

National Park Service
U.S. Department of the Interior

Padre Island National Seashore
Texas



Fire Management Plan Environmental Assessment

March 2014



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Environmental Assessment
Fire Management Plan
PADRE ISLAND NATIONAL SEASHORE

Kleberg, Kenedy, and Willacy Counties, Texas

March 2014

The National Park Service (NPS) at Padre Island National Seashore, located in Texas, has prepared this environmental assessment to analyze the effects of fire management. The purpose of the proposed fire management plan for the Padre Island National Seashore is to comply with new federal and NPS policies and to incorporate new scientific information into fire management planning within parks. In addition, the proposed plan intends to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and infrastructure and developed areas within the park. The plan also allows for the use of wild-fire and prescribed fire to promote a healthy and sustainable ecosystem.

Two alternatives were analyzed for meeting the objectives of the plan:

Alternative A - No Action Alternative (Fire Suppression): Fire management activities would be conducted without a formal management plan in place. In place of a plan, the National Park Service would conform to policy mandates that all wildland fires be treated using a full suppression approach and stipulating that fires cannot be used for resource management.

Alternative B – Wildland Fire and Fuels Management Program: Implementation of a new fire management plan for Padre Island National Seashore. The new fire management plan would allow for implementation of the full range of fire management activities, including the use of wildland fire and various fuel management techniques. Potential wildland fire management responses could include suppression and managing wildland fire to achieve multiple objectives. Fuel management activities could include prescribed fire and manual and/or mechanical treatments.

Neither of the alternatives analyzed in this environmental assessment would result in major environmental impacts.

PUBLIC COMMENT

If you wish to comment on the environmental assessment, you may mail comments to the name and address below or post comments online at <http://parkplanning.nps.gov/pais>. This environmental assessment will be on public review for 30 days. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Please address written comments to:

Mark Spier, Superintendent

Padre Island National Seashore

Attn: Fire Management Plan EA

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Corpus Christi, TX 78480-1300

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CONTENTS

CHAPTER 1: PURPOSE AND NEED FOR ACTION 1

BACKGROUND	1
Park Purpose	1
Significance	1
Fire History	2
PURPOSE OF THE ACTION	2
NEED FOR THE ACTION	7
OBJECTIVES	7
RELATIONSHIP OF THE PROPOSED ACTION TO OTHER PLANNING EFFORTS	8
Acquisition of Texas General Land Office Property North of the Park	8
Oil and Gas Management Plan and Oil and Gas Operations on Padre Island National Seashore and General Land Office Lands	8
Construction of Cabins for Turtle Monitoring	8
Colonial Waterbird Management Plan	9
Beach Debris and Clean-Up	9
PUBLIC SCOPING	9
ISSUES	10
Issues Related to Potential Planned Projects	10
Issues Related to Response to Wildland Fires	10
IMPACT TOPICS (INCLUDING TOPICS CONSIDERED AND DISMISSED)	11
Retained Impact Topics	11
Impact Topics Dismissed from Further Consideration	12

CHAPTER 2: ALTERNATIVES 17

ALTERNATIVE A, THE NO ACTION ALTERNATIVE (FIRE SUPPRESSION)	17
Wildfire Response	17
Fire Suppression Strategy	17
ALTERNATIVE B, WILDLAND FIRE AND FUELS MANAGEMENT PROGRAM	20
Wildfire Response	20
Planned Projects	20
Fire Management Units	22
APPLICABLE MITIGATION MEASURES / BEST MANAGEMENT PRACTICES	27
General	27
Air Quality	27
Special Status Species	27
Vegetation and Soil	28
Water Resources	28
Health and Safety	29
Cultural Resources	29
THE PREFERRED ALTERNATIVE AND ENVIRONMENTALLY PREFERABLE ALTERNATIVE	30
The Alternative Preferred by the National Park Service	30
Environmentally Preferable Alternative	30
ALTERNATIVES CONSIDERED BUT DISMISSED	31
SUMMARY COMPARISON OF THE ALTERNATIVES	32

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES 37

METHODS FOR ANALYZING IMPACTS 37
 CUMULATIVE IMPACTS 38
 IMPACTS TO CULTURAL RESOURCES AND COMPLIANCE WITH SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT 38

AIR QUALITY 40
 Affected Environment 40
 Methods 41
 Regulations and Policies 42
 Impacts of Alternative A, No Action 42
 Impacts of Alternative B, Wildland Fires and Fuels Management Program 43

VEGETATION 45
 Affected Environment 45
 Methods 47
 Regulations and Policies 47
 Impacts of Alternative A, No Action 48
 Impacts of Alternative B, Wildland Fires and Fuels Management Program 48

SPECIAL STATUS SPECIES 50
 Affected Environment 50
 Methods 54
 Regulations and Policies 54
 Impacts of Alternative A, No Action 55
 Impacts of Alternative B, Wildland Fires and Fuels Management Program 56

WILDLIFE 58
 Affected Environment 58
 Methods 60
 Regulations and Policies 60
 Impacts of Alternative A, No Action 60
 Impacts of Alternative B, Wildland Fires and Fuels Management Program 61

CULTURAL RESOURCES – ARCHEOLOGICAL RESOURCES 64
 Affected Environment 64
 Methods 64
 Regulations and Policies 65
 Impacts of Alternative A, No Action 66
 Impacts of Alternative B, Wildland Fires and Fuels Management Program 67

CULTURAL RESOURCES – HISTORIC STRUCTURES 70
 Affected Environment 70
 Methods 70
 Regulations and Policies 71
 Impacts of Alternative A, No Action 72
 Impacts of Alternative B, Wildland Fires and Fuels Management Program 72

VISITOR USE AND EXPERIENCE 74
 Affected Environment 74
 Methods 75
 Regulations and Policies 75
 Impacts of Alternative A, No Action 76
 Impacts of Alternative B, Wildland Fires and Fuels Management Program 77

PARK OPERATIONS 79
 Affected Environment 79
 Methods 79
 Regulations and Policies 80
 Impacts of Alternative A, No Action 80
 Impacts of Alternative B, Wildland Fires and Fuels Management Program 81

PUBLIC HEALTH AND SAFETY 83
Affected Environment 83
Methods 83
Regulations and Policies 83
Impacts of Alternative A, No Action 84
Impacts of Alternative B, Wildland Fires and Fuels Management Program 86

CHAPTER 4: CONSULTATION AND COORDINATION 89

SCOPING PROCESS AND PUBLIC INVOLVEMENT 89
Internal Scoping 89
External Scoping 89
Agency Consultation 89
Native American Consultation 90

LIST OF PREPARERS 91

LIST OF RECIPIENTS 92
Federal Agencies 92
State and Local Agencies 92
American Indian Tribes 92
Elected Officials 92
Organizations 92

CHAPTER 5: REFERENCES 95

BIBLIOGRAPHY 95

APPENDIX A: NATIONAL PARK SERVICE MEMORANDUM – USE OF HEALTHY FOREST INITIATIVE
HAZARDOUS FUELS REDUCTION CATEGORICAL EXCLUSION (2012) 103

APPENDIX B: PRESS RELEASE, SCOPING LETTERS, AND RESPONSES 107

APPENDIX C: BIOLOGICAL ASSESSMENT 131

FIGURES

FIGURE 1: PADRE ISLAND NATIONAL SEASHORE MAP 5
FIGURE 2: ALTERNATIVE B FIRE MANAGEMENT UNITS 25

TABLES

TABLE 1: COMPARISON OF THE ALTERNATIVES 33
TABLE 2: IMPACTS OF THE ALTERNATIVES 34
TABLE 3: SPECIAL STATUS SPECIES WITH POTENTIAL TO OCCUR AT PADRE ISLAND
NATIONAL SEASHORE 51
TABLE 4: PREPARERS 91

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Chapter 1: Purpose and Need for Action

BACKGROUND

Padre Island National Seashore (referred to as the park), located on a barrier island east-southeast of Corpus Christi, Texas, is the longest stretch of undeveloped barrier island in the world. In addition to its 70 miles of protected coastline, it includes important ecosystems such as rare coastal prairie, a complex and dynamic dune system, wind tidal flats, and the Laguna Madre, one of the few hypersaline lagoon environments left in the world. The park and surrounding waters provide important habitat for marine and terrestrial plants and animals, including a number of rare, threatened, and endangered species.

Situated along the Central Flyway, Padre Island is a globally important area for over 380 migratory, overwintering, and resident bird species (nearly half of all bird species documented in North America). Thirteen of these species are considered species of special concern, threatened, or endangered. In addition, the Kemp's Ridley sea turtle is the most endangered sea turtle species in the world and nests on the beach from late April through mid-July. The park also has a rich history, including the Spanish shipwrecks of 1554 (NPS 2013c).

PARK PURPOSE

Purpose statements for a national park unit express why they were set aside as part of the national park system. They are grounded in a thorough analysis of the national park unit's legislation and legislative history, and they provide fundamental criteria against which the appropriateness of plan recommendations, operational decisions, and actions are tested. The purpose of Padre Island National Seashore is, "to preserve, protect, and interpret a portion of one of the last undeveloped seashores for public recreation, benefit, education, and inspiration" (NPS 2003a).

SIGNIFICANCE

National park unit significance statements capture the essence of the unit's importance to the nation's natural and cultural heritage. They describe the unit's distinctiveness and why an area is important in regional, national, and global contexts. Significance statements help NPS managers focus their efforts and funding on attributes directly related to the purpose of the unit. Significance statements for Padre Island National Seashore are as follows:

- Padre Island National Seashore is the longest section of undeveloped barrier island in the world, protecting rare coastal prairie; a complex, dynamic dune system; and the Laguna Madre, one of the few hypersaline lagoon environments left in the world.
- The location of the island, ocean dynamics, biotic diversity and integrity, and lack of development make Padre Island National Seashore an ideal place to study natural communities and species associated with barrier islands.
- Bird Island Basin in the Laguna Madre is internationally recognized as one of the best windsurfing areas in the world.
- There are seven species of sea turtles in the world, all of which are threatened or endangered. Padre Island National Seashore is the only area on the Texas coast where nests from five species of sea turtles that occur in the Gulf of Mexico have been documented. More Kemp's Ridley sea turtle nests have been found at the seashore than at any other single location in the United States. The Gulf of Mexico, Laguna Madre, and the Mansfield Channel provide important habitat for the park's sea turtles.

- With the longest stretch of undeveloped barrier island beach in the world, Padre Island National Seashore provides rare opportunities for beach recreation in an environment of isolation and solitude.
- Padre Island National Seashore offers outstanding recreational fishing opportunities in the Laguna Madre and Gulf of Mexico.
- Situated along the Central Flyway, Padre Island is a globally important area for over 380 migratory, overwintering, and resident bird species.
- The integrity of Padre Island National Seashore as a cultural landscape documents a continuum of human habitation from more than 2,500 years ago to today in a continually changing barrier island landscape that itself is only about 5,000 years old.
- Archival resources regarding Spanish exploration of North America document the history of the area that is now Padre Island National Seashore. Padre Island National Seashore includes important archeological resources relating to the era of early Spanish exploration, including three shipwrecks dating to 1554. The Novillo line camp and associated historic resources of Padre Island National Seashore include some of the last remaining structures relating to barrier island open-range cattle ranching in the United States.

FIRE HISTORY

Historically, fire has played an important role in the ecological development of the landscape at Padre Island National Seashore. Naturally occurring fire on this landscape periodically and, in most vegetation types, frequently thinned vegetation. These naturally occurring fires reduced and maintained fuel loads at low levels, such that most ignitions had few long-term adverse impacts. Over time, continued suppression of natural fire has resulted in the accumulation of fuels, creating potentially hazardous conditions that threaten human lives and personal property. These conditions also threaten the natural functions of healthy ecosystems by altering natural vegetation.

Over the past 12 years, the park has had 33 total fires for an average of 2.75 fires annually. The fires covered as little as a tenth of an acre up to the largest event that covered nearly 13,000 acres. Almost half of these fires were caused by lightning (approximately 48%). The majority of the remainder of fire events were unintentional, human-caused fires (approximately 42%), while the remaining fires were management-ignited prescribed fires. Just over half of the park's fire events during this time period occurred in the summer, and nearly a third occurred in the winter. Fires during spring and fall are infrequent (NPS 2013c).

PURPOSE OF THE ACTION

The National Park Service is preparing this fire management plan environmental assessment because the Secretary of the Interior, through NPS wildland fire policy directives and *Director's Order #18 Wildland Fire Management* (NPS 2008a), requires parks with burnable vegetation to have a fire management plan. These plans are intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives. In preparing a new fire management plan for Padre Island National Seashore, the National Park Service seeks to provide management direction by following the National Park Service and other federal government policies and scientific information. In addition, the purpose of the Fire Management Plan at Padre Island National Seashore is to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and infrastructure and developed areas within the park. The plan also allows for the use of wildfire and prescribed fire to promote a healthy and sustainable ecosystem.

Management Policies 2006 (NPS 2006), require analysis of potential effects to determine whether actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

This environmental assessment has been prepared in accordance with the National Environmental Policy Act and its implementing regulations in 40 *Code of Federal Regulations* parts 1500-1508; *Director's Order #12 and Handbook, Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001); and section 106 of the National Historic Preservation Act and its implementing regulations in 36 *Code of Federal Regulations* part 800. The environmental assessment process is being used to comply with section 106.

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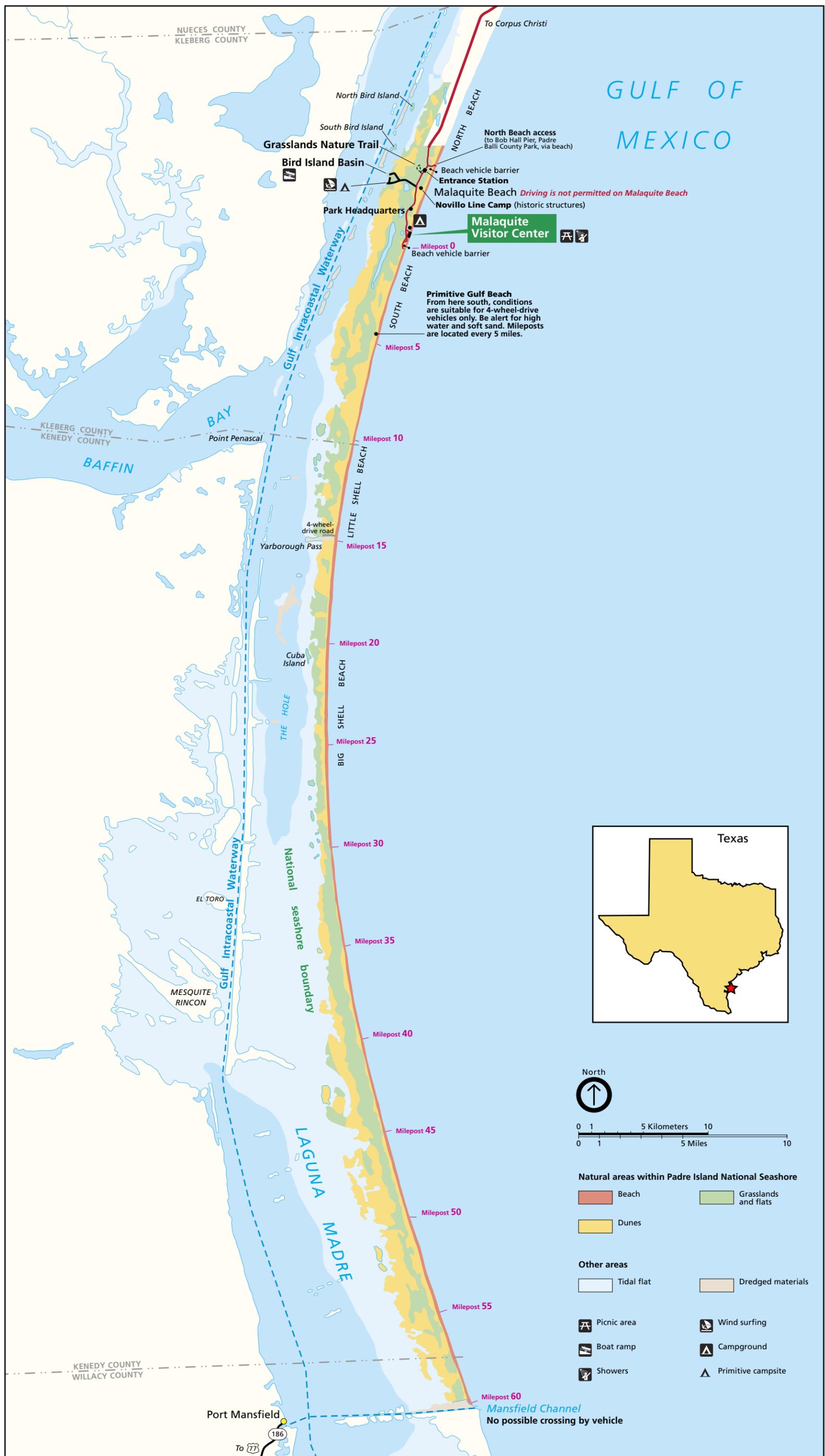


FIGURE 1: PROJECT AREA MAP
Padre Island National Seashore
United States Department of the Interior / National Park Service

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NEED FOR THE ACTION

Padre Island National Seashore currently uses a fire management plan (2004), which is supported by the Healthy Forest Initiative Categorical Exclusion (HFI CE). In April 2012, the National Park Service rescinded the use of this categorical exclusion, and directed NPS units to discontinue its use by April 24, 2015 (memo, Appendix A). To keep the fire management plan for Padre Island National Seashore in compliance, a new fire management plan and this environmental assessment are being prepared.

