator species specific to their park unit. Therefore, analyzing general raptor species or the great horned owl in this PEA is not necessary, but may be analyzed in park specific tiered compliance.

The request to include the gull-billed tern to the predator list in the PEA is also not merited at this time. Gull-billed terns are federally protected by the Migratory Bird Treaty Act, and at the state level, are listed as threatened in Georgia and North Carolina. This species is also designated as a species of special concern or equivalent in Alabama, Mississippi, and South Carolina. While gull-billed terns have been observed preying on least tern and piping plover chicks and eggs in a few park units in the Southeast Region, the extent of this predation throughout park units in the Southeast Region is unknown. Consequently, analyzing the gull-billed tern as a predator species in this PEA is not warranted. However, park units may tier to this PEA to address any potential impacts to coastal species of concern specific to their park unit.

The National Park Service determined that the laughing gull is a species known to depredate coastal species of concern in the project area and is present in most coastal park units. For this reason, the National Park Service has expanded the predatory gull species analyzed in the PEA by renaming the “Great black-backed gull” line item to “Gull species” in Table 2 (Chapter 2, page 3). Likewise, on page 21, Chapter 3 of the PEA, the National Park Service has renamed the “Great Black-Backed Gull” section to “Gull Species” and added a paragraph on the current condition and trends of the laughing gull (See Attachment 2: Errata to the PEA). Additionally, the National Park Service has updated the impacts analysis in the PEA to address both of these gull species.

IMPACTS ANALYSIS: PREDATORS

Concern 2: Several commenters expressed concern that predation management measures may result in the endangerment of predator species.

Response. As demonstrated in Table 5 of the PEA (Estimated Lethal Control of Predators under Alternative B), the percentage of National Park Service removal of predator species compared to state harvest data or population estimates is very low, at 2% or below for most species (See Chapter 4, page 44). While there would be increases in the levels of take under the preferred alternative, total numbers of predators that would be removed by National Park Service management would represent only a small proportion of the overall harvest in the states in which the park units that would be conducting removal are located. Regionwide population numbers of predators would not be meaningfully affected.

Further, the population numbers of many of the predator species listed in the PEA are increasing, and most are designated as species of least concern by the IUCN, indicating they are at lowest risk of extinction and considered widespread and abundant. These predator species are hunted extensively throughout the Southeast Region, indicating robust populations that would require a large percentage of removal in order to have a significant impact on regionwide population numbers. As a result, it is expected that the lethal management of predators will not affect predator populations beyond a local scale and short-term timeframe.

Concern 3: One commenter stated that the PEA did not adequately analyze potential ecosystem responses to predator removal, primarily increases in mesopredator populations.

Response. This PEA is intended for targeted and strategic management of specific predators that prey on coastal species of concern. This plan does not intend to eradicate predators at the landscape-level but is instead focused on targeted management of both the coastal species of concern and predator species listed in the PEA. As stated in the previous concern response, there would be a limited effect on regionwide population numbers of predators from predation management efforts by the National Park Service. As a result, the park units in the Southeast Region do not anticipate that the controlled and limited removal of the predator species listed in the PEA will result in significantly increased mesopredator populations. Mesopredators are mid-ranking predators in the middle of a trophic level that typically prey on smaller animals (e.g. raccoons, skunks). Mesopredators may increase in abundance when larger apex predators are eliminated from an ecosystem. Park units will closely monitor mesopredator populations as a part of their predator control efforts, and park units will manage these populations as necessary to ensure the protection of coastal species of concern. As such, there is a limited potential for ecosystem level responses in the Southeast region as a result of the National Park Service’s predation management efforts.

IMPACTS ANALYSIS: COASTAL SPECIES OF CONCERN

Concern 4: One commenter expressed concern that lethal methods used for predation management could trap and kill sea turtles. For this reason, the commenter suggested that the National Park Service use only nest screens to protect sea turtles.

Response. The National Park Service is not aware of and does not possess any data to support the commenter's assertion. The National Park Service thoroughly reviewed an array of lethal predation management methods and determined that it is not physically possible for juvenile or adult sea turtles to be captured by any methods listed in Chapter 2 of the PEA due to the large size of sea turtles in comparison to any of the traps or snares used. Consequently, there is no evidence to support the commenter's assertion that sea turtles may be captured or killed by any of the lethal methods listed in the PEA. Further, the predation management tools and methods evaluated in the PEA were developed based on depredation issues for a variety of coastal species of concern (See Chapter 1, page 1). The PEA does list installing screens or cages on sea turtle nests as an effective nonlethal method to protect this species (See Chapter 2, page 6). However, limiting measures to protect sea turtles to only nest screens, rather than a variety of lethal and non-lethal management methods to control predator impacts on sea turtles, does not fully address the Purpose and Need of this PEA. Moreover, if the National Park Service only utilized this method, it may not meet the requirements of federal, state, and county laws, regulations, and/or policies pertaining to coastal species of concern protection.

Additionally, the PEA contains various "Best Management Practices" to ensure that the National Park Service conducts predation management activities so that coastal species of concern and other non-target species are not injured or captured as a result of predation management (See Chapter 2, page 9-11 for a detailed description of Best Management Practices). For example, the PEA's Best Management Practices mandate that the National Park Service ensure that only personnel with proper training and experience will conduct predation management in order to prevent capture of or injury to non-target species. Consequently, this issue does not warrant further consideration or analysis.

AFFECTED ENVIRONMENT: PREDATORS

Concern 5: One commenter made several requests that the National Park Service clarify or revise information in the PEA relating to predator species. Specifically, this commenter recommended the following actions:

- In Table 2 on page 3, Chapter 1 of the PEA, update "armadillo" to "nine-banded armadillo."
- On page 19, Chapter 3 of the PEA, add information in the mink section that mink should not be taken as a predator specifically in Florida, due to their listing as a Species of Greatest Conservation need and unknown population status.
- On page 26, Chapter 3 of the PEA, add that the gull-billed tern is a known predator to other coastal species of concern, such as the snowy plover, piping plover, and least tern given that they have been confirmed to depredate eggs and are one of the primary sources of chick loss in Florida.

Response. The National Park Service has considered each of the requests above and has added text to incorporate these requests as needed to the Coastal Species of Concern section in the PEA (See Attachment 2: Errata to the PEA).

ALTERNATIVES: PROPOSED ACTION OR NEW ALTERNATIVES

Concern 6: One commenter suggested the National Park Service should focus on reducing human impacts to both coastal species of concern and predators.

Response. The purpose of this PEA is to protect coastal species of concern through predation management and is not focused on reducing human impacts to these species. Thus, this recommendation is outside the scope of the PEA. Actions proposed in this plan could occur regardless of whether the National Park Service takes action to reduce human impacts to coastal species of concern and predators. Likewise, nothing in this plan precludes the park from reducing human impacts to species. As such, these two actions are not connected actions under NEPA. Independent of this PEA, the National Park Service does regularly engage in public outreach efforts to educate and inform the public on ways to reduce human impacts on coastal species of concern, including through park unit websites, interpretive staff, and outreach materials available at park unit visitor centers. Many parks in the Southeast Region have various plans in place, including visitor use, ORV, and beach management plans specifically for the purpose of reducing human impacts on coastal species of concern.

Concern 7: One commenter inquired about whether a hunting season for feral swine would be feasible in Southeast region park units and if so, whether it could be implemented. Another commenter requested that the National Park Service manage hunting to prevent hunting without a license or over-harvesting by hunters.