The park's 2004 Fire Management Plan provided strategies for managing hazardous fuels in high-risk areas (Wildland Urban Interface) by small scale prescribed fire and manual and/or mechanical treatments. Under the 2004 plan, the use of prescribed or wildfire for the purposes of restoring fire's natural ecological role on the park's landscape and sustaining a healthy ecosystem was identified as a future need.

A wildland fire and fuels management program would provide management strategies that would:

- Restore the ecological integrity of Padre Island National Seashore, including its natural resources and processes, and
- Apply ecological principles to ensure that natural resources are maintained unimpaired.

An environmental assessment is needed to evaluate the environmental impacts of alternatives to implement a wildland fire and fuels management program at Padre Island National Seashore. A fire management plan will be produced separately following the completion of a signed decision document for this environmental assessment.

A fire management plan is an important planning tool for NPS staff and must be consistent with the park's general management plan and other related park plans. The fire management plan will incorporate the latest fire management science and will meet evolving NPS policies and guidance. The new fire management plan will include measures to promote safety in the park and will contain provisions for managing natural and cultural resources.

OBJECTIVES

Objectives are specific statements of purpose, and describe what must be accomplished to a large degree for the project to be considered a success. This will allow the National Park Service to decide on alternative actions. The following objectives were used in the analysis of alternatives in the environmental assessment:

- Protect life and property.
- Allow wildland fires to function as an essential ecological process and natural agent of change in maintaining and restoring vegetation communities.
- Promote various stages of grassland prairie community development that will support high species diversity.
- Use prescribed fire treatments as a proxy for natural processes and to achieve vegetation management objectives that support land and resource management plans such as the park's General Management Plan.
- Prevent further degradation of natural and cultural resources lost in and/or damaged by impacts of wildland fires and/or fire management activities.
- Manage wildland fire using the best available technology and science as an essential ecological process to restore, preserve, or maintain ecosystems, and use resource information

gained through inventory and monitoring to evaluate and improve the park's fire management program.

RELATIONSHIP OF THE PROPOSED ACTION TO OTHER PLANNING EFFORTS

Numerous policies, planning documents, and agreements guide the decisions and actions that can be taken to manage fire in Padre Island National Seashore. This section describes these plans, policies, and agreements to show the constraints under which a fire management plan for the park must operate. In addition, actions undertaken in association with the proposed fire management plan have the potential to contribute to the cumulative effects of other plans and projects in or near the park. The following projects and plans have the ability to contribute to cumulative effects of the project. These are included in the analyses of the cumulative scenario for the various impact topics addressed in this environmental assessment.

ACQUISITION OF TEXAS GENERAL LAND OFFICE PROPERTY NORTH OF THE PARK

At the time of publishing this EA, the park will have acquired or will soon be acquiring, 3,882 acres of Texas General Land Office land that abuts the park's northern boundary. The parcel is undeveloped and provides similar beach and inland conditions to those in the park. The parcel adds to the undeveloped acreage of North Padre Island. The proposed action involves fire management actions within the newly acquired lands.

OIL AND GAS MANAGEMENT PLAN AND OIL AND GAS OPERATIONS ON PADRE ISLAND NATIONAL SEASHORE AND GENERAL LAND OFFICE LANDS

All subsurface mineral interests underlying the land within the park were retained by private owners. Those underlying the submerged lands in Laguna Madre and the Gulf of Mexico were retained by the state of Texas and are administered by the Texas General Land Office. The National Park Service manages the exercise of nonfederal oil and gas rights under 36 CFR 9.30, et seq., according to its Oil and Gas Management Plan. Oil and gas drilling and production equipment and associated vehicles are escorted down the beach to reach sites behind the dunes; occurrence is variable and dependent on demand/oil and gas development in the area. Recently, a number of wells were plugged and abandoned, and the park is working with the operator on restoration of the drilling and production pads and access roads. More wells are scheduled to be plugged and abandoned in the near future. As of April 2013, there are 10 operational gas wells in the park.

CONSTRUCTION OF CABINS FOR TURTLE MONITORING

The National Park Service will be constructing two new cabins down island to provide sleeping accommodations for turtle monitors and construct new corrals on the beach. These new facilities will increase the existing 40-nest capacity within one corral to 200 nests in two corrals with the ability to further expand the new corrals in the future and provide the ability of turtle monitors to patrol down island in a timelier manner (NPS 2011a). The cabins will provide accessible shelter for sea turtle patrollers during storm events and reduce the number of miles needed to be driven to reach the ends of the patrol routes; thus, enhancing the ability to effectively patrol the park's down-island beach. Under the fire management plan, activities would be conducted to ensure the structures were protected during a wildfire event.

COLONIAL WATERBIRD MANAGEMENT PLAN

This plan was developed as a portion of the U.S. Army Corps of Engineers (USACE) environmental impact statement addressing maintenance dredging of the Gulf Intracoastal Waterway (USACE 2003). The plan highlights management options for the dredge-material islands in Laguna Madre, including possible predator control of coyotes and raccoons, habitat improvements, continuation of rookery monitoring, and the conduct of prescribed fires. The proposed action would not conflict with activities undertaken by the U.S. Army Corps of Engineers.

BEACH DEBRIS AND CLEAN-UP

Marine debris arrives at the park from many sources, including the Mississippi River, storms, commercial shrimping industry, offshore oil and gas industry, Mexico, and many other sources. With over 65 miles of Gulf of Mexico shoreline and no road behind the dunes, removing trash is an immense task for Seashore staff. The park relies heavily on volunteer groups from the general public for assistance. Periodic, organized efforts are sponsored by local visitor groups, and can include use of dump trucks to remove large debris items. The park also participates in statewide beach clean-ups and the Adopt-a-Beach program. Beach cleaning operations routinely occur to remove Sargassum along an approximately 500-yard stretch of Malaquite Beach closed to visitor vehicles; an EA is currently underway to address this activity. The park also performs frequent patrols to locate, document, and remove containers of hazardous waste.

PUBLIC SCOPING

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in an environmental assessment and assessment of effect. Padre Island National Seashore conducted both internal scoping with appropriate NPS staff and external scoping with the public and interested or affected groups and agencies.

Internal scoping was conducted on November 30, 2012 by staff members from Padre Island National Seashore and Big Thicket National Preserve (including fire management staff). This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined what the likely issues and impact topics would be, and identified the relationship, if any, of the proposed action to other planning efforts at the park.

The public, American Indian tribes traditionally associated with the lands of Padre Island National Seashore, agencies, and interested parties were informed of the proposed action, and invited them to submit comments in response to a scoping letter distributed on January 8, 2012 (see appendix B).

Comments were solicited during external scoping until February 10, 2013. One response was received from the Texas State Historic Preservation Office (Texas Historical Commission). The letter reminded the National Park Service that, as a federal agency, it has legal obligations under Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) and its implementing regulations. The letter informed NPS staff that its agency has made efforts to standardize the information required by Section 106 and submitted to its office. The letter directed park staff to a website that outlines the information needed for review for Section 106 compliance.

The actions described in this document are subject to section 106 of the National Historic Preservation Act, as amended in 1992 (16 *United States Code*, section 470 et seq.). Consultations with the State Historic Preservation Office have been ongoing since the start of the project. This environmental assessment will also be submitted to the State Historic Preservation Office for review and comment to fulfill Padre Island National Seashore's obligations under section 106 (36 *Code of Federal Regulations* part 800.8[c], Use of the National Environmental Policy Act Process for Section 106 Purposes).

ISSUES

Issues are concerns or topics that need to be considered in the course of developing a successful project that is consistent with governing laws, regulations, and policies and park resources. Issues need to be addressed in the analysis of the proposed project and its alternatives. Issues identified in association with fire management in the park covered a wide range of considerations and were discussed relative to planned projects and response to wildland fires.

ISSUES RELATED TO POTENTIAL PLANNED PROJECTS

The following issues were identified in relation to planned projects, to include prescribed fire and manual and/or mechanical fuel reduction:

- Because of fire exclusion, some habitats are currently characterized by more dense growth. This has also led to fuel accumulations that contribute to an ever increasing large and severe wildland fire problem in these otherwise fire-dependent and tolerant vegetation types.
- Noise and the presence of fire management staff may displace wildlife species.
- Fuel reduction activities and presence of fire management staff may disturb nesting birds.
- Small mammals and reptiles use the thatch that builds up in the grassland community. Removing this thatch reduces habitat.
- Fuel management actions could affect cultural resources.
- Visitor use of certain areas could be restricted during fire management activities. Some areas could require closure and/or special management during a prescribed burn.
- Fuel management actions along roadsides could result in an increase of exotic plant species.

ISSUES RELATED TO RESPONSE TO WILDLAND FIRES

Emergency responses, such as the suppression, of wildland fire, or managing wildland fire for the benefit of natural or cultural resources, pose the following issues:

- Cultural resources are at high risk of loss as a result of wildland fire.
- Visitor use and experience is impacted as a result of having to close areas to protect visitor safety, such as the campground.
- Oak mottes, which are rare in the park and provide important wildlife habitat, can be lost to fire.
- The seashore infrastructure and infrastructure associated with oil and gas activities within the park could be damaged or destroyed as a result of wildfire.

IMPACT TOPICS (INCLUDING TOPICS CONSIDERED AND DISMISSED)

This section identifies the resources and other values (impact topics) that could be affected by the alternatives. Candidate impact topics for this environmental assessment were identified from internal and public scoping; federal laws, regulations, and orders; NPS guidance such as *Management Policies 2006* (NPS 2006); and NPS knowledge of national seashore.

Justifications are provided for dismissing certain impact topics. Other impact topics were carried forward for further analysis in chapter 3 of this environmental assessment. Effects on these impact topics were evaluated based on the issues, listed above, identified during scoping.

RETAINED IMPACT TOPICS

Air Quality

Smoke from fires could affect air quality, including visibility in the general vicinity of the project area. This impact topic was, therefore, retained for further analysis.

Vegetation

Grasslands within the park are a fire-adapted community. Fire suppression would affect vegetation in the park. Prescribed fire would benefit the park vegetation through enhanced nutrient recycling, reduction in thatch, and a decrease in competition. Therefore, this impact topic was retained for analysis. An analysis of the effect of fire and fuels management activities on the spread or introduction on non-native species is also provided under this topic.

Special Status Species

Special status species in the park include several species of birds and reptiles that are protected under the Endangered Species Act and by Texas laws. Activities associated with fire management and fuel reduction projects have the potential to affect these species, therefore this impact topic is retained for analysis.

Wildlife

The park is a globally important bird area with international importance. It is also designated as an important western hemisphere shorebird location. Fire and fuels management will have no adverse impact on this designation. Individual birds may be disturbed or displaced during management actions; however, as a natural process, fire in grasslands would also result in beneficial impacts as a result of higher nutritional value of forage materials. Therefore, this impact topic was retained for analysis.

Cultural Resources – Archeological Resources

Fire itself, along with ground disturbance from vehicles, can compromise the integrity of archeological sites in the park; therefore, impacts to archeological resources are examined in this environmental assessment.

Cultural Resources – Historic Structures

Historic structures are at risk from damage or loss as a result of wildfire. Reducing fuel loads would reduce fire risk to historic structures. Wildfire suppression actions may indirectly affect

structures as a result of soil erosion and removal of stabilizing root structures. As such, impacts to these resources are analyzed.

Visitor Use and Experience

Because unplanned or planned fire could affect public access, visitor use and experience is addressed as an impact topic in this environmental assessment.

Health and Safety

Operational guidance directs all fire management activities to be conducted to mitigate risk from unwanted wildland fire while providing for firefighter and public safety. Because fires can impact the safety of park visitors, NPS staff, firefighters, and the surrounding community, health and safety was retained as an impact topic for further analysis.

IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

This section explains why some impact topics were not evaluated in more detail. Impact topics were dismissed from further evaluation either because the resource does not occur in the park or because implementing the alternatives would have only a negligible or minor effect on the resource or value. Negligible or minor effects would include the following:

- An effect would be negligible if the resource would not be affected or if the effect would be so small it would not be detectable or measurable.
- A minor effect would be detectable or measurable, but would be of little importance.

Because there would be negligible or minor effects on the dismissed impact topics, the contribution from an alternative to cumulative effects for dismissed topics would be low or none.

Ecologically Critical Areas, Wild and Scenic Rivers, or Other Unique Natural Resources

Aside from the designated critical habitat for the piping plover, the alternatives being considered would not affect any designated ecologically critical areas, wild and scenic rivers, or other unique natural resources, as referenced in the Wild and Scenic Rivers Act (16 USC 1271, et seq.), Management Policies 2006 (NPS 2006), 40 CFR 1508.27, or the 62 criteria for designating national natural landmarks. Therefore, this impact topic was dismissed from further analysis. Impacts associated with the critical habitat of piping plovers are addressed in the analyses for special status species and wildlife.

Floodplains

Executive Order 11988 instructs federal agencies to avoid to the extent possible the long- and short-term, adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of development in floodplains wherever there is a practicable alternative. Requirements of Executive Order 11988 are applied to NPS facilities in *Director's Order # 77-2* and the *National Park Service Procedural Manual 77-2: Floodplain Management* (NPS 2004a).

Most of the park and all of the project area lies within the 100-year floodplain for the Gulf of Mexico and the Laguna Madre (NPS 2000; FEMA 2013). The exception is the higher dune areas located along the Gulf beach shoreline. The park is subjected to periodic flooding from tropical storm events, hurricanes, and severe rainfall. Hurricane season begins June 1 and continues through November 30. Storm surge levels can range from 9 to 12 feet above sea level (Weise and White 1980).

Fire management activities in the park would not require floodplain occupancy or modifications. Floodplain values and functions would not be affected by fire or fire management activities proposed in this plan. Therefore, floodplains were not retained for further analysis.

Wetlands

The NPS' *Director's Order #77-1* (NPS 2002) states that activities with the potential to adversely impact wetlands are subject to the procedures of Executive Order 11990. These are activities with the potential to degrade any of the natural and beneficial ecological, social/cultural, and other functions and values of wetlands. Examples of activities with the potential to adversely impact wetlands include drainage, water diversion, pumping, flooding, dredging, channelizing, filling, nutrient enrichment, diking, impounding, placing of structures or other facilities, live-stock grazing, and other activities that degrade natural wetland processes, functions, or values.