Response. While various predator species are managed at the State level through hunting and trapping permits, some park units in the Southeast Region, through their enabling legislations, also authorize hunting and trapping, including hunting and trapping of feral swine (See Appendix D, page D-3 for a full list of Southeast Region park units that allow hunting and trapping). Additionally, many park units in the Southeast Region already have measures in place to ensure that illegal hunting and over-harvesting by hunters do not occur. Changes to the way hunting is managed in the Southeast Region, either within park units or at the State level, is outside the scope of this plan.

Concern 8: Several commenters suggested that the National Park Service collect sea turtle eggs from nests and release the hatchlings in a controlled area to prevent depredation. Additionally, one commenter requested that the National Park Service supervise turtle nests in order to decrease predation rates.

Response. The goal of the proposed action is to build a predation management toolbox that can be used across the NPS Southeast Region to facilitate and streamline planning, interagency coordination, and program management for the protection and recovery of coastal species of concern. The plan focuses on those tools that have been determined to be most effective for predation management. Given the large volume of sea turtle nests in some parks (e.g., Cumberland Island National Seashore reported 469 sea turtle nests in 2018 and Canaveral National Seashore reported between 4,500 and 12,000 sea turtles nests in 2017 and 2018), and the ability of predator species to depredate many sea turtle nests in a single night, relocation of a large numbers of nests to a controlled environment for purposes of predation management would be cost prohibitive and infeasible to implement region-wide. Additionally, for most nesting beaches in the Southeast Region, it is general practice to avoid disturbing any nest believed to be more than 12 hours old. Literature has shown that nest relocation beyond this period can cause significant disturbance to eggs, resulting in changes to embryonic

development and in some instances decreased hatch success (Ahles 2009, Blanck and Sawyer 1981, Le Buff 1990, Limpus, Baker and Miller 1979).

Each park unit may approach sea turtle nest supervision differently, given the variations in relevant state guidelines, number of sea turtle nesting sites, and park area size for any given park unit and may analyze the use of this tool in park-specific compliance.

Concern 9: Several commenters requested an alternative that would allow the National Park Service to safely capture predators and relocate them away from coastal species of concern nests.

Response. This alternative element was considered but dismissed from analysis in the PEA (See Appendix D, page D-5). For some predators, such as feral cats, relocation is a feasible option. For example, Alternative A in the PEA states that feral cats may be live trapped via a walk-in cage trap and sent to a shelter (See Chapter 2, page 5). However, in general, most states have guidelines that do not allow (or at least discourage) wildlife species to be transported within the state, often due to disease transmission concerns or other unintended consequences. Consequently, it is not likely that park units could obtain permits from states to transport most predator species for this predation management plan due to prohibitions on transport. This alternative element also presents humaneness concerns for most predator species, due to increased competition in areas where predators may be relocated. Lastly, many predator species have a great ability to return to areas where they were captured after relocation to other areas, thus reducing the feasibility and effectiveness of this alternative element. Therefore, this alternative was dismissed from further analysis in this PEA.

Concern 10: One commenter requested that the National Park Service supplement predator species' food sources to decrease predation rates.

Response. This method, if implemented, would not meet the Purpose and Need for action outlined in the PEA, as supplementation of food sources may result in artificially-high population numbers of and reproduction capacities for many predator species. These unintended consequences could result in greater impacts to coastal species of concern, which would not meet the purpose of the PEA.

Further, merely supplementing predator species' food sources in an attempt to decrease predation rates on coastal species of concern is would be inconsistent with NPS management policies and is unlikely to be effective. For example, feral cat populations do not cease hunting/killing bird species despite supplemental food sources (American Bird Conservancy 2018⁵). It is estimated that free ranging domestic cats that are owned kill 100 million to 3 billion birds in the US and 500 million to 2.8 billion mammals in the US and Europe annually (Loss et al. 2013⁶). It is presumed that these owned cats receive regular food from their owners. Furthermore, supplemental feeding feral cats can increase the population densities to be higher than otherwise expected (Tennet and Downs 2008⁷). Therefore, this method was properly excluded from consideration and analysis in the PEA.

⁵ American Bird Conservancy. 2018. Cats Indoors. Internet website: <https://abcbirds.org/program/cats-indoors/cats-and-birds/>.

⁶ Loss, S. R., T. Will, and P. P. Marra. 2013. The impact of free-ranging domestic cats on wildlife of the United States. *Nature Communications*, Article number 1396.

⁷ Tennet, J. and C. T. Downs. 2008. Abundance and home ranges of feral cats in an urban conservancy where there is supplemental feeding: a case study from South Africa. *African Zoology* 43(2):218-229.

Concern 11: Several commenters requested that the National Park Service incorporate technology, such as cameras and alarm systems, into both lethal and non-lethal predation management methods in order to decrease predation rates.

Response. The National Park Service currently utilizes camera systems in feral swine traps, which has proven to be an effective technological method to control feral swine populations. The PEA describes this method on page 8 of Chapter 2, under the subheading “Box/cage/corral traps.” As summarized in the PEA, recent advances in technology have enabled trap systems to include trigger devices that can communicate with nearby surveillance cameras connected to park staff cell phones. After receiving a message from a surveillance camera, park staff can operate a trap system via text commands from their cell phone if a camera shows swine present inside a trap.

However, the experience of the National Park Service staff indicates that camera systems are currently only feasible and effective for feral swine trapping. Feral swine are larger in size and tend to herd together in groups, as opposed to lone predator species, which can be more difficult to detect and capture using camera systems due to their smaller size, greater speed, and solitary lifestyles. Consequently, the use of cameras and alarm systems to attempt to capture smaller predator species would not be feasible or effective at this time. However, as described in the 'Emerging Technologies' section of Chapter 2 of the PEA, the National Park Service may implement additional technologies or tools as they become available.

Concern 12: Several commenters requested that the National Park Service improve its community outreach and education efforts by informing the public about the damage that predators can inflict on endemic species and organizing community involvement projects to protect sea turtle nests. Another commenter requested that the National Park Service better inform the public on the relationship between coastal species of concern and how they benefit coastal environments.

Response: As indicated in the Purpose and Need, this PEA is focused on developing a coastal species of concern predation management plan (See Chapter 1, page 1). Independent of this PEA, the National Park Service regularly engages in public outreach efforts to educate and inform the public on the topics listed above, including through park unit websites, interpretive staff, and outreach materials available at park unit visitor centers. Additionally, the National Park Service currently conducts various community involvement projects in the Southeast Region. For example, several park units use volunteers to protect coastal species of concern, offer night-time sea turtle education walks, and educate park visitors about predator impacts at visitor information centers. Park units use these methods to the extent that resources are available. However, because such educational and outreach efforts are not generally believed to cause environmental impacts analyzed in an EA, the National Park Service has not elaborated on these efforts in the PEA.

Concern 13: One commenter requested that the National Park Service collaborate with state agencies on predation management efforts. This commenter suggested that the section on State Hunting and Trapping on page 33, Chapter 4 of the PEA should discuss state authorization of leg hold traps for trapping purposes. Additionally, this commenter suggested that the National Park Service should use a State Predator Management Biologist during predation management efforts.

Response. The National Park Service agrees that collaboration with state agencies is an important component of effectively implementing predation management efforts. The National

Park Service has revised the text on page 15, Chapter 2 of the PEA to include State Agencies as viable resources to aid in predation management (See Attachment 2: Errata to the PEA).

Regarding State authorization for traps, as appropriate, individual park units will work with State agencies to the extent required under Federal and/or State laws and regulations) for any authorizations needed for the predator control tools listed in the PEA.