Approximately 60 percent of the park is classified as wetlands based on the Cowardin et al. (1979) classification system, including seagrass beds and tidal flats. These habitats generate a large amount of primary production and provide important habitat for wildlife resources of the park, including several special status species. Laguna Madre is the largest of only five hypersaline lagoons in the world. Its seagrass beds are among the most productive of marine plant communities, providing feeding habitat for game fish, migratory waterfowl, and sea turtles, and serving as nursery areas for fish, crabs, and shrimp.

Neither alternative examined in this environmental assessment proposes any fire management activities that would have greater than negligible effects on wetlands. Therefore, this impact topic was dismissed from further analysis.

Water Resources

The water resources of the park include the quality and quantity surface waters, particularly pond, Gulf of Mexico, and Laguna Madre habitats. Fire and fuels management activity would have no notable effects on the water quality or quantity within the Gulf of Mexico or the Laguna Madre.

Grassland areas contain many ephemeral ponds, which act as firebreaks and occur throughout the northern portion of the seashore. Sediments from areas surrounding ephemeral ponds denuded of vegetation after the passage of a wildland fire may provide a source of increased sedimentation. Ephemeral ponds are typically bordered by vegetation containing enough fuel moisture to prevent wildland fire and therefore minimize or eliminate sedimentation. In addition, above ground vegetation removed during a wildland fire grows quickly and is generally re-vegetated within in three to four weeks. A wildland fire and fuels management program would have negligible impacts on water resources due to bordering vegetation and the timeliness of stabilizing exposed sediments. Therefore, this impact topic was not retained for detailed analysis.

Marine or Estuarine Resources

Fire management activities will be conducted on grassland environments of the park. Best management practices would be conducted during fire management activities to prevent any damage to mudflats and algal mats by personnel or vehicles. Therefore, no impacts would occur to marine or estuarine resources and this impact topic was dismissed from further analysis.

Soils

Fire of varying intensities could alter the physical, chemical, and biological properties of the soil because of vegetation removal, consumption of organics, and increased temperatures. Lack of

fire could alter the physical, chemical, and biological properties of the soil because of interrupted nutrients cycling in fire maintained habitat types. Given the rapid recovery of grasslands the adverse impacts of fire would be short-term and no greater than minor in intensity. Under the proposed action, prescribed burning would result in beneficial long-term impacts from the re-establishment of a fire-driven nutrient cycle and increased stability of the soil strata. Therefore, this impact topic was not retained for detailed analysis.

Soundscapes

Noise is defined as unwanted sound. Fuels reduction, prescribed fires, and fire suppression efforts can all involve the use of noise-generating mechanical tools and devices with engines. Use of this equipment would be infrequent (on the order of hours, days, or at most weeks per year), and would not be frequent or widespread enough to substantially interfere with the ambient soundscape of the park. As such, impacts to the solitude and tranquility associated with the park would be no greater than negligible. Therefore, this impact topic was dismissed from further analysis.

Energy Requirements and Conservation Potential

This impact topic is based on section 1502.16 of the Council on Environmental Quality (1978) regulations for implementing the National Environmental Policy Act. Increasing concern is reflected by recent executive orders, including 13423, Strengthening Federal Environmental, Energy, and Transportation Management (2007) and 13514, Federal Leadership in Environmental, Energy, and Economic Performance (2009).

Fire management activities in Padre Island National Seashore would generally not be considered energy-intensive. They primarily would involve the consumption of gasoline or diesel fuel as personnel travel to and from a fire management activity. Implementation of either alternative would not substantially change the volume of hydrocarbon fuel consumed annually at either park unit.

As with all its actions, the National Park Service would strive to reduce energy costs, eliminate waste, and conserve energy resources by using energy-efficient and cost-effective technology. Energy efficiency and the use of renewable energy sources would be emphasized in the decision-making process. Because the alternatives would not vary substantially in their use of energy or potential for conservation, this impact topic was dismissed from further consideration.

Natural or Depletable Resource Requirements and Conservation Potential

This impact topic is based on the Council on Environmental Quality (1978) regulations and executive orders cited for energy requirements and conservation potential. It addresses the quality, recycling, or conservation of petroleum products and other natural resources. The use of fuels and other energy sources, including petroleum products, was discussed above under energy requirements and conservation potential. Because neither alternative would involve any construction or other activities that would require the commitment of other natural or depletable resources, differences between the alternatives for this impact topic would be negligible; therefore, this impact topic was dismissed from further analysis.

Indian Trust Resources

The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights. It represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. Environmental Compliance Memorandum Number ECM97-2 provides compliance guidance regarding responsibilities for Indian trust resources. Indian trust resources do not oc-

cur at Padre Island National Seashore. Therefore, this impact topic was dismissed from further analysis.

Sacred Sites

Executive Order 13007 requires all federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and to avoid adversely affecting the physical integrity of sacred sites. Fire management activities in the park would be brief in duration and could easily be re-scheduled to accommodate ceremonial use, and the fire program will not alter the ability to access and use sacred sites, or change the physical characteristics of sacred sites. Therefore, sacred sites were dismissed from further analysis.

Prime and Unique Farmlands

In 1980, the Council on Environmental Quality directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. None of the soils in the park are classified as prime and unique farmlands. Therefore, the topic of prime and unique farmlands was dismissed from further analysis.

Socioeconomic Environment

The National Environmental Policy Act requires an analysis of impacts to the "human environment," which includes economic, social, and demographic elements in the affected area. Fire management activities under either alternative may bring a short-term need for additional personnel in both or either park unit as well as short-term closures, but these would be minimal and would not affect the population, income, or employment base of neighboring communities. Management actions proposed would not have a measurable impact on the local or regional economy. Therefore, this impact topic is dismissed from further analysis.

Environmental Justice

Executive Order 12898, *General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed fire management activities would not have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the U.S. Environmental Protection Agency's 1998 environmental justice guidance. Therefore, environmental justice was dismissed from further analysis.

Climate Change

Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality and storm frequency) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program and the Intergovernmental Panel on Climate Change (2007a, 2007b) provide evidence that climate change is occurring as a result of rising greenhouse gas emissions and could accelerate in coming decades.

While climate change is a global phenomenon, it manifests differently depending on regional and local factors. Global changes that are expected in the future as a result of climate change

include hotter, drier summers; warmer winters; warmer water; higher ocean levels; more severe wildfires; degraded air quality; more frequent heavy downpours; and increased drought. In the part of Texas that includes Padre Island National Seashore, output of the HadCM2 computer model predicts a temperature increase between 3°C and 5°C (5.4°F and 9.0°F) for the 30-year target period of 2070-2100, compared to a baseline of 1960-1990 (Climate Charts 2013).

Although some effects of climate change are known or likely to occur, many potential impacts are unknown. Much depends on the rate at which the temperature would continue to rise and whether global greenhouse gas emissions can be reduced or mitigated. Climate change science is a rapidly advancing field and new information is being collected and released continually.

It is not possible to meaningfully link the greenhouse gas emissions of individual project actions to quantitative effects on regional or global climatic patterns. While fire management activities would contribute to increased greenhouse gas emissions, such emissions would be temporary and not discernible at a regional scale. Therefore, the topic was not retained for further analysis.

Cultural Resources – Cultural Landscapes

Three Cultural Landscape Inventories have been completed, covering the Novillo Line Camp, the Black Hill Line Camp, and the Green Hill Line camp. These three landscapes are discussed and analyzed under the impact topic of Cultural Resources – Historic Structures.

Cultural Resources – Ethnography

No ethnographic resources were identified in the park; therefore, this impact topic was dismissed from further consideration. Consultation with the tribes associated with the park, however, will be on-going and they will be kept informed regarding future fire management activities.

Cultural Resources – Museum Collections

Museum collections associated with the park are housed off-site. As such, this impact topic was not retained for further analysis.

Chapter 2: Alternatives

This chapter describes two alternatives for fire management in Padre Island National Seashore. Alternative A would include the suppression of all wildfires within the park.

Alternative B would implement a new fire management plan in the park using multiple fuel reduction strategies and wildfire could be managed for multiple purposes.

ALTERNATIVE A, THE NO ACTION ALTERNATIVE (FIRE SUPPRESSION)

Although Padre Island National Seashore currently has a valid Fire Management Plan, it is supported by the Healthy Forest Initiative Categorical Exclusion. NPS use of the Healthy Forest Initiative Hazardous Fuels Reduction Categorical Exclusion was discontinued (NPS 2012), but may be used during a “grace period” until a new or updated fire management plan is completed and supported by appropriate NEPA documentation (deadline 4/24/2015). In the absence of a current fire management plan supported by appropriate NEPA documentation, parks must respond to wildfires using suppression tactics (NPS 2008b). Therefore, the no action alternative would necessitate full suppression of all wildfire, and would not support planned fuel reduction, and/or ecosystem restoration/maintenance projects.

WILDFIRE RESPONSE

On all wildland fire management actions, use of *minimum impact suppression tactics* (these tactics are referred to as MIST) is the policy of the National Park Service. Minimum impact suppression tactics are defined as the application of those techniques that effectively accomplish wildland fire management objectives with the least cultural and environmental impact, commensurate with public and firefighter safety (NPS 2008a). Full suppression would involve the use of hand crews, engine crews, or aircraft, as needed. The objectives of minimum impact suppression tactics are to make unique decisions with each fire start to consider the land, resources, and wildland fire incident objectives (NPS 2008a).

According to *Director’s Order #18: Wildland Fire Management* (NPS 2008a), “The protection of human life is the single, overriding suppression priority.” Setting priorities to protect human communities and community infrastructure, other property and improvements, and natural and cultural resources will be done based on human health and safety, the values to be protected, and the costs of protection. Once people are committed to an incident, these human resources become the highest value to be protected.” Fire suppression under alternative A would be implemented in compliance with this priority.

The next priority of an attack on a wildland fire under alternative A would be to limit damage to resources and values to be protected and to prevent escape of the fire. Additional details regarding the procedures to be followed in establishing command and control on a wildland fire, as well as specific on-the-ground operations instructions, can be found in *Reference Manual 18: Wildland Fire Management* (NPS 2008b) and the *2013 Wildland Fire Incident Management Field Guide* (National Wildfire Coordinating Group 2013), respectively. The use of a particular fire suppression method to combat a wildland fire would be an incident command decision based on circumstances. Multiple fire suppression methods may be employed at the same time.

FIRE SUPPRESSION STRATEGY

All wildland fire suppression activities would provide for firefighter and public safety as the highest consideration. Suppression tactics would strive to protect park resources, minimize potential damage to natural and cultural resources, and take into consideration economic expenditures. As stated previously, the incident commander would determine appropriate suppression

tactics. Tactics may include creating indirect fuel breaks around a fire, allowing the fire to burn to a fuel break or natural feature and burn itself out, or to create direct fuel breaks to immediately suppress the fire. Tactics used to suppress wildfire include direct and indirect attack, and contain and confine. Based on the National Wildfire Coordinating Group *Wildland Fire Incident Management Field Guide* (2013), these tactics are defined as:

- Direct attack: Any treatment applied directly to burning fuel such as wetting, smothering, or chemically quenching the fire or by physically separating the burning from unburned fuel. For example constructing a fireline on the fire perimeter.
- Indirect attack: A method of suppression in which the control line is located some considerable distance away from the fire's active edge. Generally done in the case of a fast-spreading or high-intensity fire and to utilize natural or constructed firebreaks or fuelbreaks and favorable breaks in the topography. The intervening fuel is usually back-fired; but occasionally the main fire is allowed to burn to the line, depending on conditions.
- Confine: To restrict the wildfire within determined boundaries, established either prior to, or during the fire. These identified boundaries will confine the fire, with no action being taken to put the fire out.
- Contain: To restrict a wildfire to a defined area, using a combination of natural and constructed barriers that will stop the spread of the fire under the prevailing and forecasted weather conditions, until out.

The contain and confine tactics include monitoring plus varying types and intensities of operational actions to delay, direct or check fire spread. Actions taken are based on the values at risk and /or resource benefit opportunities. Typically these tactics utilize both direct and indirect strategies.

Creating a fuel break around a fire could include natural barriers or could consist of manually and/or mechanically constructed lines. Using natural fuel breaks could increase fire size, but could provide for firefighter safety and reduce disturbances on the land.

More aggressive fire suppression could employ a variety of tools. An example of an aggressive suppression strategy would be to directly attack along the fire's edge with hand crews, heavy equipment, water pumps (fire engines) with fire hoses, and aircraft. Generally, direct attack using engines would be employed along existing roads, preventing resource damage from off-road equipment use and reducing firefighter risk. In rare situations the use of bulldozers, graders, or other heavy equipment could be used, but only after approval on a case-by-case basis by the Superintendent. It should be noted that fire retardant and the use of heavy equipment off park roads has not occurred on park fires in the past.

Mechanical equipment could be used during response to wildfires. Types of mechanical treatments could include vegetation removal by any of the methods described below.

- Manual equipment (e.g., shovels, saws, axes, Pulaski's, and chainsaws),
- Mechanical equipment (wheeled or tracked) (e.g., light-on-the-land forestry equipment that includes all-terrain-vehicles with attachments such as mowers, chippers, and small tractors pulling/attaching similar equipment, as well as aerial equipment, such as airplanes and helicopters).

Mechanized wheeled or track equipment could be used in wildland urban interface areas within developed areas of the park.

Heavy equipment that uses large tires or large tracks resulting in less ground disturbance would be the first choices for use.

Water pumps on fire engines are commonly used to apply water or suppression chemicals to burning material to extinguish fire.

Aircraft used to fight wildfire range from very large tanker planes to small helicopters. These aircraft deliver water or liquid fire retardant from the bodies of planes and large helicopters, or from buckets suspended from other helicopters. The application ranges from hundreds of gallons to thousands of gallons of water or fire retardant.

In accordance with the *Interagency Standards for Fire and Fire Aviation Operations* (USDA and USDOJ 2014) only approved chemicals are to be used in fire operations. Approved chemicals are listed by the U.S. Forest Service (U.S. Forest Service 2012) and include retardants and foam. Retardants are most often delivered in fixed or rotor-wing aircraft although some products are formulated specifically for delivery from the ground. Fire suppressant foams are combinations of wetting and foaming agents added to water to improve the efficiency of water and are delivered by engines and portable pumps. Helicopters and single engine airtankers can also deliver foam. Foam would not be used near watercourses where accidental spillage or overspray of the chemical could be harmful to the aquatic ecosystem.

ALTERNATIVE B, WILDLAND FIRE AND FUELS MANAGEMENT PROGRAM

This alternative, the NPS preferred alternative, consists of preparing and implementing a new fire management plan for Padre Island National Seashore. The new fire management plan would allow for implementation of the full range of fire management activities, including the use of wildland fire and various fuels management techniques. Potential wildland fire management responses could include suppression and managing wildland fire to achieve multiple objectives. Fuels management activities could include prescribed fire and manual and/or mechanical treatments. Wildfires requiring suppression would use minimum impact suppression tactics.

Under alternative B, the park would be divided into two fire management units. Figure 2 depicts the boundaries for each unit.

WILDFIRE RESPONSE

Wildfire management responses would consider a variety of strategies, including suppression, and managing for resource objectives. The most appropriate tactics would be implemented by operational managers.

For each wildland fire, fire management officers would apply a decision making process to determine the appropriate management strategy. The National Park Service currently uses the Wildland Fire Decision Support System, a tool that assists fire managers and analysts in making strategic and tactical decisions for fire incidents. The system allows managers to evaluate the wildfire in terms of the maximum manageable areas, available resources, monitoring plans, and identified threatened resources, and also establishes trigger points for implementing suppression actions if, needed.