Concern 14: One commenter recommended the use of an adaptive framework for predation management that facilitates the focus of targeted predation management (both reactive and proactive) following monitoring and documentation of site-specific predation pressures and risks. Additionally, several commenters made various recommendations regarding monitoring and data collection in the PEA. These recommendations are listed below:

- Create a monitoring system for predator species to determine what species occur and reproduce in the highest numbers so that the National Park Service can remove only those species.
- Standardize monitoring and data collection across all national parks in the Southeastern US to assess the effectiveness of predation management actions for various coastal species of concern.
- Add an appendix detailing the type of data that will be collected, where the data will be stored, and whether annual reports will be available to potentially inform predation management actions outside of the National Park Service.

Response. The PEA includes elements of an adaptive framework as part of the toolbox approach described under the preferred alternative in the PEA. The preferred alternative gives park units the flexibility to use both nonlethal and lethal tools and apply these tools in ways that best meets the specific needs of each park unit based on the specific predators, specific coastal species of concern, and monitoring results.

Regarding the first recommendation, the National Park Service agrees with this suggestion and currently uses monitoring and the best available scientific information, including knowledge of the reproductive capacity of predators, to inform predation management.

Regarding the second recommendation, as discussed in Chapter 2 of the PEA, any park that tiers to this PEA and implements predation management tools and methods should work to develop a park-specific data collection program that allows for consistent reporting of information on predation management efforts as needed. Any such program should include standardized data collection protocols, consistent with National Park Service, State, and USFWS recommendations and requirements, to the extent practicable. This consistency would help inform the management of coastal species of concern and the decision framework for predation management tools and methods. The National Park Service has updated Chapter 2 with a description of this data collection program, as recorded in the Errata (See Attachment 2: Errata to the PEA).

Regarding the third recommendation, the Southeast Region and park units are currently coordinating on a more standardized approach to collect data on the number, species, and locations where predation management occurs, and anticipate preparing reports periodically; however, park units are not committed to any specific data collection, data warehousing, or reporting at this time. In addition, such details are not subject to NEPA analysis in an EA. Therefore, the National Park Service did not add an appendix to the PEA discussing this information.

Concern 15: One commenter recommended that the National Park Service change the example thresholds listed on page 15, Chapter 2 of the PEA, as the commenter believed that they could be viewed as baseline thresholds to consider for management. Additionally, this commenter recommended that the National Park Service establish general predation thresholds, predation trigger levels, and guidance to help guide park managers on decisions to implement predation management.

Response. The National Park Service dismissed predation rate thresholds from further analysis in the PEA (See Appendix D, page D-7 for a detailed explanation of the National Park Service's reasoning for dismissing this alternative from analysis). Regarding general predation thresholds and predation trigger levels, the PEA states that park managers may develop thresholds or triggers at a park-specific level (Chapter 2, page 15). However, setting thresholds and triggers regionwide would not be appropriate given that a single threshold would not work for all park units or species within a specific park unit. Due to the programmatic nature of this EA and the differing needs of each park unit, it is a more effective strategy to allow individual park units to set their own thresholds and triggers using local expertise, best available science, and monitoring data.

Concern 16: One commenter requested that the National Park Service revise the PEA's descriptions and considerations for the application of several predation management tools. This commenter recommended the following actions:

- On page 5, Chapter 2 of the PEA under "Fencing single nests and colonies of shorebirds," add the following: The use of exclosures can lead to higher adult mortality. Also add a reference to the new piping plover decision support tool as well as a link to the Piping Plover Atlantic Coast Recovery Plan.
- On page 6, Chapter 2 of the PEA under "Installing screens or cages on sea turtle nests," add the following: Coyote are known to dig under wire screens; consequently, screens may not be effective in preventing depredation. Cages are recommended in these situations.
- On page 6, Chapter 2 of the PEA under "Providing chick shelters," add the following: Shorebirds may use various items on the beach for shade. However, chick shelters follow a specific design, typically in an A-frame structure to provide both shade and act as a cover against avian predators. Shelters are typically placed at or near brood-rearing areas. They may be placed near nests, but should never be placed at nests, particularly or solitary nesters to minimize the attraction of predators to the nest. Shelters are unfortunately prone to attracting predations such as ghost crabs that also prefer the shaded microclimate.
- On page 6, Chapter 2 of the PEA under "Using effigies," add the following: Most effigies used for predator management are in the form of a bird, such as crows, hawks, etc. While scarecrows are frequently used for agriculture, they are not recommended for coastal species of concern that are also sensitive to human disturbance.
- On page 6, Chapter 2 of the PEA under "Using conditioned taste aversion," add the following: Predators may associate the taste and that the effect of the aversion is not permanent. Taste aversion may be effective to certain types of predators and habitats. Federal and state authorization is needed.
- On page 6, Chapter 2 of the PEA under "Using biological odor repellants," add the following: Little is known about the effectiveness of repellants or how long scents will remain in the habitat. Repellants may need to be reapplied regularly, particularly in rainy environments.

- On page 7, Chapter 2 of the PEA under “Using disruptive harassment and frightening devices,” add the following: Harassment and frightening devices should be used with sensitivity to avoid disruption to coastal species of concern.
- On page 7, Chapter 2 of the PEA under “Foothold traps,” add the following: Foothold traps can also be placed as part of a 'blind-set' without baits and lures. Blind sets are critical as a tool for trapping to avoid training trap-wise individuals, particularly coyote. Additionally, ghost crabs can be disruptive for trapping by digging up baits and lures, exposing traps and making them ineffective. The use of blind-sets allows for trapping effectively in these situations.”
- On page 7, Chapter 2 of the PEA under “Snares,” add the following: Even with the use of 'stops', non-target animals may be caught in snares. For this reason, placement of snares should address caution of use in locations where pets are known to be common, even if they are not permitted at the location.
- On page 9, Chapter 2 of the PEA, under “Lethal Methods,” add 'Direct Shoot' as a method for Lethal Removal.

Response. The National Park Service has considered each of the recommendations above and has added text to incorporate these recommendations as needed to the predation management tools in the PEA (See Attachment 2: Errata to the PEA). It should be noted that several of these tools are not carried forward in the preferred alternative but are described in the no-action alternative (using effigies, conditioned taste aversion, biological odor repellents, or frightening devices).

Concern 17: One commenter questioned the National Park Service’s level of detail regarding the Best Management Practices for traps and snares. Specifically, the commenter made the following comments:

- The commenter noted that while the PEA states that all non-target species accidentally captured will be released, the commenter expressed concern that if a non-target species is a potential predator, releasing the animal could result in creating a trap-shy predator.
- The commenter requested that the National Park Service should leave animal carcasses on site if trapping occurs on beach sides, particularly if in close proximity to nesting habitat. The commenter noted that buried carcasses can attract predators to the site, thus negating predation management actions.
- The commenter recommended using signs to temporarily close areas where trapping or other predation management actions occur.

Response. The National Park Service agrees that the release of non-target predator species could result in trap-shy predator species. Consequently, the National Park Service has determined that trained wildlife experts will conduct the release of non-target predator species from traps and snares on a case-by-case basis after considering the circumstances at the time of potential release.

Likewise, the National Park Service agrees that buried carcasses may attract predator species to sea turtle nesting sites; therefore, trained wildlife experts will determine when and where carcasses will be left on a case-by-case basis. Regarding the request to include signs to temporarily close areas, the National Park Service has determined that signage may be posted as necessary. These determinations will also be made on a case-by-case basis.

The National Park Service has made changes to the text of the PEA based on these determinations (See Attachment 2: Errata to the PEA).

Concern 18: One commenter requested that the PEA provide additional detail or examples on pages 12 and 13, Chapter 2 of the PEA, regarding where and how DRC-1339 will be applied, and how staff plan to minimize harm to non-target species, people, and pets.

Response. Wildlife management officials from the US Department of Agriculture’s Animal and Plant Health Inspection Service, or others certified as a licensed pesticide applicator, may utilize DRC-1339 for targeted control of specific, known avian predators. As DRC-1339 is not a commonly used chemical, DRC-1339 would likely only be used as necessary in limited situations and in few park units. Management officials would identify target species and usage patterns in the area where damage is occurring, apply pre-baiting techniques, determine the appropriate concentration of DRC-1339, place treated bait, observe targeted species use of bait sites (including bait ingestion amounts), and remove any treated bait according to label instructions. Management officials would carefully consider the presence of any nearby nontarget native species using pre-baiting techniques, complete any necessary registrations to use this toxicant, and ensure that public entrance into areas where DRC-1339 may be used would be controlled as appropriate. The National Park Service has added this additional detail on the use of DRC-1339 to the end of the first paragraph under the heading “Lethal Control Tools and Methods” on page 12, Chapter 2 of the PEA. (See Attachment 2: Errata to the PEA).

Concern 19: One commenter made several requests regarding the paragraph relating to Fripp traps on page 13, Chapter 2 of the PEA, including that the PEA include: a link for information on Fripp trap construction; an image/description of a Fripp Trap in the Appendix; and a link to the Florida Park Service Ghost Crab Report.

Response. The National Park Service has considered each of the requests above and has added text to incorporate these requests as needed to the PEA (See Attachment 2: Errata to the PEA).

Regarding the request for a link to information on Fripp trap construction, the PEA provides an adequate level of detail to analyze the impacts of using a Fripp trap and therefore more details about construction, including a link, is not necessary for this NEPA analysis.

EDITORIAL COMMENTS

Concern 20: One commenter made an editorial request to replace the “chick shelter” definition on page C-2 of Appendix C and the “chick shelter” figure in Appendix A (Figure 4). The commenter felt that neither the definition nor the figure appropriately reflected a standard chick shelter.

Response. The National Park Service has made the requested changes to the appendices of the PEA as recorded in the Errata (See Attachment 2: Errata to the PEA).

Concern 21: One commenter felt that the section regarding sea turtle predation at Canaveral National Seashore on page 1, Chapter 1 of the PEA was inconsistent and required further clarification. Specifically, the commenter requested further clarification on the percentages of nest depredation.

Response. The National Park Service has clarified the percentages of nest predation described on page 1 of the PEA (See Attachment 2: Errata to the PEA).

Concern 22: One commenter requested more details on the term “colony collapse” on page 1, Chapter 1 of the PEA. This commenter also inquired about whether there were concurrent changes to the habitat and whether predation management occurred during this time period.

Response. The National Park Service has added a footnote on page 1, Chapter 1 of the PEA that provides more detail on the colony collapse described on page 1 (See Attachment 2: Errata to the PEA).

Concern 23: One commenter made several editorial requests to modify the text of the PEA. These requests are listed below:

- On page 3 in Table 1, Chapter 1 of the PEA, change the status for the snowy plover from Federally Threatened (FT) to State Threatened (ST).
- On page 3 in Table 1, Chapter 1 of the PEA, clarify that the Wilson’s plover is State Threatened (ST) in at least part of its range.
- On page 4 in Chapter 1 of the PEA, revise the sentence relating to predators, as the commenter felt it was confusing.

Response. The National Park Service has considered each of the editorial requests above and has added text to incorporate these requests as needed.

While the snowy plover is Federally Threatened on the Pacific Coast, this listing status is limited to that specific population segment and does not apply to snowy plover occurring in coastal areas of the Southeastern United States. Consequently, the National Park Service has revised its listing to State Listed (ST) in the PEA. Likewise, the Wilson’s plover is State Listed in at least part of its range (Georgia); therefore, the National Park Service has revised its listing from Not Listed (NT) to State Listed (ST) in the PEA. The National Park Service has updated the PEA to reflect these changes (See Attachment 2: Errata to the PEA).

Regarding the third request listed above, the National Park Service has added text to provide clarity on page 4, Chapter 1 of the PEA (See Attachment 2, Errata to the PEA).

Concern 24: One commenter made several editorial requests to modify the text of the “Factors for Consideration, Such as Time and Location” section in Table 3 on pages 13-14, Chapter 2 of the PEA. The commenter made the following requests:

- Under “Fencing single nests and colonies,” add the following: “Adult mortality of shorebirds may increase with the use of exclosures under the factors to consider section.”
- Under “Installing screens or cages,” add recommendations for the use of cages instead of screens in situations where coyotes are observed digging under screens.
- Under “Managing Perches,” add recommendations to consider management of naturally occurring predator perches, such as snags or encroaching trees that occur in close proximity to nesting habitat.
- Under “Chick shelters,” describe how shelter design can address some of the factors for consideration.
- Under “Snares,” add the following: “Use caution when dogs are known to be present.”

Response. The National Park Service has considered each of the editorial requests above and has added text to incorporate these requests as needed to Table 3 on pages 13-14, Chapter 2 of the PEA (See Attachment 2, Errata to the PEA).

Attachment 4: Programmatic Implementation Plan

INTRODUCTION

This Programmatic Coastal Species of Concern Predation Management Plan (the plan) was developed by the National Park Service (NPS) to address depredation issues on coastal species of concern throughout various park units in the Southeast Region. Under this plan, all park units in the NPS Southeast Region will have a suite of tools and methods available to control predators threatening coastal species of concern, including tools and methods that were not previously used by some park units in the region. This plan establishes the framework for the use of predation management tools and methods, while park unit-specific depredation efforts may be proposed and evaluated in subsequent NEPA reviews that “tier” to this PEA. Additionally, this plan will streamline the approach for predation management by providing programmatic NEPA compliance across the region, resulting in the timely and efficient implementation of the tools and methods presented in the plan.

GENERAL APPROACH

Predation management under the plan will be selective to reduce the likelihood of adverse impacts associated with use of the various predation management tools and methods. After identifying target predators, park staff will use the most effective and humane tools and methods available to deter or remove predators. The National Park Service will also apply regionally consistent best management practices (BMPs) and mitigation measures to reduce the likelihood of adverse impacts associated with implementing predation management tools. Additionally, park units may develop park-specific data collection programs that allow for consistent reporting of information on predation management efforts.

NONLETHAL CONTROL TOOLS AND METHODS

Relocating Feral Cats

Feral cats may be trapped live via a walk-in cage trap and sent to a shelter.

Fencing Single Nests and Colonies of Shorebirds

Exclosures are typically 4-foot high, have a 4-foot radius, and can be made of 2-inch by 4-inch non-electrified wire mesh. Plastic bird netting is placed on top of the exclosure. This design allows small birds to pass through but keeps out larger birds, such as crows and gulls, and mammals, such as raccoons, feral cats, and canines (Figure 2 and Figure 3 in Appendix A). Predator exclosures do not protect eggs or chicks from ghost crabs, nor are they effective for protecting chicks from avian and mammalian predators once they are outside the predator exclosures. Further, the use of exclosures may result in higher adult mortality in shorebirds in some circumstances. However, using exclosures to protect shorebird nests and colonies has also been shown to result in increased nest productivity and clutch survival for shorebirds overall (See the Piping Plover Decision Support Tool at <https://catalog.data.gov/dataset/decision-support-population-modeling-for-piping-plover-recovery>). Additional predator exclosure use guidelines can be found in Appendix F of the “*Piping Plover (Charadrius melodus) Atlantic Coast Population Revised Recovery Plan*” (USFWS 1996). A link to this document is provided in the references section in Appendix C of the PEA. These guidelines recommend that persons constructing predator exclosures have the appropriate authorization(s) and experience. Circular or square exclosures are recommended and should be constructed after a full clutch of eggs is confirmed during good weather. Behavior of the coastal species of concern should be monitored

during and after enclosure construction for abandonment. Enclosures should be removed after chicks have fledged or the birds have left the nest territory and will not be disturbed by enclosure removal.