Firefighting tools and resources that could be used include manual and/or mechanical tools, engines, aviation resources, and other fire management tools as described in alternative A. Other wheeled and/or tracked equipment could be considered on a case-by-case basis to protect life, property, or resources with approval from the Superintendent.

Use of Wildland Fire

Wildland fires could be managed to accomplish specific resource management goals and/or objectives in pre-defined fire management units within the park. Many of the suppression tactics previously described could be used to manage wildland fire for multiple objectives.

The use of wildland fire would meet several objectives. The fire could be managed to

- Reduce hazardous fuels,
- Reintroduce fire into fire-dependent plant communities,
- Restore natural ecosystems modified by prolonged fire exclusion,
- Restore vegetative composition, and
- Maintain natural systems.

PLANNED PROJECTS

Alternative B would involve the use of multiple strategies to reduce fuel loads for health and safety purposes, as well as for resource and/or developed areas, structures, and/or park infrastructure protection. Prescribed fire would also be applied to achieve determined goals and objectives in the fire management plan.

Under alternative B, fuel reduction actions would involve the use of manual and/or mechanical thinning and prescribed fire or a combination of these tools around facilities and infrastructure,

cultural sites, along roads, trails, in the wildland urban interface, and sensitive resource areas (e.g., oak mottes).

Manual and Mechanical Fuel Reduction

Manual and mechanical equipment could be used to reduce fuels as a stand-alone fuels treatment method or in combination with other treatments in preparation for a prescribed fire project.

Manual and mechanical fuel treatments (mowing and line trimmers) along some park road shoulders and around/in the Novillo Line Camp, sensitive resource areas (e.g., oak mottes), and other park facilities, would be conducted to reduce hazardous fuels and reduce accidental ignitions by vehicles.

A number of provisions would guide NPS selection and use of mechanical equipment. Prior to implementing fuel reduction efforts, the equipment to be used for the specific vegetation being targeted would be clearly identified. Seasonal use restrictions would be considered as well as any restrictions related to weather or species sensitivity. Both short- and long-term monitoring of fuel reductions would take place to determine the success in meeting project objectives and the effectiveness of protecting resources.

Thinning of vegetation would be accomplished using tools that include non-mechanized and mechanized handheld tools and wheeled or tracked mechanized equipment (e.g., all-terrain-vehicles with attachments, such as mowers, chippers and small tractors pulling/attaching similar equipment). Heavy equipment that uses large tires or large tracks resulting in less ground disturbance would be the first choices for use. Use of any heavy equipment off of any established roads require superintendent approval. Projects that require equipment with possible ground-disturbing effects would be planned and implemented with mitigation measures when resource conditions allow for reduced impacts to soil and vegetation.

Vegetation thinning would reduce the fuel load available to support either a prescribed fire or wildfire. Fuel reduction could be used alone to reduce the intensity of a potential wildfire or it could be used prior to a prescribed burn to minimize the intensity and help maintain control of the fire. The need for using fuel reduction techniques would be determined in consultations between NPS resource management specialists, fire ecologists, and a fire management officer.

Prescribed Fire

Prescribed fires are defined as any fire ignited by management to meet specific objectives. Prescribed fires could be used anywhere within the park to reduce hazardous fuels and to reduce debris or dispose of manually or mechanically treated fuels or for restoration/maintenance of the ecosystem.

The National Park Service would use the most current version of the *Interagency Prescribed Fire Planning and Implementation Procedures Guide* as direction for planning, implementing, and evaluating prescribed burns. As stated in the guide, “As one component of fire management, prescribed fire is used to alter, maintain, or restore vegetative communities; achieve desired resource conditions; and to protect life, property, and values that would be degraded and/or destroyed by wildfire.”

Operational guidelines for a prescribed fire would be presented for each proposed project in a detailed prescribed fire plan, as described in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide* (USDA and USDOJ 2008) appendices. Details for each proposed prescribed fire would depend on its purpose, vegetation to be burned, specific objectives, and location of the proposed project. These details would require review and approval by NPS fire specialists and managers.

Under alternative B, the objectives for prescribed fire use include:

- Reduce hazardous fuels,
- Reintroduce fire into fire-dependent vegetation communities,
- Restore natural ecosystems modified by prolonged fire exclusion,
- Improve vegetative compositions to natural levels (example enhance habitat and forage quality for wildlife),
- Reduce debris or dispose of manually or mechanically treated fuels, or
- Conduct maintenance burning where natural fires could not be managed.

The use of prescribed fire would consider factors such as seasonal use restrictions, weather restrictions, firefighter resources, visitor use, species sensitivity, or other concerns that may affect equipment use or operations related to prescribed fire.

Many methods and strategies described previously under Fire Suppression Strategy could be used to control and manage prescribed fire (e.g., aviation use for management or control).

FIRE MANAGEMENT UNITS

Under alternative B, two fire management units would be designated: Malaquite Beach and Down Island.

Malaquite Beach Fire Management Unit

The Malaquite Beach Fire Management Unit encompasses 18,491 acres extending from the northern park boundary to Pan Am Road at approximately milepost 7 (see figure 2). This unit contains the largest concentration of visitors, most of the park infrastructure, and the historic Novillo line camp. Management actions in this unit would emphasize the protection of life and safety of park staff, visitors, and fire personnel, and the protection of all structures and facilities.

Management Strategies

All unplanned ignitions in the Malaquite Beach Fire Management Unit will be suppressed. Fire Managers will determine the most appropriate tactics under the suppression strategy.

Prescribed fire treatments would be allowed as part of a hazardous fuel reduction project to protect park infrastructure. Prescribed fire would be used to reduce dead and down fuel loading and decrease live fuel densities. Treatments could also be implemented in fire-dependent ecosystems within this unit for resource benefit.

Manual and mechanical methods would be primarily implemented near developed areas to protect private property (e.g., cars and boats at Bird Island Basin) and park infrastructure. Manual and mechanical methods could also be used to protect cultural or natural resources. These methods would be used to thin or reduce fuels and vegetation in and around these resources. Treatments may also be implemented for ecosystem benefit. Due to the rapid growth of grassland vegetation, some areas may need to be treated multiple times a year to protect resources and infrastructure.

Down Island Fire Management Unit

The Down Island Fire Management Unit encompasses 24,647 acres. The boundary of this unit is Pan Am Road, at approximately Mile Marker 7, and continues south to the Mansfield Channel (see figure 2). This unit contains two historic structures and little park development. Primary visitor use occurs along the beach with seldom visitor use of the back island environment. No paved roads occur within this management unit, but several unimproved roads exist, including

oil and gas access roads and the Back Island Road. Most of the park's nonfederal oil and gas operations occur within this unit.

Each oil and gas operator must address fire prevention and fuels reduction in its approved Plan of Operation. Operators are responsible for the areas around production equipment, along access roads, and surface pads. In each petroleum production area, the appropriate fire management strategy would ensure protection of the petroleum facilities and the safety of production staff working at these sites.

Management Strategies

All wildland fires would be assessed for the most appropriate management strategy. Response for wildland fires could be suppression, allowing wildfire to achieve resource benefits, or a combination of these strategies. Strategies can change throughout the duration of the fire.

Prescribed fire would be allowed, as part of a hazardous fuel reduction project, to protect cultural and natural resources, or as a restoration treatment in fire-dependent ecosystems.

Manual and mechanical methods would be primarily used near non-federal oil and gas sites and historic structures to protect non-federal interests or to protect natural or cultural resources. These methods could be used to thin or reduce hazard fuels or non-native vegetation.

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FIGURE 2: ALTERNATIVE B FIRE MANAGEMENT UNITS
 Padre Island National Seashore
 United States Department of the Interior / National Park Service

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APPLICABLE MITIGATION MEASURES / BEST MANAGEMENT PRACTICES

The following mitigation measures would minimize adverse impacts that may result from implementing either of the alternatives. The measures are organized by resource topic, although some overlap occurs. The evaluation of impacts in chapter 3 takes these mitigation measures into account. Only the appropriate mitigation measure(s) would be applied. Mitigation measure(s) will be applied for planned projects; they will also be applied during wildland fire when possible. Mitigation measures may or may not be successful during these wildland fires.

GENERAL

- Use fire management staff and resource advisors to continuously educate fire crews on the appropriate methods of protection of natural and cultural resources during suppression, prescribed fire, and hazardous fuel reduction treatments.

AIR QUALITY

- Planned ignitions will occur when atmospheric mixing and transport winds favor rapid dispersal and avoid Corpus Christi.
- Use smoke management techniques based on computer models to determine smoke dispersion prior to prescribed burns.
- Postpone prescribed fires when conditions are unfavorable for smoke dispersion and air quality standards would be threatened.
- Use current and predicted weather forecasts along with test fires to determine smoke dispersal.
- Visually monitor smoke dispersal on a continuous basis at set intervals during the performance of all prescribed burns. Extinguish the prescribed burn if air quality standards are exceeded or smoke creates a hazard or nuisance, especially in or near smoke-sensitive areas.
- When prescribed fires are conducted, written or verbal notification of the burn will be provided to the Texas Commission of Environmental Quality (TCEQ) regional office.
- Provide notices regarding prescribed fires to personnel from Kleberg, Kenedy, and Willy Counties, local communities, park staff, concessioners, and visitors.
- Post signs if smoke would affect roads or designated visitor areas (such as interpretive sites or picnic areas).
- Limit the acreage and amount of fuel to be burned as noted in the prescribed fire plans.
- Select the timing and method of ignition to limit effects on air quality.

SPECIAL STATUS SPECIES

- Conduct surveys for special status species before deciding to take any action that may cause harm. In consultation with the U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department, take appropriate measures to protect any sensitive species whether identified through surveys or presumed to occur.
- Turtle spotters would be used on all fire management vehicles driving on beaches and in sea turtle habitat to ensure no vehicle/turtle conflicts.

VEGETATION AND SOIL

- Park vehicles in designated areas and have crews walk to project sites where appropriate to avoid resource damage.
- Do not drive vehicles off pavement or gravel roads without the superintendent's approval.
- Prepare a fire rehabilitation plan and implement it as soon as possible after a fire is out, in some cases even before a fire is out. Return firelines to as near original condition as possible using existing materials.
- Use protective tactics in areas identified as being sensitive for natural resources.
- Use wetlines instead of handline construction if adequate water and pumps are available.
- Keep firelines to the minimum width necessary to stop the fire's spread and to allow back-firing or a safe blackline to be created. Whenever possible, use natural barriers to avoid unnecessary fireline construction.
- Use sprinklers, soaker nozzles, or fogger nozzles during mop-up of fire incidents. Avoid boring and hydraulic action.
- Include rehabilitation of handlines during fire mop-up. Return vegetation to the handline to help prevent erosion.
- Remove invasive exotic species in the vicinity of historic and archeological resources in such a way as to minimize ground disturbance and threats to remaining vegetation. Conduct removal only after remaining resources and landscape features and systems are protected.
- Survey area where debris burning is planned and avoid sensitive biological soil crusts to the greatest extent possible.
- Rehabilitate all firelines, spike camps, or other disturbances in the park to maintain a natural appearance.
- Replace organic materials to assist in natural vegetation regeneration.
- Scatter native seed-bearing plants cut along firelines as mulch to provide a source of indigenous seed for bare soil areas.
- Monitor for occurrences of invasive vegetation following fuels treatments and fire suppression activities. Provide mitigation as needed to prevent establishment of invasive species.
- Use mitigation such as fiber erosion logs, particularly in steep areas, to minimize future channeling of runoff, prevent erosion of disturbed soil, and direct runoff toward areas of natural vegetative filters.
- Schedule prescribed fires based on the priority of resource objectives. Factors to consider include soil productivity and potential, desired plant community composition, and site preparation and treatment costs.
- Use central refueling stations with ground protection for refueling equipment such as chain saws and brush cutters to minimize chances of gasoline or oil spills.

WATER RESOURCES

- Do not burn slash in locations where surface water could be affected.
- Consult the *Implementation Guide for Aerial Application of Fire Retardant* (USDA 2012) when deciding between water drops or use of fire-retardant chemicals.

- In prescribed burn areas, leave a mosaic of vegetation near surface waters to minimize the potential for erosion from runoff.
- Avoid fuel spills in or near water sources by refueling equipment at least 50 feet from standing water or wetlands and use a containment pan.
- Use central refueling stations with ground protection for refueling equipment such as chain saws and brush cutters to minimize chances of gasoline or oil spills.

HEALTH AND SAFETY

- Consider temporarily closing parts of the park to visitors as a safety precaution. This decision would be made by the superintendent or the superintendent's designee.
- When a burn is conducted, place warning signs, such as "Smoke on Road" along all maintained roads.
- Provide a flagman and pilot cars when visibility is less than twice the braking distance required for the posted speed limit.

CULTURAL RESOURCES

- Conduct intensive archeological survey in areas identified for planned treatments if lacking prior surveys.
- Remove or thin vegetation around historic structures and/or significant landscape features (telephone poles, etc.), and archeological sites to reduce fire intensity.
- Avoid surface disturbing suppression techniques within cultural resource boundaries (sites, historic districts, landscapes, structures) unless techniques are warranted for resource protection and supervised by a cultural resource advisor.
- Carry, rather than drag, manually or mechanically removed fuels to reduce surface disturbance within cultural resource boundaries. Remove slash from thinning areas to designated locations for off-site disposal.
- Shield sites and structures from flame contact, limit exposure to fog spray, foam, backpack pumps, low pressure sprinklers, and damaging high temperatures or lengthy heavy smoke exposures with fire shelters or wrap, and reduce fuel loads as mentioned above or apply other techniques.
- Avoid direct applications of bucket or air tanker drops. Water drops could be applied as an indirect protective measure for cultural resources.
- Educate fire treatment personnel about known locations and cultural resources in general.

THE PREFERRED ALTERNATIVE AND ENVIRONMENTALLY PREFERABLE ALTERNATIVE

THE ALTERNATIVE PREFERRED BY THE NATIONAL PARK SERVICE

Under alternative A, the park would not be in compliance with NPS directives that require park units to have valid fire management plans supported by appropriate NEPA decision in place if there is existing vegetation that is subject to fire. Alternative B would meet NPS requirements, and therefore is the NPS preferred alternative.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

According to the U.S. Department of the Interior regulations in 43 *Code of Federal Regulations* section 46.30 that implement the National Environmental Policy Act, the environmentally preferable alternative “causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources.”

Alternative A would not provide a framework for the use of fire as a management tool (that is, planned fire would not be considered under alternative A). Under alternative A, the park would be bound to respond to all fires with full suppression tactics only. Full suppression of all wildland fire would thereby allow for continuous buildup of hazardous fuels, the spread of invasive vegetation species, suppressed vegetation composition and abundance, and increased risk of extreme wildland fire. This alternative, therefore, would fail to provide additional fire management actions that could be used to protect and to benefit resources in the park.

Alternative B, the NPS preferred alternative, would reduce the risk of uncontrolled wildland fire by allowing for wildland fire use, and reducing the buildup of hazardous fuels in treatment areas through strategic use of manual and/or mechanical fuels reduction and prescribed fire. The preferred alternative as compared to no action alternative would:

- Reduce fuel loads resulting in less intense wildland fire, therefore:
 - Protect natural and cultural resources.
 - Restore and maintain natural ecosystems.

Alternative B is therefore the environmentally preferred alternative.

ALTERNATIVES CONSIDERED BUT DISMISSED

Additional strategies to reduce fuels in the park were considered during the development of the alternatives. The National Park Service considered the use of herbicides to reduce fuels within the park as an element of the alternatives. Exotic plants in the park are treated under a separate management program in accordance with NPS Management Policies 2006 (section 4.4.4 – Management of Exotic Species). Therefore, the additional use of herbicides as part of the fire management program was not considered necessary. Furthermore, exotic plants are not extensive enough within the park that use of herbicides to control them would make a substantial contribution to fuel reductions.

The use of domestic livestock (e.g., cattle, sheep, goats, horses, mules, burros, and llamas) as a fuel reduction strategy was not considered further as these animals are exotic species to the park. Although exceptions are made for domestic livestock in other national park units, their use in Padre Island National Seashore was considered to be incongruent with protection of the park's resources. Due to the sensitivity of Padre Island's natural resources, South Texas' frequent droughts, and the harsh marine environment, the use of livestock would disturb the island's delicate balance and have unacceptable impacts to seashore resources.

SUMMARY COMPARISON OF THE ALTERNATIVES

Table 1 provides a summary of the important features of the alternatives. Table 2 summarizes the environmental consequences that would result from each alternative. More detailed summaries of the factors responsible for the effects are presented in the “Conclusion” sections at the end of each impact topic analysis. Full analyses of the impacts are presented in Chapter 3: Affected Environment and Environmental Consequences.

The purpose of this proposed action was identified at the beginning of chapter 1, with objectives that could be used to determine if an alternative would successfully meet the purpose. Alternative A would not meet fully the objectives of protecting park staff, property, and resources from fire and reducing fuel loads because fuel reduction projects could not be considered. Full suppression of wildfire in the park under alternative A would also not meet park objectives to promote various stages of grassland prairie community development.

Alternative B would implement a full range of fire management techniques that would promote a high level of health and safety as well as enhancing native grasslands through the use of fire. Alternative B addresses the NPS directives that require park units to have valid fire management plans supported by appropriate NEPA decision in place if there is existing vegetation that is subject to fire. Alternative B would not result in any conflicts with any environmental laws or policies.

Table 1: Comparison of the Alternatives

Feature	Alternative A: No Action (Fire Suppression)	Alternative B: Wildland Fire and Fuels Management Program
Prepare and implement a fire management plan.	A new fire management plan would not be prepared and the park would not be in compliance with DO-18.	A new fire management would be prepared and implemented in compliance with DO-18.
Fire suppression	Wildland fires would be suppressed throughout the park using manual and/or mechanical methods and/or aircraft. Contain and confine suppression tactics would also be used where conditions and fuel breaks (natural and manmade) are favorable for controlling the fire.	Suppression tactics would be the same as alternative A. In the Malaquite Beach FMU, fires would be suppressed using confine, contain, or direct attack tactics. In the Down Island FMU, fires would be considered for resource benefit. If a fire cannot be managed for these benefits, then it would be suppressed using confine, contain, or direct attack tactics.
Use of wildland fire	Not permitted within the park.	Wildland fire that originates outside of the Malaquite Beach FMU, and enters the Malaquite Beach FMU, will be suppressed with the most appropriate tactics. In the Down Island FMU, use of wildland fire for multiple objectives would be allowed in lieu of or in concert with suppression strategies.
Manual and mechanical fuel reduction	No fuel reduction actions would take place.	Manual and mechanical fuel treatments (mowing and line trimmers) along some park road shoulders and around/in the Novillo Line Camp, sensitive resource areas (e.g., oak mottes), and other park facilities, would be conducted to reduce hazardous fuels and reduce accidental ignitions by vehicles. In the Malaquite Beach FMU, treatments would primarily occur near developed areas to protect private property (vehicles), park infrastructure, and to protect natural and cultural resources. In the Down Island FMU, treatments would be used primarily near non-federal oil and gas and historic structures and to protect natural and cultural resources or non-federal interests.
Prescribed fire	No fuel reduction actions would take place.	Prescribed fire could be conducted in both fire management units. Larger prescribed fires would be allowed to reduce fuel accumulations and as a restoration treatment in the fire-dependent grasslands in the park.

Table 2: Impacts of the Alternatives

Impact Topic	Alternative A: No Action (Fire Suppression)	Alternative B: Wildland Fire and Fuels Management Program
Air quality	There would be negligible, short-term, local adverse impacts to air quality associated with vehicle and aircraft emissions as well as power tool (e.g., chain saws, brush cutters) emissions. Cumulative impacts to local and regional air quality would be short-term, minor, and adverse.	Alternative B would have effects similar to alternative A from fire suppression actions, although there would be greater impacts from manual and/or mechanical fuel reductions and prescribed burns, resulting in short-term, local to regional, minor, and adverse impacts to air quality. Cumulative impacts would be local and regional, short-term, minor, and adverse. In the long-term, fuels reduction would have a beneficial effect on air quality as the intensity of wildfires would be reduced.
Vegetation	The fire suppression activities of alternative A would be local, short-term, and no greater than minor because the grassland fires would not carry over long distances, woodlands are extremely limited in the park, and suppression efforts would not likely be extensive. Loss of individual plants would result in short- and long-term minor cumulative impacts but there would be no adverse impacts on plant populations from other plans and projects.	The effects of fire suppression under alternative B would be local, short-term, adverse and minor and primarily associated with disturbance by humans, vehicles, and fire suppression activities. Manual and/or mechanical fuel reductions would have short-term, local minor adverse impacts as a result of trampling and crews working in the plant communities. Prescribed fire would have local, minor to moderate adverse impacts in the short term as a result of some plant mortality, but this would be offset by long-term benefits associated with increases in species richness, diversity, and resiliency, with a tendency toward fire-tolerant plant species in the treated areas. In the short-term, the contribution of alternative B to cumulative adverse effects would be incrementally greater than alternative A because of the added effects of fuel reduction and prescribed burning. However, there would be a long-term beneficial impact from the use of wildland fire to restore plant communities and reduction of unplanned wildfire intensities.
Special status species	Alternative A would have short-term, local, minor adverse impacts on reptilian and avian special status species. These effects would primarily be associated with human and vehicle intrusions into natural habitats to implement fire suppression actions. Special status species preferring habitats that are not subject to a sustaining fire regime because of sparse vegetation or a aquatic surrounding would experience few or negligible adverse effects from fire suppression. Cumulative impacts of other plans, projects, and activities would be long-term, minor, and adverse.	The effects of alternative B on special status species would be short-term, local, minor, and adverse with respect to fire suppression actions, manual and/or mechanical fuel reductions, and prescribed burning, with the impacts primarily associated with human and vehicle disturbance and intrusion into special status species habitat. In the long term, beneficial effects on wildlife would result with reduced fuel loads, less potential for stand replacing wildfire, and greater habitat diversity with restoration of a more natural fire regime. Overall there would be large beneficial cumulative effects on special status species due to a return to a more natural fire regime and improved habitat.

Table 2: Impacts of the Alternatives (Continued)

Impact Topic	Alternative A: No Action (Fire Suppression)	Alternative B: Wildland Fire and Fuels Management Program
Wildlife	Wildfire suppression activities associated with alternative A would have local, short-term, negligible to minor adverse effects on most wildlife species as a result of human and vehicle disturbance and the impacts of suppression on habitats. Suppression of excessively fueled wildfires would benefit wildlife if intense stand replacing fires could be controlled. Cumulative impacts to wildlife would be minor to moderate and long-term.	The impacts of fire suppression would be short-term, local, negligible to minor and adverse resulting from displacement wildlife by firefighting crews and vehicles. Manual and/or mechanical fuel reductions and prescribed burning would provide a mix of short-term, local negligible to minor adverse effects associated with field crews and disturbance with the benefits of reduced fuel loads, less intense wildfires, and improved habitat diversity and health with the return of a more natural fire regime. Cumulative impacts from other plans, projects, and activities on wildlife would be long-term, minor to moderate, and adverse.
Cultural resources – archeological resources	Wildfire suppression under alternative A would provide incidental, indirect, parkwide, long-term benefits to archeological resources in reducing the size of a wildfire and thus the extent of adverse impacts to these resources in the park. Although resource protection measures would limit adverse impacts, suppression activities involving engine crews, hand crews, and aircraft dropping water or retardant could result in ground disturbance, causing permanent, localized, and negligible to minor adverse effects. Impacts to archeological resources from using natural barriers and fire breaks to suppress a wildfire would also be permanent, negligible to minor, and adverse, as short residence time and limited heat pulse would prevent more substantial effects. Cumulative impacts would be permanent, parkwide, negligible to minor, and adverse.	Wildfire suppression would provide incidental, indirect, parkwide, long-term benefits to archeological resources in reducing the size of a wildfire and thus the extent of adverse impacts to these resources in the park. As discussed in alternative A, adverse impacts stemming from wildfire suppression tactics would be permanent, localized, and negligible to minor. Managing wildfire for multiple objectives would include benefits to natural and cultural resources from the fire, and would include point-protection strategies when appropriate. Point-protection strategies allow fire to move past the specific resource without burning the identified resource. Planned projects like manual and/or mechanical thinning and prescribed fire would be designed to protect archeological resources; therefore permanent, localized, adverse effects would be negligible to minor. The resulting fuel load reduction would be a long-term benefit to archeological resources, since they could be better defended during wildfires. Cumulative impacts would be permanent, parkwide, negligible to minor, and adverse.
Cultural resources – historic structures	Fire suppression tactics would be employed around historic structures to prevent damage from wildfire. With resource protection measures in place to protect the structures from suppression activities, adverse impacts would be no more than short-term, localized, and negligible to minor. Cumulative impact would be permanent, parkwide, minor, and adverse.	Impacts associated with suppression strategies would be the same as described under alternative A and would result in no more than localized, short-term, negligible to minor adverse impacts. Managing wildfire for multiple objectives would include benefits to natural and cultural resources from the fire, and would include point-protection strategies when appropriate. Point-protection strategies allow fire to move past the specific resource like a structure without burning the identified resource. Planned projects like manual and/or mechanical thinning and prescribed fire would be designed to result in no adverse impacts to historic structures. The resulting fuel load reduction would be a long-term benefit to historic structures, since they could be better defended during wildfires. Cumulative impacts would be permanent, parkwide, minor, and adverse.

Table 2: Impacts of the Alternatives (Continued)

Impact Topic	Alternative A: No Action (Fire Suppression)	Alternative B: Wildland Fire and Fuels Management Program
Visitor use and experience	Alternative A would have local, short-term, negligible to moderate, adverse impacts from temporary area closures and noise associated with suppression activities. Long- and short-term beneficial effects on visitor use and experience would result from educational and interpretative opportunities. Cumulative impacts would be parkwide, long-term, and beneficial.	Wildfire suppression would provide parkwide, long-term benefits to visitor use and experience by reducing the size of a wildfire and thus the extent of adverse impacts to these resources in the park. As discussed in alternative A, adverse impacts stemming from wildfire suppression tactics using hand crews, engine crews, and aircraft, localized, and negligible to moderate. Fuel reduction activities under this alternative would result in short-term negligible to minor adverse impacts. However, the use of fuel reduction activities would provide greater protection to park resources from impacts of wildfire, which would be a long-term beneficial impact. Use of wildland fire for resource management would have similar impacts to fire suppression tactics, which are negligible to moderate and adverse over the short-term and beneficial over the long-term. Cumulative impacts would be long-term and beneficial.
Park Operations	The impacts of alternative A would be negligible to minor, and short-term, because fire suppression efforts are accounted for with advanced planning and contingencies to deal with fire fighting are in place to avoid unwanted impacts to normal park operations. If temporary closures are necessary, impacts would be minor. Cumulative impacts would be long-term, negligible, and adverse.	The effects of wildfire suppression efforts on park operations would be the same as described for alternative A. Fuel reduction and prescribed fire activities would have short-term, negligible to minor, adverse impacts on park operations. Cumulative impacts would be long-term, negligible, and adverse.
Public Health and safety	Alternative A would have short-term, negligible to minor, adverse impacts given the risk involved in fighting wildland fire. Long-term beneficial effects on health and safety in the park would accrue from suppression of wildfires. Cumulative impacts would be long-term, negligible to minor, and adverse.	Alternative B would have short-term negligible to minor adverse impacts associated with suppression and fuel reduction activities on firefighters, park staff, and visitors. Long-term beneficial effects on health and safety would result from reduced fuel loads that would minimize the size and intensity of future wildland fires. Cumulative impacts would be long-term, negligible to minor, and adverse.

Chapter 3: Affected Environment and Environmental Consequences

This chapter provides a description of the Affected Environment for each resource followed by an evaluation of the Environmental Consequences of the alternatives. It is organized by impact topic, which allows a standardized comparison among alternatives, based on issues.

The Affected Environment section describes the resources within Padre Island National Seashore that could be affected as a result of implementation of each alternative considered in the EA. Resource descriptions provided in this chapter serve as a baseline with which to compare the potential effects of the alternatives considered in this environmental assessment. This section is required by the Council on Environmental Quality regulations (1978) implementing the National Environmental Policy Act, to succinctly describe the environment of the area(s) likely to be affected by the alternatives under consideration, and focus efforts and attention on important issues (40 CFR 1502.15).

The Environmental Consequences portion of each impact topic analyzes both beneficial and adverse impacts that could result from implementing any of the alternatives described in Chapter 2: Alternatives. Analysis includes a summary of laws and policies relevant to each impact topic, and the methods used for determining cumulative effects. Definitions of impact thresholds (negligible, minor, moderate, and major) used to analyze impacts are detailed within each impact topic discussion. As required by the Council on Environmental Quality, a summary of the environmental consequences of each alternative is provided in table 2 in Chapter 2: Alternatives.

The following section discusses general methods used to identify impacts and includes definitions of terms. Additionally, it includes policy, terminology, and methods related to general analysis and cumulative impacts. The alternatives are then analyzed in the order they appear in Chapter 2: Alternatives. Each impact topic includes a description of the effects of the alternative, a discussion of cumulative impacts, and a conclusion.

METHODS FOR ANALYZING IMPACTS

Effects were evaluated for each retained impact topic in terms of type, context, duration, and intensity. Type describes whether impacts are beneficial or adverse, and direct or indirect:

- *Beneficial*: A positive change occurs in the condition or appearance of the resource or a change moves the resource toward a desired condition.
- *Adverse*: A change moves the resource away from a desired condition or detracts from its appearance or condition.
- *Direct*: An effect caused by an action and occurs in the same time and place.
- *Indirect*: An effect caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.

Context describes the area or location in which the impact will occur, such as site-specific, local, regional, or even broader. The methods description for each impact topic identifies the geographic area considered.

Duration describes the length of time an effect will occur, either short-term or long-term. These terms are defined in the “Methods” section for each impact topic.

Intensity describes the degree, level, or strength of an impact. For this analysis, intensity was categorized as negligible, minor, moderate, and major. Intensity definitions are provided in the “Methods” section for each impact topic analyzed.

In addition to analyzing the fire management methods for each alternative, the effects of unplanned wildland fire were evaluated under the alternative A analyses for each impact topic.

For impact topics where the effects of unplanned wildland fire would be no different under alternative B, the analysis is not repeated.

CUMULATIVE IMPACTS

For each impact topic, the alternatives were evaluated for their contribution to cumulative impacts, consistent with the Council on Environmental Quality (1978) regulations for implementing the National Environmental Policy Act. Cumulative effects are “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.”

The cumulative impact scenario identifies the other past, ongoing, or reasonably foreseeable future actions in the park area that, with this action, could contribute to cumulative impacts. Cumulative impacts were determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at Padre Island National Seashore and, if applicable, the surrounding region. Most of those actions were described earlier in this document under the heading, “Relationship of the Proposed Action to Other Planning Efforts.” In addition, the cumulative impact scenario includes the following:

- Treatment of nonnative plants is conducted under the NPS Integrated Pest Management (NPS 2010);
- Smuggling incidents and border protection actions;
- Past construction activities such as the installation of a telecommunications tower by the Department of Homeland Security to better support communications and security; and
- Emission of air pollutants from regional power plants and urban areas that may affect air quality.