Installing Screens or Cages on Sea Turtle Nests

Such exclusion devices consist of a 4-foot-square panel of 2-inch by 4-inch wire mesh or comparable material securely anchored over the nest when it is first laid and located. Screens are used to deter mammalian predator species from excavating individual sea turtle nests, which results in the loss of eggs. These exclusion devices also protect hatchling turtles from avian predators when they are emerging from the nest during the time that they are still within the exclusion area. Screen or cage exclusion devices do not protect eggs or hatchlings from ghost crabs, nor are they effective for protecting hatchlings from avian and mammalian predators once they are outside the exclusion device. While cages are not always effective against coyotes, cages may be recommended in situations where coyotes are observed digging under screens, and where park resources would allow. Park units that manage high-density sea turtle nesting beaches may not have the resources to cage all sea turtle nests, as installing and removing cages can be very labor intensive.

Managing Perches

Perch deterrents are devices designed to prevent predatory birds and corvids from using tall structures, generally artificial perches like power poles, as hunting platforms in prey habitats. Perch deterrents thereby hinder the ability of predatory birds and corvids to forage in certain areas, minimizing depredation. Commercially available perch deterrents are usually triangle shaped, cone-shaped, or are spike-type structures that dissuade perching on a horizontal beam or pole top (Dwyer and Doloughan 2014). Other perch management, such as removing perches (dead snags) and shortening tall signs, also deter predatory birds from perching and reduce depredation in certain areas (USDA APHIS 2016).

Providing Chick Shelters

Shorebirds may use various items on the beach for shade. However, chick shelters typically follow a specific design. They are a type of cage or enclosure placed near individual bird nests to prevent depredation (Figure 4 in Appendix A). They are usually used in areas devoid of vegetation to provide both shade and act as a cover against avian predators. Materials and design of the shelters vary but may include small wooden A-frames, pallets, or pallets on top of bricks. Shelters can be approximately 8-inches high and 12-inches across the base. Shelters are typically placed at or near brood-rearing areas. They should be placed so as to minimize the attraction of predators to the nest, particularly for solitary nesters. Shelters are prone to attracting predators such as ghost crabs, which also prefer the shaded microclimate.

LETHAL CONTROL TOOLS AND METHODS

Foothold Traps

Foothold traps are a versatile control method widely used by wildlife managers across the country. Foothold traps (Figure 5 in Appendix A) of the appropriate size and type can be effectively used to capture specific target animals that may not respond to other control tools or methods. Two primary advantages of the foothold trap are that they can be set under a variety of conditions and pan-tension devices can be used to reduce the potential for capturing smaller nontarget animals. Advances in technology (padded jaws, laminated jaws, and offset jaws) have made trap designs more efficient and humane for captured animals (see Best Management Practices [BMPs], described below). Effective trap placement and use of appropriate lures by trained personnel also contribute greatly to the foothold trap's selectivity. Modern trap designs

minimize injury and stress to captured animals. Foothold traps also allow for on-site release or relocation of nontarget animals.

Trap placement location is contingent on the habits of the respective target species, habitat conditions, presence of nontarget animals, and occasionally the level of human (visitor) activity. Traps can be baited or scented using fetid food, urine, or musk to attract the target animal. Foothold traps can also be placed as part of a 'blind-set' without baits and lures. Blind sets are critical as a tool for trapping to avoid training trap-wise individuals, particularly coyote. Additionally, ghost crabs can be disruptive for trapping by digging up baits and lures, exposing traps and making them ineffective. The use of blind-sets allows for trapping effectively in these situations. Predation management personnel use foothold traps to capture a variety of predators, including coyotes, foxes, raccoons, opossums, and mink. Captured target species will continue to be dispatched by approved tools and methods described below.

Snares

Snares (Figure 6 in Appendix A) are capture devices composed of a cable loop and a slide locking device. Most snares are equipped with a swivel to minimize cable twisting and breakage while allowing a captured animal to move freely, decreasing the likelihood of injury. Snare cable sizes range from 1/16-inch to 3/16-inch and are commonly used in the United States to capture animals as small as mink to larger animals like feral swine. Available modifications include "stops" that prevent the slide lock from closing past a certain point to prevent capture of some nontarget species or to reduce tension-related stress on captured target animals. However, even with the use of 'stops', non-target animals may be caught in snares. For this reason, staff should use caution in the placement of snares in locations where pets are known to be common, even if they are not permitted at the location. Break-away locks or links are designed to separate at specific tensions to avoid capturing larger nontarget animals like deer and livestock. Snare sets can be designed to capture an animal around the neck in both lethal and non-lethal situations. Foot snares utilize the same snare device with a throw mechanism to capture an animal above the foot for nonlethal capture. The Collarum® live capture device uses a throw mechanism with a large cable and stop installed to reduce injury to both target animals (fox and coyote) and nontarget animals. Captured target species will continue to be dispatched by approved tools and methods described below.

Walk-in Cage Traps

Walk-in cage traps, commonly referred to as live traps or Havahart™ traps, are used to capture a variety of animals, including raccoons, opossums, feral cats, and in some instances, foxes (Figure 7 in Appendix A). Placement of walk-in cage traps is contingent on the habits of the respective target species, habitat conditions, and the presence of nontarget animals. Cage traps pose minimal risk to humans, pets, and other nontarget species, and they allow for on-site release or relocation of nontarget animals. Typical baits/attractants used for cage traps are food-based lures. Most feral cats are trapped using these devices and are sent to shelters. With the exception of feral cats, captured target species will continue to be dispatched by approved tools and methods described below.

Dog-proof Traps

Dog-proof traps are a more recently developed foot capture trap used for raccoons and opossums and are designed to avoid the potential to capture dogs and other nontarget animals (Figure 8 in Appendix A). The trap design is based on a trigger mechanism that must either be pulled or pushed to trip the capture bar. The trigger mechanism is enclosed inside a small metal cylinder or box that prevents animals like dogs from accessing and operating the trigger. The trap's design is based on the ability of animals like raccoons and opossums to reach into a small

space (in this case, a hole in the trap casing) and grab, push, or pull the trigger. When tripped, a spring-loaded bar slides across the opening and pins the animal's foot against the inside of the trap casing. Dog-proof traps are staked in the ground, secured with an anchor or cable, and baited with a variety of raccoon or opossum lures. Normal capture is well above the animal's foot, and injury is nonexistent to minimal in most cases. Captured target species will continue to be dispatched by approved tools and methods described below.

Box/Cage/Corral Traps

Traps commonly used to capture feral swine include box traps, cage traps, and corral traps (Mississippi State University 2013) (Figures 9 and 10 in Appendix A). Box traps are usually wooden panels with an entry door. Cage traps for feral swine are square in design, made of metal panels, usually have a top and bottom panel, and an entry door. Cage traps are manufactured in a variety of sizes and door designs. Corral traps can be constructed of livestock panels or specifically manufactured trap panels secured together with pins, wire, and metal ground posts, and may have one or more entry doors. Ground area within corral traps can be large or small, depending on the number of swine targeted, number of panels used, and the landscape of the trap area. Normal height for both cage and corral traps is 5-feet. Shorter heights risk escape of captured swine by climbing or jumping out of the trap. Entry doors are designed to be tripped via a trip line placed in the rear of the trap, which allows multiple animals to enter before tripping the door(s). Recent advances in technology enable trap systems to be used whereby the trigger device communicates with a nearby surveillance camera, which talks to the user's cell phone. The user can operate the trap door mechanism via text commands from the cell phone if the camera shows swine present inside the trap. This system ensures efficient capture of entire sounder groups of swine and eliminates potential capture of nontarget animals like deer. Captured target species will continue to be dispatched by approved tools and methods described below.

Use of Firearms or Shooting

Use of firearms, or shooting, can provide immediate, efficient, and selective removal of predators causing losses or threats to coastal species of concern. The typical scenario for using firearms would be dispatching target animals caught in traps by administering a gunshot to an animal's head or cervical vertebrae with a non-lead bullet (AVMA 2007). Predator species also can be pursued with targeted hunting techniques or removed opportunistically when observed in and around areas where coastal species of concern exist. Shooting may sometimes be one of the only control options available if other factors prevent trapping or non-lethal methods from being employed or if predators exhibit trap-shy behavior while still causing losses. Shooting techniques may involve being mobile and searching for animals by walking or driving a vehicle or all-terrain vehicle and can also consist of stationary stand hunting where target animals are known to frequent. Stand hunting can be conducted from elevated platforms or from ground level. Personnel may use pellet rifles, rimfire rifles/pistols, centerfire rifles, or shotguns. Specific firearm type and caliber or gauge of ammunition varies. In addition to daytime activity, advances in weapon sight system technology, including night vision and thermal optics, enable personnel to remove animals that are primarily nocturnal. Since no light is emitted by night vision and thermal optics, these devices are optimal for work around sea turtle species that are normally disturbed by unnatural light. In some cases, rifle suppressors are used to muffle noise from the shot's muzzle blast.

DRC-1339

A toxicant that is intended to kill target species, 3-chloro-4-methylbenenamine hydrochloride (DRC-1339), may be used in unique situations to deter avian predators. The toxicant, DRC-1339, is registered with the Environmental Protection Agency (EPA; registration number 56228-

29) and may be used to lethally control corvids (crows) and other predatory avian species. Corvids that are selectively preying on shorebird nests (eggs and chicks) could be removed safely and effectively with DRC-1339, a rapidly metabolized avian toxicant. Birds ingesting a lethal dose of DRC-1339 usually die away from the bait site within 12 to 72 hours. There is minimal chance of secondary toxicity to species ingesting birds treated with this chemical because it has been metabolized prior to death; if any treated bait remained in the digestive tract, the amount would be too minimal to harm another animal. Wildlife management officials from the US Department of Agriculture's Animal and Plant Health Inspection Service may utilize DRC-1339 for targeted control of specific, known avian predators. As DRC-1339 is not a commonly used chemical, DRC-1339 will likely only be used as necessary in limited situations and in few park units. Management officials will carefully consider the presence of any nearby non-target native species, complete any necessary registrations to use this toxicant, and ensure that public entrance into areas where poisons may be used will be controlled as appropriate.

DRC-1339 is unstable in the environment and degrades rapidly when exposed to sunlight, heat, or ultraviolet radiation. It is highly soluble in water; however, it does not hydrolyze there and degrades rapidly (USDA 2001). This compound is also unique because of its relatively high toxicity to some species, such as corvids, but low to moderate toxicity to most predatory birds and almost no toxicity to mammals (DeCino et al. 1966; Schafer 1981). Only personnel trained and certified in the use of toxicants will be allowed to apply DRC-1339. Typical bait delivery will include injection of the chemical into chicken eggs or topical application to food items, including French fries, hot dog pieces, and other suitable baits consumed exclusively by the target bird species. Baiting will usually be conducted during times of feeding activity, and any remaining treated baits will be retrieved by NPS personnel prior to departing the site. A pre-baiting period will establish use patterns and identification of any non-target concerns. Toxic baits will be monitored and removed from the site when not monitored.

Fripp Traps

Park units can remove ghost crabs using Fripp traps and manual removal from burrows. Fripp traps can include a gallon jug with a smaller bottle and sandpaper or mesh screening that it is buried in an active ghost crab burrow, ideally near an active and depredated nest site, and left overnight. Crabs that enter these traps are unable to leave and are collected by managers and dispatched. Removing ghost crabs from burrows involves selecting those that have created burrows between 5 and 15 meters from nest sites and those crabs depredating nest sites. Methods used to remove ghost crabs could include the use of "grabbers," or a mechanical device used to reach into burrows and extract crabs, or excavating burrows and extracting crabs by hand (Florida Park Service 2013).

Dispatching of Captured Animals

Use of the term "dispatching" in this document refers to quickly and humanely killing a trapped target animal. The term is interchangeable with "euthanasia"; acceptable tools and methods are discussed in detail in American Veterinary Medical Association (AVMA) Guidelines (AVMA 2013). The primary dispatch method in the context of predation management for protecting coastal species of concern is use of firearms. Another method of dispatching animals caught in traps is use of a carbon monoxide/carbon dioxide gas chamber. This method, described below, will continue to be used by personnel trained in administering the chosen method.

Euthanasia Chamber

Euthanasia by carbon dioxide-induced narcosis may be used after a species has been captured using the above-mentioned tools and methods. Carbon dioxide is relatively safe to the wildlife technician and will suppress an animal's ability to experience pain prior to death. Depending on

the species, the animal will expire within 30 minutes. This method involves the release of carbon dioxide into a chamber (wooden box, plastic trash can or barrel).

BEST MANAGEMENT PRACTICES

General

- Conduct predation management activities professionally and in the safest manner possible;
- Ensure only personnel with proper training and experience conduct predation management;
- Based on NPS staff's knowledge of visitor use patterns, conduct predation management activities away from areas of high human activity, including placing traps away from facilities or areas of high visitation. Coordinate with visitor use personnel to identify factors that affect wildlife control operations taking place, such as high public use areas, times of day, or seasons of high visitor use. In some instances, the amount or type of visitor use may negate control operations;
- Based on NPS staff's knowledge of park infrastructure, including structures, roads, trails, campgrounds, bodies of water, parking lots, and any feature that presents a safety hazard when firearms are used, make all possible efforts to discharge firearms in a safe, discreet manner, with safety as the primary concern;
- When necessary, notify visitors of certain operations and educate them on the details in a manner that will reduce potential safety hazards;
- When appropriate, notify park unit law enforcement of specific activities and coordinate any necessary or anticipated actions to ensure visitor safety.

Traps and Snares

The International Association of Fish and Wildlife Agencies (AFWA) has developed BMPs for trapping, in order to maximize humaneness and minimize suffering. The AFWA worked with Congress and the National Trappers Association to test the most effective and humane traps for a number of species. This work resulted in species-specific BMP guides for trapping furbearers (AFWA 2006). All trap devices used by park units meet or exceed all specifications recommended in the AFWA BMPs. The AFWA BMPs describe various capture devices and their components; modifications to certain trap models; trap tuning, preparation, and maintenance; and trapping techniques. Only personnel with proper training and experience trap and dispatch predators.

While nontarget species may be accidentally caught and/or injured, research from the AFWA BMPs indicates that specific modifications to foothold traps may enhance animal welfare and still provide a sufficient efficiency in capturing target animals. Examples of such modifications are as follows:

- Offset jaws—Traps are now designed with a space between the gripping surfaces, typically from 1/8- to 1/4-inch. This reduces injury to the animal's foot when sprung.
- Lamination or padded jaws—Traps are now designed with jaws thickened by lamination, which may be attached above or below the trap jaws, or by adding rubber pads to the jaw themselves. These features increase the surface area of the jaw on a trapped animal's foot, which could influence both animal injury and capture efficiency.
- Four-coiling—This is a design feature where traps include two additional springs. These traps perform better in terms of reducing animal injury and improving capture efficiency because the trap is more stable when it is triggered.