IMPACTS TO CULTURAL RESOURCES AND COMPLIANCE WITH SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

In this environmental assessment/assessment of effect, impacts to cultural resources are described in terms of type, context, duration, and intensity, which is consistent with the regulations of the Council on Environmental Quality (1978) that implement the National Environmental Policy Act. These impact analyses are also intended, however, to comply with the requirements of section 106 of the National Historic Preservation Act. In accordance with the Advisory Council on Historic Preservation’s regulations for implementing section 106 (*36 Code of Federal Regulations* part 800, Protection of Historic Properties), impacts on cultural resources were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to the cultural resources of concern; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory Council’s regulations, a determination of either adverse effect or no adverse effect must be made for affected cultural resources that are listed or eligible for the national register. An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualify it for inclusion in the national register (including, for example, diminishing the integrity of the resource’s location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would occur later in time, be farther removed in distance, or be

cumulative (36 *Code of Federal Regulations* part 800.5). A determination of no adverse effect means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the national register.

The Council on Environmental Quality regulations and *Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2001a) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, such as reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by section 106 is similarly reduced. Although adverse effects under section 106 may be mitigated, the effect remains adverse.

A section 106 summary is included in the impact analysis under the preferred alternative. The section 106 summary is intended to meet the requirements of section 106 and is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

AIR QUALITY

AFFECTED ENVIRONMENT

The National Park Service has the responsibility to protect air quality under both the 1916 Organic Act and the Clean Air Act (CAA), and will seek to maintain the highest possible air quality in parks. This action will preserve natural resources and systems, preserve cultural resources, and sustain visitor enjoyment, human health, and scenic vistas (NPS 2006).

National Ambient Air Quality Standards are established under the CAA to protect public health. Federal and state governments have established regulations under the CAA specifically to address emissions from wildland fires, and the park is required to work within this regulatory framework. The U.S. Environmental Protection Agency established an *Interim Air Quality Policy on Wildland and Prescribed Fires*, and the State of Texas established a *State Implementation Plan*. These guidelines provide a process for evaluating the impact of smoke emissions in planning for management fires, state review before ignition, public notification before and during fires, and monitoring of emissions during fires. The park's air quality is protected by allowing limited increases over base-line concentrations of sulfur dioxide, nitrogen oxides, and particulate matter.

When wildland or prescribed fires are burning, daytime smoke is normally carried to the northwest by the prevailing southeast winds from March through September and to the southwest from October through February (NPS 2000), and is usually dispersed quickly enough that it is not visually detectable from background levels within a few miles.

Emissions affecting air quality in the park include stationary, area, and mobile sources. Stationary sources refer to fossil fuel-fired space and water heating equipment, generators, and fuel storage tanks. Area sources refer to campfires, prescribed burns and wildland fires, and oil and gas operations. Mobile sources refer to visitor vehicles, NPS vehicles, and non-road vehicles and equipment (NPS 2003b).

Wildland fires commonly produce various emissions, including carbon dioxide, water, particulates, carbon monoxide, and occasionally low amounts of nitrogen oxides. Carbon dioxide and water are not considered air pollutants. Airborne particulates are the primary pollutant of wildland fires and management ignited prescribed burns (Komarek 1970).

Federal land managers have an affirmative responsibility to protect the air quality related values and to consider whether any proposed major emitting facility within, or outside, the area will have an adverse impact on such values. As defined by the National Park Service, an air quality related value is "A resource . . . that may be adversely affected by a change in air quality. The resource may include visibility or a specific scenic, cultural, physical, biological, ecological, or recreational resource . . . for a particular area." (NPS 2013a) Air quality related values of Padre Island National Seashore are those resources that are potentially sensitive to air pollution, and include vegetation, wildlife, soils, and visibility.

National Ambient Air Quality Standards

The Clean Air Act requires the U.S. Environmental Protection Agency to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards: primary and secondary. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Standards were set for six principal pollutants, called "criteria" pollutants

(carbon monoxide [CO], lead [Pb], nitrogen dioxide [NO₂], ozone [O₃], particulate matter [PM₁₀], and sulfur dioxide [SO₂]) (USEPA 2010).

Air Quality at Padre Island National Seashore

According to the Texas Commission on Environmental Quality (TCEQ), which administers the air pollution program for Texas, and the Final Oil and Gas Management Plan/Environmental Impact Statement for the park (NPS 2000), Kleberg, Kenedy, and Willacy Counties are classified as attainment for all the National Ambient Air Quality Standards (NAAQS) (NPS 2003b). Padre Island National Seashore is designated as a Class II air shed, as authorized by the Prevention of Significant Deterioration provisions of the Clean Air Act (CAA) (NPS 2003b).

Air Quality and Fire

Smoke contains particulate matter, and it is difficult to measure the effects of smoke on a community because particulate standards are based on 24-hour and annual averages. Further, smaller smoke plumes may degrade air quality for only a few hours, while large wildland fires may have smoke plumes that persist for several days or as long as the fire is active. In addition to particulate matter, globally, fires are a significant contributor of carbon dioxide and other greenhouse gases in the atmosphere (Sandberg et al. 2002), but gas emission are highly dependent on specific fire weather conditions, area burned, and fuel loads.

Climate Change Effects on Air Quality

Climate change and air quality are closely coupled. Ozone is a significant greenhouse gas, and particulates can influence the climate by scattering, reflecting, and /or absorbing incoming solar radiation (USEPA 2010). Due to climate change, there may be a declining air quality in cities through changes in dispersion rates of pollutants, the production of ozone and particle pollution, and the strength of emissions from the biosphere, fires, and dust. Alterations in hydrology and vegetation communities, in conjunction with more severe droughts, could alter local air quality through increased dust and more intense fires releasing more particulates and carbon dioxide.

METHODS

Air quality was analyzed for both alternatives based on the effects of fire in Padre Island National Seashore. Impacts on air quality were evaluated using the process described in “Methods for Analyzing Impacts” and applying the mitigation measures in chapter 2.

Impact thresholds for air quality are defined as follows:

- *Negligible*: Impacts would not be detectable or measurable. Visibility would not be affected.
- *Minor*: Impacts would be measurable, but air quality parameters would be within all Class II criteria. Visibility would be within the range of historical conditions.
- *Moderate*: Changes in air quality would be readily apparent, but Class II parameters would be met, with only occasional exceedances. Air quality would be outside historic baselines on a limited basis. Mitigation would be necessary to offset adverse effects and would likely be successful.
- *Major*: Changes in air quality would be readily measurable, and some Class II parameters would be equaled or exceeded for extended periods of time. Extensive mitigation measures would be necessary, and their success would not be assured.

- *Short-term* impacts to air quality would recover in 7 days or less following the action.
- *Long-term* impacts to air quality recovery would take more than 7 days following the action.

REGULATIONS AND POLICIES

Current regulations and policies related to the analyses of effects on air quality in the park:

- Clean Air Act as amended in 1991;
- Consolidated Natural Resources Act of 2008;
- *NPS-77: Natural Resources Management Guideline* (1991); and
- *Management Policies 2006* (NPS 2006)

IMPACTS OF ALTERNATIVE A, NO ACTION

Analysis

Under alternative A, the effects on air quality would be associated with wildfire suppression. Suppression related effects would include vehicle and aircraft emissions as well as power tool (e.g., chain saws) emissions. The relatively small proportion of suppression-related emissions when compared to overall vehicle use, smoke emissions from wildfires and campfires, power tool use, and the typical short duration of suppression efforts would result in negligible, short-term, local adverse impacts to air quality.

Under Alternative A, fuel loading would continue to increase with a continued potential for high-intensity wildland fires during a high-severity fire season resulting in increased emissions periodically originating on park land. The potential for these high intensity fires is based on the continuing variance from historical conditions, creating greater uncontrolled smoke production from the burning of an accumulation of fuels, such as grass thatch, that were historically removed by frequent wildland fires. These emissions of particulates, dust, and air pollutants, including nitrogen oxides (NO_x) and carbon monoxide (CO), would continue from the presence of campfires, wildland fire, and suppression vehicles associated with each wildland fire. Predominate onshore winds would quickly dissipate air quality impacts and mitigate the adverse effects associated with wildfires feeding off high fuel loads.

Cumulative Impacts

Other plans, projects, and activities would have local and regional, short-term, minor adverse cumulative impacts on air quality. These impacts would be related to vehicle emissions, recreation (campfires, recreational vehicles), construction activities, and general development activities. Alternative A fire suppression activities would contribute in a small manner to these adverse emission-related impacts, but would ultimately put wildfires out, end smoke emissions, and provide a cumulative benefit to air quality.

Conclusion

Fire suppression efforts under alternative A would result in negligible, short-term, local adverse impacts to air quality associated with vehicle and aircraft emissions as well as power tool (e.g., chain saws, brush cutters) emissions. Cumulative impacts to local and regional air quality would be short-term, minor, and adverse, with alternative A contributing in a small way to the adverse

effects. Alternative A would provide a cumulative benefit to air quality by putting wildfires out and ending smoke emissions.

IMPACTS OF ALTERNATIVE B, WILDLAND FIRES AND FUELS MANAGEMENT PROGRAM

Analysis

The impacts to air quality from wildfire suppression would be the same as those described for alternative A; namely short-term, local, negligible, and adverse.

Fires and their resultant smoke would have an adverse impact on air quality; however, air quality impacts from wildland fires are distinguished from the air quality impacts from prescribed fires because emissions from these two sources were, in the past, treated separately under the Clean Air Act and state fire regulations (Sandberg et al. 2002). The primary air pollutant from prescribed fire would be smoke. Prescribed fires are generally designed so smoke does not move into sensitive areas. The light fuels on Padre Island would produce a short duration fire that may put up a smoke plume or convection column. It would be of short duration, and minimal residual smoke production will occur. Planned ignitions would occur when atmospheric mixing and transport winds favor rapid dispersal and avoid Corpus Christi. Smoke effects to air quality from a 500-acre prescribed burn conducted in the park during July of 2004 could not be observed in Flour Bluff along Laguna Shores Road, which is the closest road to the park on the mainland of Texas. The smoke and haze effects of a 3,000-acre fire were observed on the mainland, yet impacts had dissipated within one day of extinguishing the fire. Indirect effects from prescribed burn smoke could include reduced visibility along roadways, reductions in recreation values due to visibility limitations, smoke and odors, and possible health effects to sensitive residents and visitors. Mitigation measures to minimize smoke would be implemented under this alternative, including scheduling to avoid high visitor use periods and other scheduled fires in the region, as well as assessing fuel conditions, ignition patterns, and other fire management tools to enhance smoke dispersal. With the use of these mitigation measures, adverse effects would not likely exceed minor levels as fuel levels are slowly reduced. As a result, the effect on air quality from the prescribed burns proposed under alternative B would be short-term, local to regional, minor, and adverse.

The effects from manual and/or mechanical fuel reduction activities, resulting from vehicle and power tool emissions, would be short-term, local, negligible, and adverse because of the short duration of the actions and relatively small emissions from the number of vehicles and tools used. In the long-term, fuels reduction would have a beneficial effect on air quality as the intensity of wildfires would be reduced.

Effects to air quality from both prescribed fires and wildland fire use would generally include negligible to moderate, short-term, localized and widespread, direct and indirect, adverse impacts, as large quantities of pollutants, primarily particulates, are released to the atmosphere and carried past park boundaries.

Cumulative Impacts

The cumulative impacts on air quality of other plans, projects, and activities would be the same as those described for alternative A; local and regional, short-term, minor, and adverse. With added emissions from additional field vehicles and power tools to implement manual and/or mechanical fuel reductions and especially from prescribed fire smoke, alternative B would have a substantially greater contribution to these cumulative impacts than alternative A.

Conclusion

Alternative B would have effects similar to alternative A from fire suppression actions, although there would be greater impacts from manual and/or mechanical fuel reductions and prescribed burns, resulting in short-term, local to regional, minor, and adverse impacts to air quality. Cumulative impacts would be local and regional, short-term, minor, and adverse. Alternative B would have a greater contribution to these cumulative impacts than alternative A because of the added adverse effects associated with manual and/or mechanical fuel reductions and prescribed burning. In the long-term, fuels reduction would have a beneficial effect on air quality as the intensity of wildfires would be reduced.

VEGETATION

AFFECTED ENVIRONMENT

Prior to the park's establishment, cattle grazing, burning, and military activities degraded existing plant communities. Following establishment of the park in 1963, these activities were phased out, allowing vegetation structure and species composition to return to a more natural state.

Physical factors such as high temperatures, sun exposure, salinity, isolation from the mainland, and high levels of disturbance from hurricanes and fire influence the structure and composition of plant communities on the island. Low-lying grasses, forbs, and shrubs are the predominant vegetation life forms that have adapted to the harsh, salty environment. The small tree population primarily consists of mesquite (*Prosopis* spp.), live oak (*Quercus* sp.), and willow (*Salix* spp.). Stunted oak trees grow clustered on low dunes referred to as oak mottes. There are over 450 flowering plant species from 77 families in the park (Cooper et al. 2005).

From the gulf to the lagoon, a width that varies along the island from one-half to three miles, the park's landscape changes from beaches to ridges of fore-island dunes, then to grasslands broken by scattered small dunes, ponds, and wetlands, and finally to transitional back-island dunes and mudflats that merge with the waters of Laguna Madre (NPS 2000). Vegetation at Padre Island National Seashore is composed of beach, dune, coastal prairie, and wetland communities predominantly herbaceous in nature. Each community is briefly described below.

Beach

On the landward edge of the beach, a few salt-tolerant plants such as glasswort (*Salicornia* spp.), sea purslane (*Sesuvium portulacastrum*), and seashore dropseed (*Sporobolus* spp.) are established. Glassworts are succulent, annual "halophytes," or plants that thrive in saline environments like sea coasts and salt marshes. Dropseed grasses are typical prairie and savanna plants occurring in open habitat in warmer climates (Smith 2002). These plants can form mats of vegetation important in the initial stages of dune formation. Behind the primary dunes, the landscape becomes a mixture of back dunes, coastal prairie, and wetlands. In the spring and summer, bands of *Sargassum* seaweed are deposited and provide organic input and forage for many beach species (Withers et al. 2004). This line of vegetation is often referred to as the wrack.

Dunes

Because dunes are constantly being created and eroded, the amount and types of vegetation can vary depending on the development stage of the dune. More-established dunes generally have a larger amount of vegetative cover, while newly forming dunes may be nearly bare. Along the western edge of the island and in some interior locations, active dune fields are continually modified by strong winds and are almost devoid of vegetation. The few plants that can grow in these areas include beach croton (*Croton punctatus*), sedge (*Carex* spp.), and sea oats (*Uniola paniculata*). As vegetation becomes established, it stabilizes dune movement. Other dune species include railroad vine (*Ipomoea pes-caprae*), beach pea (*Lathyrus maritimus*), and beach evening primrose (*Oenothera drummondii*).

Vegetative cover also varies by location. On the windward side of the dune, cover averages 53 percent, while on the leeward side it can increase to 70 percent (Cooper et al. 2005). From the beach to the crest of the dune, sea spray can affect plants, and these species must be salt tolerant. Plant density also affects dune height by increasing sand accumulation (NPS 2000). The park's higher dune fields are typically dominated by seacoast bluestem (*Schizachyrium littorale*), cam-

phor weed (*Heterotheca subaxillaris*), and gulf dune paspalum (*Paspalum monostachyum*), with cover between 75 to 95 percent.

Coastal Prairie

West of the foredune ridge, the coastal prairie begins in the island interior. Topography varies from flat to rolling dunes up to 10 feet high (Cooper et al. 2005). Coastal prairie is somewhat different from the tallgrass prairie community found in the Midwest because the coastal prairie receives 56 inches of precipitation per year versus 28 inches in the tallgrass prairie (USGS 2005). The dominant prairie species changes in the park from bitter panicum (*Panicum amarum*) in the north to seacoast bluestem (*Schizachyrium littoralis*) in the south. Like the Midwest prairie, fire plays an important role in maintaining the coastal prairie community.

Wetlands

Wetland communities found on North Padre Island include ephemeral ponds, freshwater wetlands supported by groundwater, wind-tidal flats, and seagrass beds.

Freshwater wetlands are common in swales in the island's interior. In some instances, the wind has removed sand down to the water table. In others, seasonal rains accumulate in low spots and form ephemeral wetlands. On the west side of the island, marsh vegetation is typically both salt and freshwater tolerant. The dominant species is swordgrass (*Scirpus americanus*), along with seacoast bluestem (*Schizachyrium scoparium* var. *littoralis*), fleabane (*Erigeron procumbens*), roundstem (*Paspalum monostachyum*), narrowleaf sumpweed (*Iva angustifolia*), and marsh hay cordgrass (*Spartina patens*). These marshes often transition to salt flats and seagrass beds in Laguna Madre.

Where barrier islands meet the lagoon side of the island, there typically are salt flats, where the estuarine waters partially inundate the barrier island's edge. Salt flats along the Texas coast are referred to as wind-tidal flats because water movement is largely a function of wind patterns rather than tides. Some sections of the wind-tidal flats are covered by mats of blue-green algae (cyanobacteria). While wind-tidal flats look barren, the amount of algal material produced by photosynthesis, known as primary productivity, may be nearly as much as in seagrass beds (Withers 2002b). In seagrass beds, dominant vegetation includes shoalgrass (*Halodule wrightii*), widgeon grass (*Ruppia maritima*), and manatee grass (*Syringodium filiforme*). Many species of marine algae are also found in the waters of Laguna Madre and at the Mansfield Channel jetties.

Exotic Species

On North Padre Island, Kleberg bluestem (*Andropogon annulatus*) is an introduced pasture grass that has become established along the main roadways in the park where regular mowing occurs. Another exotic species, guinea grass (*Urochloa maxima*), has been observed recently as well. These two species, as well as several other exotic grasses, have replaced the native flora to varying degrees. No exotic species have been reported in inland waters (Withers et al. 2004).

Exotic vegetation is not present on the natural islands but is present on a number of the dredge-material islands. In addition to the grasses noted above, exotic species include tamarisk (*Tamarix* spp.), reed (*Phragmites* sp.), Brazilian pepper (*Schinus terebinthifolius*), oleander (*Nerium oleander*), and date palm (*Phoenix* spp.) (NPS 2004b). Some of these exotic species were planted around cabins constructed before the area became a national park (NPS 1999). King Ranch bluestem (*Andropogon ischaemum*) is the dominant grass on several of the active nesting islands for colonial waterbirds. In addition, smaller amounts of Johnson grass (*Sorghum halpense*) have invaded these islands (Withers et al. 2004).

Role of Fire

The role of fire is important in North American grasslands where periodic droughts, high temperatures, and strong winds provide an ideal environment for ignition and perpetuation of fire (Collins and Wallace 1990). Fire is one of the most important natural disturbances to the park's ecosystem, but has become less frequent due to the historical impacts of over-grazing on the native vegetation and aggressive fire suppression activities. Some areas currently have fuel accumulations that could contribute to detrimental stands replacing wildland fires.

Park-specific research regarding the effects of fire on the vegetation communities is limited, although Lonard et al. (2004) did report on the recovery of grassland vegetation following fire in the park in 1999. Live plant coverage increased and leaf litter was reduced for more than two years after the fire, with species diversity and abundance returning to pre-fire levels within 71 days of burning. Species diversity and richness exceeded that in non-burned areas in less than two months following the fire.

Large accumulations of litter have occurred in recent years due to the removal of large herbivores and have caused recurrent, unplanned fires. Build-ups of large amounts of litter in grassland regions lower soil temperatures, which in turn reduce bacterial activity, tie up nutrients, and slow the general nutrient cycling process (Drawe and Kattner 1978).

METHODS

Impacts on vegetation were evaluated using the process described in "Methods for Analyzing Impacts." Impact threshold definitions are as follows.

- *Negligible*: The impact on individual plants and/or vegetation communities would not be measurable. The abundance or distribution of individuals would not be affected or would be slightly affected. Ecological processes and biological productivity would not be affected.
- *Minor*: The action would not decrease or increase the area's biological productivity. It would affect the abundance or distribution of individual plants in a localized area but would not affect the viability of local or regional populations or communities.
- *Moderate*: The action would change biological productivity in a small area. It would affect a local population sufficiently to change plant abundance or distribution, but would not affect the viability of the regional population or communities. Changes to ecological processes would be of limited extent.
- *Major*: The action would change biological productivity in a relatively large area. The action would affect a regional or local population of a species sufficiently to change abundance or distribution to the extent that the population or communities would not be likely to return to its/their former level (adverse), or would return to a sustainable level (beneficial). Important ecological processes would be altered.
- *Short-term* impacts would recover in less than one year.
- *Long-term* impacts would require one or more years to recover.

REGULATIONS AND POLICIES

Current regulations and policies associated with vegetation include the following:

- Plant Protection Act of 2000, 7 *United States Code* 7701 et seq. (supersedes the Federal Noxious Weed Act of 1974, except Sections 1 and 15);
- Consolidated Natural Resources Act of 2008 (Public Law 110-229);

- Executive Order 13112 (February 1999), Control of Invasive Species, as amended by Executive Order 13286;
- *Director's Order #77: Natural Resources Management Guideline* (NPS 1991); and
- *Management Policies 2006* (NPS 2006).

IMPACTS OF ALTERNATIVE A, NO ACTION

Analysis

The effects of alternative A on vegetation would be associated with fire suppression actions. The presence and movement of fire-fighting crews, laying of hoses, fireline construction, and potential water/fire retardant drops by aircraft could each have impacts on vegetation as a result of trampling, rutting, destruction of root systems, and compaction or removal of soil. However, these adverse impacts would be local, short-term, and no greater than minor with the use of natural fire breaks to suppress the fire, implementation of mitigation measures to limit fire line construction impacts, and site rehabilitation. Adverse impacts to vegetation in the park from fire suppression responses may include destruction or damage of individual or small patches of plants, but the population would recover relatively quickly.

Cumulative Impacts

Other plans and projects with the potential to affect vegetation include those described in the Relationship of the Proposed Action to Other Planning Efforts previously presented in this document. Those projects that could affect vegetation, including oil and gas development and construction of turtle monitoring cabins, would have short- and long-term, minor adverse impacts on vegetation as individual plants may be destroyed, but the populations would not be affected. This would represent an overall negligible to minor adverse cumulative impact on vegetation. Alternative A would contribute to these adverse cumulative impacts in a manner proportional to the degree of impacts a particular suppression effort would have. This contribution could vary widely depending on the severity, location, and season. Nonetheless, the adverse cumulative effects of alternative A combined with the other plans and projects on vegetation would be local, short- and long-term, and no greater than minor.

Conclusion

The fire suppression activities of alternative A would have local, short-term, and no greater than minor adverse effects with implementation of mitigation measures to limit fire line construction and the use of natural fire breaks. The loss of individual plants, but no adverse impacts on plant populations from other plans and projects would result in short- and long-term minor cumulative impacts, with alternative A contributing in a relatively small way that would be proportional to the extent of suppression efforts.

IMPACTS OF ALTERNATIVE B, WILDLAND FIRES AND FUELS MANAGEMENT PROGRAM

Analysis

The impacts of alternative B on vegetation would be associated with fire suppression, manual and/or mechanical fuel reduction actions, and the use of prescribed burning as a tool to reduce

fuel loads as well as reintroduce fire to the local ecosystem. The effects of fire suppression would be the same as described for alternative A: local, short-term, adverse and minor.

Manual and/or mechanical fuel reductions would have short-term, local minor adverse impacts as a result of trampling and crews working in the plant communities. However, in the long term, the effects would be beneficial as reduced fuel loads would likely lessen the intensity of wildfires.

The use of prescribed fire, as well as wildland fire for resource benefit or fuel reduction, would result in minor to moderate, short-term adverse effects to plant communities from direct mortality. However, long-term benefits would result in increases in species richness, diversity, and resiliency, with a tendency toward fire-tolerant plant species in the treated areas. Fire is one of the most important natural disturbances to the park's ecosystem. Grassland fires tend to move rapidly, and although soil surface temperatures can be quite elevated, soil is a good insulator thus, there is little penetration of heat more than a centimeter below the surface (Collins and Wallace 1990). This allows the rootstock to survive and resprout following the prescribed fire. Wildfires that occur in the future would likely be less intense as a result of reduced fuel loads, thus lowering the potential for stand-replacing fires. Prescribed fire is commonly used as a method of ecological management for native grassland communities (Grace et al. 2001). Most native plant associations are adapted to the effects of periodic surface fires, and prescribed fire would produce beneficial impacts in these communities.

Additional prescribed fire benefits include a method of control for nonnative species. Following a 1999 wildfire in the park, only one exotic species, rabbitsfoot grass (*Polypogon monspeliensis*) became established within the burned area (Lonard et al. 2003), and in 2004 no exotic species were reported from the burned area (Lonard et al. 2004). Naturally occurring wildland fires, or well-timed prescribed fires, do not have substantial negative effects on the native dominant species and, thus, promote the long-term existence of the native, fire-adapted community (Grace et al. 2001).

Cumulative Impacts

The cumulative effects of other plans and projects on vegetation would be the same as those described for alternative A; local, short- and long-term, minor, and adverse. The contribution of alternative B to these adverse impacts on vegetation would be incrementally greater in the short-term as a result of manual and/or mechanical fuel reduction projects and prescribed burning. In the long term, alternative B would have large scale benefits from the use of fire to restore native plant communities and reducing the intensity of wildfires and the potential for widespread adverse impacts to vegetation. The overall cumulative effects of alternative B and other plans and projects would be beneficial.

Conclusion

The effects of fire suppression under alternative B would be local, short-term, adverse and minor and primarily associated with disturbance by humans, vehicles, and fire suppression activities. Manual and/or mechanical fuel reductions would have short-term, local minor adverse impacts as a result of trampling and crews working in the plant communities. Prescribed fire would have local, minor to moderate adverse impacts in the short term as a result of some plant mortality, but this would be offset by long-term benefits associated with increases in species richness, diversity, and resiliency, with a tendency toward fire-tolerant plant species in the treated areas. In the short-term, the contribution of alternative B to cumulative adverse effects would be incrementally greater than alternative A because of the added effects of manual and/or mechanical fuel reduction and prescribed burning. However, there would be a long-term beneficial impact from the use of wildland fire to restore plant communities and reduction of unplanned wildfire intensities.

SPECIAL STATUS SPECIES

AFFECTED ENVIRONMENT

Special status species, for the purposes of this environmental assessment, include federally listed endangered, threatened, candidate, and proposed species, as well as state-listed endangered, threatened species, and species of special concern. Additionally, any designated critical habitat is considered in the analysis. Current listings and status of species were referenced on the U.S. Fish and Wildlife Service (USFWS 2013a) and Texas Parks and Wildlife (TPW 2013a) websites. The special status species with potential to occur in Padre Island National Seashore are presented in table 3 along with the determination of whether a species will be fully evaluated. At the present time, there is no designated critical habitat for any species in the park.

The analyses of effects to federally listed, proposed, or candidate species in this environmental assessment is based on the methods and impact threshold definitions provided in this section. Analyses of effects compliant with Endangered Species Act Section 7 will be provided in a separate biological assessment (see appendix C).

Many of these species would not be affected by fire management activities. As a result, the species with no potential to be affected by fire management actions associated with the new plan will not be evaluated further. Rationale for these decisions follows.

Five species of sea turtles occur in the park. Fire management actions using vehicles along the beaches where turtles potentially occur would be required to have a turtle spotter on board and speed restrictions would be implemented. In addition, mitigation measures would be employed to restrict prescribed fire activities in the park during turtle nesting season so transport of eggs to incubation facilities would not be interrupted or restricted. With implementation of these mitigation measures and best management practices, there would be no adverse effects to sea turtles from fire management actions and these species are dismissed from further evaluation.

Marine mammals with potential to occur in the park include the West Indian manatee and several whale and dolphin species (although whales and dolphins are usually only found in cases of stranding). A manatee was sighted in Corpus Christi Bay in 2001 and another was reported in Bird Island Basin in 2011, but no other manatees have been reported in the park or adjacent waters (USACE 2003, Lindsay pers. comm. 2013). Because fire management actions would have no effect on the marine habitats used by any of these species, marine mammals are dismissed from further evaluation.

Similarly, fire management actions would not affect the American alligator. Since 1991, only two alligators were observed in the park. One was removed from the park in 2005 and the other has not been observed since 2004. As a result, the American alligator is dismissed from further evaluation.

Table 3: Special status species with potential to occur at Padre Island National Seashore

Common Name	Scientific Name	Federal Status*	State Status*	Potentially Affected by Fire Management Activities?
REPTILES AND AMPHIBIANS				
American alligator	<i>Alligator mississippiensis</i>	T / SA		No. Dismissed from further evaluation.
Texas horned lizard	<i>Phrynosoma cornutum</i>		T	Yes
Texas indigo snake	<i>Drymarchon corais erebennus</i>		T	Yes
Texas scarlet snake	<i>Cemophora coccinea lineri</i>		T	Yes
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	E	E	No. Dismissed from further evaluation.
Loggerhead sea turtle	<i>Caretta caretta</i>	T	T	No. Dismissed from further evaluation.
Green sea turtle	<i>Chelonia mydas</i>	T	T	No. Dismissed from further evaluation.
Atlantic hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E	E	No. Dismissed from further evaluation.
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	E	No. Dismissed from further evaluation.
BIRDS				
Piping plover	<i>Charadrius melodous</i>	T	T	Yes
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	E	E	Yes
Black-capped vireo	<i>Vireo atricapillus</i>	E	E	Yes
Red knot	<i>Calidris canutus</i>	C		Yes
Sprague's pipit	<i>Anthus spragueii</i>	C		Yes
Wood stork	<i>Mycteria americana</i>		T	Yes
Reddish egret	<i>Egretta rufescens</i>		T	Yes
White-faced ibis	<i>Plegadis chihi</i>		T	Yes
Bald eagle	<i>Haliaeetus leucocephalus</i>	DL	T	Yes
Peregrine falcon	<i>Falco peregrinus</i>	DL	T	Yes
Sooty tern	<i>Sterna fuscata</i>		T	Yes
Tropical parula	<i>Parula pitiayumi</i>		T	Yes
Swallow-tailed kite	<i>Elanoides forficatus</i>		T	Yes
White-tailed hawk	<i>Buteo albicaudatus</i>		T	Yes
Long-billed curlew	<i>Numenius americanus</i>		SC	Yes
MAMMALS				
West Indian manatee	<i>Trichechus manatus</i>	E	E	No. Dismissed from further evaluation.

*Key: E = endangered; T = threatened; C = candidate; SA = listed by similarity of appearance; DL = delisted; SC = species of special concern

Federally Listed Species

Over 55 percent of the entire U.S. population of **piping plovers** overwinters on the Texas coast and in the park, making this area very important for the species (Nicholls and Baldassarree 1990). Factors for listing the piping plover included loss and degradation of habitat, development and shoreline stabilization, and disturbance by visitors and pets. Many areas of the Texas coast are designated critical habitat for wintering piping plovers, including the beach and wind- tidal flats of the GLO lands adjacent to Padre Island National Seashore. However, the park has not been designated as critical habitat (USFWS 2013c)

The **northern aplomado falcon** was listed as endangered because of the large population declines of a major prey source, the black-tailed prairie dog, in Arizona, New Mexico, and Texas; loss of prey habitat from farming and overgrazing; and pesticides in the food chain. Populations in the United States almost disappeared in the 1930s. The falcon's preferred habitats include open grassland and savannah with shrubs and trees. Since 1997, over 100 captive-reared young have been released annually on the Texas gulf coast, resulting in successful nesting pairs and rearing of young (TPW 2013a).

The **black-capped vireo** was listed as endangered because of population decline, reduced reproductive success, low recruitment rates, parasitism of nests by brown-headed cowbirds, pesticides, direct habitat loss, and the indirect effects on habitat from land uses (TPW 2013a). Black-capped vireos migrate through North Padre Island in the spring and summer and use the grasslands of the park as stopover habitat (USGS 2006).