- Double jaws—This is a design feature where a trap includes two jaws. A primary jaw restrains the foot, and the second jaw limits the animal’s access to the foot when the trap is sprung.

In addition, traps are placed in sheltered areas with enough natural cover to protect the animal from adverse weather conditions and to reduce stress levels. Weather and environmental conditions permitting, all field equipment is checked at least once each day. If daily checking is not possible, all equipment is removed from the site. Ideally, trap checks should be performed early in the morning to remove any captured animals before public use. Timely removal of captured animals will reduce the chance that the public and park staff may see or interact with captured animals.

At times, it may be necessary to check traps several times daily, depending on wildlife patterns and visitor use patterns. Traps are set and placed to minimize catching nontarget species; any nontarget species accidentally trapped will be released. Areas or roads will be closed temporarily during trapping and shooting. It may also be necessary to shut down or remove traps during busy times, to completely avoid public interaction. Trained wildlife experts will conduct the release of non-target predator species from traps and snares on a case-by-case basis after considering the circumstances at the time of potential release.

Traps are placed away from facilities or areas of high visitation. As appropriate, the NPS leaves carcasses on-site or disposes of carcasses by burial, incineration, or by removing the carcasses to a remote site for decomposition. However, buried carcasses may attract predator species to sea turtle nesting sites; therefore, trained wildlife experts will determine when and where carcasses will be left on a case-by-case basis.

The NPS installs warning signs, alerting people to the presence of foothold traps or snares, posted at points of access to areas where foothold traps or snares are used. When necessary, the NPS uses signs to temporarily close off areas during trapping or firearms operations. Also, park staff may briefly close an area when a situation dictates, such as when euthanizing an injured animal. Signage may be posted as necessary, with these determinations made on a case-by-case basis.

Use of Firearms or Shooting

The NPS may continue to use lead-free bullets and will continue to adhere to the 1998 Agreement on International Humane Trapping Standards and subsequent 2006 agreement, which included BMPs (AFWA 2006; described above). The NPS also adheres to the AVMA’s guidelines for euthanizing animals (AVMA 2013). These guidelines are available on the AVMA’s website (www.avma.org). They are updated as needed to reflect the best research and empirical information available. Those managing depredation are professionals experienced in the humane use of euthanasia techniques. The NPS conducts shooting when human activity is low or during park closed hours, when possible. Areas may be closed to visitors temporarily.

CONSIDERATIONS FOR USE OF PREDATION MANAGEMENT TOOLS AND METHODS

Under the selected action, park units have the flexibility to use a suite of nonlethal and lethal tools and methods to manage depredation, which could take place year-round, as needed. Tools and methods that could be used, factors for consideration, and species affected are presented in Table 3. For all forms of control in the table, the decision on what tool or method to use will be based on experience, skill level, safety considerations, certifications of park

personnel, best professional judgement of park staff on what tool to use, and knowledge of predator behavior and capacity to cause harm to species of concern.

**Table 3.
Factors for Consideration Regarding Predation Management Tools and Methods**

Predation Management Tool and Method	Target Predator Species	Target Coastal Species of Concern	Factors for Consideration, Such as Time and Location
Fencing single nests and colonies	Mammalian and avian predators	All avian coastal species of concern	Used during nesting season after nests have been established and eggs are laid. Ineffective after eggs have hatched. Fencing can be used when predation is anticipated in an area; where the area is an appropriate size for fencing; and where interactions with sea turtles, adult birds, and other species are not expected. May require permits from the state and must be monitored. While adult mortality of shorebirds may increase with the use of exclosures in some circumstances, overall, using exclosures to protect shorebird nests and colonies has been shown to result in increased nest productivity and clutch survival for shorebirds.
Installing screens or cages	Mammalian predators	Sea turtles	Used during nesting season in areas where parks anticipate predation. Given the staff effort and equipment needed, nest screens/cages are not used in areas where predation is not anticipated. While cages are not always effective against coyotes, cages may be recommended in situations where coyotes are observed digging under screens, and where park resources would allow. Park units that manage high-density sea turtle nesting beaches may not have the resources to cage all sea turtle nests, as installing and removing cages can be very labor intensive.

Predation Management Tool and Method	Target Predator Species	Target Coastal Species of Concern	Factors for Consideration, Such as Time and Location
Managing perches	Avian predators	All avian coastal species of concern	Ability to use year-round where a known perch is near an active nest or colony. Easy to install and may be able to use existing infrastructure. May require replacement. Effective for some avian predators, though not all avian predators perch. Naturally occurring predator perches, such as snags or encroaching trees that occur in close proximity to nesting habitat, may be considered.
Chick shelters	Avian predators	All avian coastal species of concern	Used after chicks have hatched in areas devoid of vegetation. Weather is a consideration, as chick shelters can blow over. Chick shelters may attract predators, so they must be monitored. May disturb colony during placement and should be placed before chicks emerge from nests. Although chick shelters can blow over, shelters can also be elevated or weighted to minimize these concerns. Chick shelters can specifically attract predators like ghost crabs, who are attracted to the shade that shelters provide. Additionally, chick shelters may need to be moved frequently given the movement patterns of plover chicks.
Foothold trap	Coyote, red and gray fox, raccoon	All coastal species of concern	Ability to use year-round. Factors for consideration include weather, location, timing, and park expertise at knowing predator habits and ability to avoid park visitors from coming upon a trap or trapped animal.
Snare	Coyote, red and gray fox	All coastal species of concern	Ability to use year-round along travel routes. Requires substantial expertise to use successfully. Use caution when dogs are known to be present.
Walk-in (live, cage) trap	Raccoon, opossum, feral cat, fox, armadillo, mink	All coastal species of concern	Ability to use year-round near nests or along travel routes. Can be used when staff are not qualified to use firearms, if staff do not want to carry a firearm, and because it is safer for park staff because animals don't have to be moved or handled. Daily monitoring required.

Predation Management Tool and Method	Target Predator Species	Target Coastal Species of Concern	Factors for Consideration, Such as Time and Location
Dog-proof trap	Raccoon, opossum	All coastal species of concern	Ability to use year-round and is more species-specific than other traps. Similar factors for consideration as for foothold traps.
Box/cage/corral trap	Feral swine	All coastal species of concern	Ability to use year-round. Requires more time, as feral swine must be acclimated to pens. Factors for consideration include finding swine travel routes, baiting feeding locations, setting remote cameras, and access considerations for hauling large and heavy traps.
DRC-1339	Avian predators	All avian coastal species of concern	Ability to use year-round and is more species-specific than other methods. Factors for consideration include monitoring to decrease nontarget species consumption.
Fripp Traps	Ghost crabs	All coastal species of concern	Ability to use year-round.
Shooting	All predators, except feral cats	All coastal species of concern	Ability to use year-round in any circumstance. More time-efficient than setting traps. Need trained personnel aware of safety considerations and appropriate timing (e.g., during hours when the park is closed) and location. May be more appropriate for predators that are difficult to trap.
Euthanasia chamber	Raccoon, opossum, fox, armadillo	All coastal species of concern	Used in concert with walk-in traps; factors for consideration are the same.

Source: NPS interdisciplinary team input

Several factors affect the approach to predation management, including:

- The degree of threat that the predator poses to coastal species of concern, based on past experience in the park unit, known food habits, or documentation (scientific or otherwise) of that predator's ability to affect local protected species
- The vulnerability of a particular coastal species of concern's nesting colony, egg clutch, or habitat⁸
- Documented predator presence near coastal species of concern colonies, nests, and hatchlings

⁸ This could be expressed as the overall level of protection needed for a particular species throughout its range, based on known global or local populations and threats or known minimal numbers of a species in a park unit's available habitat.

In park units where a coastal species of concern nests in relatively large numbers, park managers may establish a threshold of losses that will trigger the need for predation management. Thresholds will be based on such factors as professional experience and guidance from state, regional, or national recovery plans. Such a threshold could be expressed as a percentage of the total reproductive effort of a coastal species of concern or percentage of loss from depredation events, for example 10% of the total nests affected by depredation, 5% of hatched chicks lost, or 1% of the estimated total number of sea turtle eggs on a nesting beach lost. These numbers will be determined at the park unit level as necessary.

The NPS may use a private contractor, another federal agency, state agency, or skilled volunteers for predator control. The NPS will require that those parties operate under a park unit standard operating procedure (SOPs) in addition to those SOPs specific to that party. If the NPS uses the United States Department of Agriculture (USDA) Animal Plant Health Inspection Service (APHIS) for predator control, that park unit and USDA will develop a blanket SOP as part of the interagency agreement document. The NPS will require that all parties engaged in predator control do so under the direct supervision of the NPS. The use of a private contractor, another federal agency, state agency, or skilled volunteers will be determined at the park unit level, during tiered park-specific NEPA compliance.

MITIGATION MEASURES

Mitigation measures such as conducting cultural and archaeological surveys and implementing avoidance measures will be applied before predation management is implemented. If any cultural or archaeological resources are inadvertently discovered during a predation management activity, all work will be halted until the resources could be evaluated and an appropriate mitigation strategy developed to preserve the information and artifacts to the fullest extent. Cultural and archaeological resources were considered but dismissed as an issue in this plan due to these mitigation measures and other factors. For information on this resource topic and dismissal, please see Appendix D of the PEA.

EMERGING TECHNOLOGIES

The NPS will continue to research and use, where appropriate, emerging technologies for protecting coastal species of concern. The early investigation of and investment in emerging technologies may help advance predation management to protect coastal species of concern. Implementation of additional technologies or tools not covered in the PEA may require additional NEPA analysis.

MONITORING AND DATA COLLECTION

As determined necessary by the Southeast Region, park units that implement predation management under the PEA would develop park-specific data collection programs that provide for regionally consistent reporting of information on predation management efforts. Any such programs would include standardized data collection protocols, consistent with National Park Service, State, and U.S. Fish and Wildlife Service (USFWS) recommendations and requirements, to the extent practicable. This consistency is intended to help inform the management of coastal species of concern and the decision framework for predation management tools and methods regionwide. The data collected could include, but will not be limited to: the types of tools and methods implemented, number and type of depredation events, number and type of predators removed and/or relocated, and percentage of successful coastal

species of concern reproductive events reported annually to determine effectiveness of predation management tools and methods.

Based on data collection results, management techniques may be altered at the park level to determine the best types and/or combination of management tools and methods to be utilized for subsequent years. Results from data collection programs will be shared among NPS Southeast Region park units tiering to this PEA to contribute to regionwide effective management strategies, track numbers of predators removed, and record coastal species of concern reproductive success. This consistency will help inform the management of coastal species of concern and the decision framework for predation management tools and methods.

The Southeast Region and park units are currently coordinating on a more standardized approach to collect data on the number, species, and locations where predation management occurs, and anticipate preparing reports periodically; however, park units are not committed to any specific data collection, data warehousing, or reporting at this time.



United States Department of the Interior

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Subject: Informal Consultation, NPS Predation Management Plan
[FWS Log #: 04E00000-2019-I-0001]

Dear Mr. West,

The U.S. Fish and Wildlife Service (FWS) is responding to your letter dated October 29, 2018, regarding the Predation Management Plan for coastal species of concern in the NPS Southeast Region. Your letter requested concurrence with NPS determinations that the proposed Plan is not likely to adversely affect (NLAA) the following species that are protected under the Endangered Species Act (ESA):

Species Common Name	Species Scientific Name
Anastasia Island beach mouse	<i>Peromyscus polionotus phasma</i>
Green sea turtle	<i>Chelonia mydas</i>
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>
Least tern	<i>Sternula antillarum</i>
Leatherback sea turtle	<i>Dermochelys coriacea</i>
Loggerhead sea turtle	<i>Caretta caretta</i>
Perdido key beach mouse	<i>Peromyscus polionotus trissyllepsis</i>
Piping plover	<i>Charadrius melodus</i>
Red knot	<i>Calidris canutus</i>
Roseate tern	<i>Sterna dougallii dougallii</i>
Snowy plover	<i>Charadrius nivosus</i>
Southeastern beach mouse	<i>Peromyscus polionotus niveiventris</i>

Except for the snowy plover (*Charadrius nivosus*, which is the western snowy plover), the species listed above are known to occur within the NPS units covered under the PEA. The southeastern snowy plover (*Charadrius alexandrinus tenuirostris*) is likely occur in some of the NPS units, but is not listed under the ESA. Likewise, populations of the least tern that breed within coastal southeastern NPS units are not listed. The populations known as the interior least tern is classified as endangered, and breeds mostly along rivers of the Mississippi River Basin.

You provided a Programmatic Environmental Assessment (PEA; dated 9/2018) and a Biological Evaluation (BE; dated 10/29/2018) for the Plan with your request. The FWS has reviewed the PEA and the BE and concurs with your NLAA determinations for the species listed above, recognizing that consultation for the least tern and snowy plover is not required. Following a record of decision for the Plan, the PEA indicates that park managers would have the discretion to apply the predation management tools and methods analyzed in the PEA to help protect and recover coastal species of concern, including the ESA-protected species listed above. As needed, parks would complete tiered, park-specific NEPA compliance for implementing the specific actions. Please coordinate with the FWS Field Office of applicable jurisdiction in any such site-specific planning efforts under the programmatic Plan.

The FWS appreciates the proactive conservation goal of the Plan to increase the reproductive success of sea turtles, shorebirds, and beach mice on the parks. Sea turtle and shorebird nests, and all life stages of beach mice, are highly susceptible to predation and should benefit from careful use of the proposed predation management tools and methods. Please share with our FWS Field Offices of applicable jurisdiction the data your parks collect regarding the effectiveness of the tools and methods implemented under the program. Such data will inform our understanding of the status of these species within the parks included in the program, which provide some of the most important habitats for their conservation.

Our concurrence in this letter with your NLAA determinations concludes the NPS obligations for compliance with section 7(a)(2) of the ESA regarding the Predation Management Plan. Reinitiation of this programmatic ESA consultation is required while NPS retains discretionary involvement or control over the Plan (or is authorized by law) when:

- (a) new information reveals that Plan implementation may affect listed species or designated critical habitat in a manner or to an extent not considered in the PEA and BE;
- (b) the Plan is modified in a manner that causes effects to listed species or designated critical habitat not considered in the PEA and BE; or
- (c) a new species is listed or critical habitat designated that the Plan may affect.

The NPS does not expect Plan implementation to cause take of any listed species, and the FWS agrees. Should take of listed species occur, any operations causing such take must cease pending reinitiation.

If you have any questions or concerns about this letter, you may contact me at (404) 679-7142 or robert_tawes@fws.gov, or Jerry Ziewitz of my staff, Endangered Species Act Consultation Coordinator, at (850) 877-6513 or jerry_ziewitz@fws.gov.

Sincerely,



Robert Tawes
Chief, Division of Environmental Review