The **red knot**, a medium-sized shorebird known for its extremely long migrations, is a federal candidate species for listing. Although the knot does not breed in the park, the shoreline habitats provide important rest stops (NatureServe 2013). Impacts to the red knot's prey base, horseshoe crab eggs in particular and disturbance in far northern breeding habitats have been identified as possible threats to knot populations (USFWS 2013d). Padre Island is currently being considered as critical habitat for the red knot.

The U.S. Fish and Wildlife Service determined that listing **Sprague's pipit** as "endangered" or "threatened" was warranted but precluded by higher listing priorities. Sprague's pipit is currently a candidate for listing as threatened. The principal causes for declines in Sprague's pipit populations are habitat conversion to seeded pasture, hayfield, and cropland, as well as overgrazing by livestock. Moreover, management favoring intensive cattle grazing and reduced fire frequency may lead to the degradation of remaining suitable grassland tracts over much of their range. Without proper fire intervals, shrubs and excessive vegetative litter may reduce habitat quality; in addition, grasslands may even eventually succeed to shrubland or savannah (Jones 2010).

State-listed Species

The **Texas horned lizard** has been declining in several states in its range, although the population is somewhat stable in southern Texas. The species is at risk due to habitat loss from agriculture and development, invasion of exotic species, and reduction in its prey base of native ants that are being outcompeted by exotic ants, which the lizards cannot survive on (HLCS 2001). This species prefers flat, open terrain with sparse plant cover. It hibernates from September to early May (TPW 2013c).

For the **Texas indigo snake**, habitat loss and human settlement are the main factors in this species being state-listed as threatened (Texas Tech University 2002). Texas indigo snakes can be found in coastal sandhills and grassy plains.

The **Texas scarlet snake** is largely fossorial (burrowing) and their life history is poorly known. They are thought to feed mainly on the eggs and young of other reptiles (NPS 2004c). Threats to

the Texas scarlet snake include loss of habitat from development and land conversion, agricultural practices, and possibly from imported fire ants (TPW 2005).

The **wood stork** was state-listed as threatened because of loss of feeding habitat, loss of wetland habitat, water manipulation that alters important habitat, predation, lack of nest tree regeneration, human disturbance, and pesticides and other chemical pollutants. Wood storks can be observed at the freshwater ponds in the park during summer months (USGS 2006), but the species does not breed in Texas (USFWS 2013b).

The **reddish egret** was nearly exterminated in the late 1800s by hunters who sold its plumes for ladies' hats. The population is still recovering, and most of the 1,500 to 2,000 nesting pairs in the United States reside in Texas (TPW 2013a). Reddish egrets can be viewed along the shore of Laguna Madre. They nest on the dredge-material and natural islands and occur year-round, although they are less common in winter (USGS 2006).

The **white-faced ibis** is listed as threatened in Texas because of habitat loss from the draining of wetlands and effects of pesticides. White-faced ibises are known to nest on the islands in Laguna Madre and can be viewed on Padre Island National Seashore near freshwater ponds and in the grasslands (USGS 2006). Factors in declining nesting numbers are attributed to reduced habitat and to competition with laughing gulls on rookery islands (Withers 2002a).

Bald eagles overwinter in southern Texas and can occasionally be seen on Padre Island National Seashore in the winter (USGS 2006). The bald eagle was first listed as an endangered species in 1967 because of widespread population declines due to pesticides, loss of habitat, and shooting. Its status was upgraded to threatened in 1997 and then the species was federally delisted in 2007. However, the bald eagle remains protected by federal statutes, including the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The State of Texas lists the bald eagle as threatened (TPW 2013a).

The **peregrine falcon** was originally federally listed as endangered because of steep population losses in the 1960s and 1970s, mostly from pesticides. Almost all of the eastern United States population was extirpated. Once some of these pesticides were banned, the population rebounded to a level where it was delisted under federal law. However, it remains listed as endangered by Texas. The Texas coast, including the park, is the only known staging area for peregrine falcons during spring migration. They primarily use the more isolated southern end of the island to forage and rest (TPW 2013b).

Sooty terns have a stable population but a limited range, as the majority breed in the Dry Tortugas. Declines in their population since the 1960s are attributed to mammalian predators and human disturbance in breeding grounds (Florida Marine 2013). They are known to nest on the natural and dredge-material islands in the park (USACE 2003).

The **tropical parula** in the United States occurs only in southern Texas, where its preferred breeding habitat is live oak forests in the Lower Rio Grande Valley. The U.S. population level is low and the species is affected by pesticides, habitat destruction, and cowbird parasitism (TNC 2000). This species most likely occurs in the park as a migrant or accidental visitor because breeding areas are farther south and appropriate oak forest habitat is limited.

The **swallow-tailed kite's** numbers and range have decreased since the late 1800s due to destruction of prairie and bottomland forest and shootings (Brown et al. 1997). Individuals are observed migrating through the park during March and April and then later in the year from August through mid-October (TPW 2000).

The **white-tailed hawk** occurs in coastal grasslands and saltgrass flats in Texas. Apparently, the population in Texas declined during the 1950s because of conversion of coastal prairie to agriculture and increases in brushy cover in remaining grasslands from fire suppression (USGS 2007).

Because of the small size of the population that occurs in the United States, determining population trends of the hawk is difficult. White-tailed hawks are commonly seen in the winter in the grasslands of the park and less so during the remainder of the year (USGS 2007). They also forage on or near the wind-tidal flats (Withers 2002a).

The **long-billed curlew**, a state species of special concern, is North America's largest shorebird and frequents the parks' shorelines. Current threats include habitat loss and destruction due to urban development, grassland conversion for agricultural purposes, changes in the natural fire regime and the spread of exotic invasive species. High levels of concern for the species are due to the loss of the eastern third of their historical breeding range and apparent population declines, particularly in the shortgrass and mixed-grass prairies of the western Great Plains (Fellows and Jones 2009).

METHODS

The following definitions of impact intensity are used in the analysis of effects on special status species:

- *Negligible*: State- and federally listed species and their habitats would not be affected or the effects to an individual of a listed species or its designated critical habitat would be at or below the level of detection. Effects would not be measurable or of perceptible consequence to the protected individual or its population. Negligible effect would equate with a “*no effect*” determination in Endangered Species Act section 7 terms.
- *Minor*: The action would result in detectable effects to an individual (or individuals) of a state- or federally listed species or its critical habitat, but the effects would not result in population-level changes with measurable long-term effects on species, habitats, or natural processes sustaining them. Minor effects would equate with a “*may affect but is not likely to adversely affect*” determination in Endangered Species Act section 7 terms.
- *Moderate*: An action would result in detectable effects on individuals or population of a state- or federally listed species, its critical habitat, or the natural processes sustaining them. Key ecosystem processes may experience disruptions that may result in population or habitat condition fluctuations that would be outside the range of natural variation. Moderate level adverse effects would equate with a “*may affect / likely to adversely affect / adversely modify critical habitat*” determination in Endangered Species Act section 7 terms.
- *Major*: Individuals or the population of a state- or federally listed species, its critical habitat, or the natural processes sustaining them would be measurably affected. Key ecosystem processes might be permanently altered resulting in long-term changes in population numbers and permanently modifying critical habitat. Major adverse effects would equate with a “*is likely to jeopardize the continued existence of a listed species / adversely modify critical habitat*” determination in Endangered Species Act section 7 terms.

Duration is not applicable to federally listed, candidate, or proposed species because of definitions in accordance with Endangered Species Act section 7 terminology.

- *Short-term* (Texas special status species): Effects last less than one year.
- *Long-term* (Texas special status species): Effects last longer than one year.

REGULATIONS AND POLICIES

Current regulations and policies associated with special status species include the following.

- Endangered Species Act of 1973;

- Bald and Golden Eagle Protection Act of 1940;
- Migratory Bird Treaty Act of 1918;
- *Management Policies 2006* (NPS 2006);
- Consolidated Natural Resources Act of 2008; and
- *NPS-77: Natural Resources Management Guideline* (1991)

IMPACTS OF ALTERNATIVE A, NO ACTION

Analysis

Under alternative A the fire management approach would be full suppression of wildfire. The primary effects on any special status species of fire suppression would be vehicular traffic and associated noise, the presence of fire-fighting crews, the potential disturbance of habitat due to fireline construction, hose laying, and/or water/fire retardant drops by aircraft. In the case of the Texas horned lizard (if present in the suitable habitat identified in the park), Texas indigo snake, and Texas scarlet snake, these species would have access to underground burrows. Typically, these species would go deep enough below the surface to avoid elevated temperatures. Suppression actions on the surface would have little effect on burrowing reptiles and, as a result, the likely impact of fire suppression actions on these reptile special status species would be short-term, local, minor and adverse and result from displacement during firefighting efforts. It is possible that reptiles could not access a burrow in the event of a fast moving grass fire, which could result in a mortality. Even though mortality of a state-listed species could occur, this would not be a result of the suppression activity, but would be caused by the wildfire and unavoidable.

For the avian special status species, including the piping plover, northern aplomado falcon, black-capped vireo, wood stork, reddish egret, white-faced ibis, bald eagle, peregrine falcon, sooty tern, tropical parula, swallow-tailed kite, white-tailed hawk, red knot, long-billed curlew, and Sprague's pipit, the disturbance associated with fire suppression would be similar to those effects listed above. The presence of vehicular traffic and any associated noise; the presence of fire-fighting crews; and the potential disturbance of habitat due to fireline construction, hose laying, and/or water/fire retardant drops by aircraft would result in local, short-term, negligible, and adverse impacts to avian special status species. Although there is a wide variation in the preferred habitat among these species and the effects of fire suppression actions would be somewhat different depending on the species' preferences and their specific habitat, the primary impact would be associated with disturbance that would likely cause a temporary displacement. The presence of crews or more direct physical impacts on a species' habitat from suppression actions would result in short-term, minor adverse impacts as the degree of disturbance could be greater than simply passage of a vehicle or noise. Colonial nesting special status species that rely mostly on dredge material islands (white-faced ibis and wood stork) would experience no or at most negligible adverse effects associated with noise or smoke because suppression actions would typically be limited to the barrier island.

Suppression actions could affect nesting avian special status species if wildfire threatens their nesting habitat. However, the threat of nest or egg destruction or juvenile mortality from fire would be a more serious threat than suppression, which would have the potential to save a nest, eggs, or nestlings. Thus, the adverse effect of suppression on nesting avian special status species would be local, likely short-term, and minor, especially in comparison to the lethal destructive impacts of a wildfire.

Cumulative Impacts

Other plans, projects, activities, and park operations, including present and future oil and gas operations within the park, park development, wildland fires, park visitors, and spills from oil and gas activities located adjacent to the park, including tanker traffic in the Gulf of Mexico, would contribute to cumulative impacts on special status species. Park activities that could contribute to impacting suitable habitat include routine maintenance of park roads, park and visitor vehicle use, and recreational activities. These cumulative impacts would be primarily long-term, adverse, and minor as a result of encroachment or direct impacts on habitat used by special status species. Alternative A would provide a small contribution to these impacts in the event of the need to implement fire suppression actions. In the absence of fire, there would be no contribution from alternative A to the cumulative impacts.

Conclusion

Alternative A would have short-term, local, minor adverse impacts on reptilian and avian special status species. These effects would primarily be associated with human and vehicle intrusions into natural habitats to implement fire suppression actions. Special status species preferring habitats not subject to a sustaining fire regime because of sparse vegetation or aquatic surroundings would experience few or negligible adverse effects from fire suppression. Cumulative impacts of other plans, projects, and activities would be long-term, minor and adverse, with alternative A contributing to the adverse impacts in a small manner.

IMPACTS OF ALTERNATIVE B, WILDLAND FIRES AND FUELS MANAGEMENT PROGRAM

Analysis

The effects of fire suppression activities on special status species would be the same as those described for alternative A; short-term, local, minor and adverse.

Biological surveys would be performed before selecting a prescribed burn site or conducting manual and/or mechanical fuel reductions. This would determine if any special status species are in the proposed project vicinity or if suitable habitat exists so avoidance and minimization of impacts could be planned. Awareness of the preferred habitats and life histories of each of the special status species would minimize adverse effects on breeding species to the greatest extent possible. Implementation of these mitigation measures prior to fuel reduction activities would result in local, short-term, minor adverse impact on both reptile and avian special status species primarily as a result of temporary displacement.

Prescribed fire would have further-reaching impacts than manual and/or mechanical fuel reductions. Smoke columns formed by prescribed fire and the presence of fire management crews could impact avian special status species by displacing them from the affected area to another suitable location. However, these short-term, local, adverse impacts would not exceed minor because of the pre-implementation surveys, as described above. Information regarding the location of nesting special status species would be used prior to initiating any prescribed burn to avoid direct adverse impacts. Additionally, smoke from prescribed burns would dissipate quickly with the predominate southeast winds and crew presence would be of short duration, resulting in local, short-term, minor, adverse impacts on avian special status species from prescribed burning.

Beneficial long-term impacts to all special status species would accrue as a result of improved habitat conditions with reduced fuel loads, less potential for stand replacing wildfire, and greater

habitat diversity with restoration of a more natural fire regime as a result of prescribed burn implementation.

Cumulative Impacts

The cumulative impacts of alternative B on special status species would be similar to those described under alternative A; namely, long-term, minor and adverse. There would be an incremental increase in the contribution to these impacts from alternative B because of the implementation of fuel reduction projects and prescribed burns, although the associated mitigation measures would minimize the adverse effects. Large-scale benefits that could accrue under this alternative to species habitat in the long-term would outweigh the adverse effect. Overall there would be large beneficial cumulative effects on special status species.

Conclusion

The effects of alternative B on special status species would be short-term, local, minor and adverse with respect to fire suppression actions, manual and/or mechanical fuel reductions, and prescribed burning, with the impacts primarily associated with human and vehicle disturbance and intrusion into special status species habitat. In the long term, beneficial effects on wildlife would result with reduced fuel loads, less potential for stand replacing wildfire, and greater habitat diversity with restoration of a more natural fire regime. Overall there would be beneficial cumulative effects on special status species due to a return to a more natural fire regime and improved habitat.

WILDLIFE

AFFECTED ENVIRONMENT

Mammals

Island colonization by mammals is a function of distance from source populations, island size, and the presence of barriers that impede travel to the island (Smith and Fawver 2005). Therefore, islands typically do not contain the same suite of mammals as found on the mainland. Because of extreme temperatures, weather, and lack of shade, most land mammals in Padre Island National Seashore are small, nocturnal, or burrowing. However, larger species such as white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), and bobcat (*Felis rufus*) do occur on the island. With the elimination of cattle grazing, foraging habitat has improved for white-tailed deer, and their population has been increasing in the park (NPS 1999). Dolphins likely use seagrass beds in Laguna Madre to forage and probably occasionally venture into the nearshore waters on the gulf side of the park (Withers 2002b).

Birds

Padre Island National Seashore lies along the Central Flyway, a migratory path for birds traveling from northern North America to the gulf coast, Mexico, Caribbean and, for some species, Argentina and Chile. In addition to its importance as stopover habitat during migration, many birds winter on the island, while others are year-round residents. Different groups of birds are discussed in more detail below.

Colonial Waterbirds. Twenty-one species of colonial waterbirds nest on the natural and dredge-material islands within the park, including egrets, terns, herons, ibis, and gulls (NPS 1999). Due to differences in nesting periods of these birds, the islands' breeding seasons extend for seven months of the year (TNC 2001). Some islands have predators, such as coyotes, badgers, raccoons, and fire ants, which can adversely affect the productivity of the rookeries (CBBEP 2005).

Three of the islands are considered highly productive, four others are only moderately productive, and seven are minimally productive (NPS 2004b). The park monitors these rookeries in their annual colonial waterbird survey. During the 1990s, nearly 10,000 birds were nesting (NPS 1999). Currently, the park patrols the islands on a weekly basis and will cite visitors found trespassing or disturbing wildlife.

Laguna Madre provides very important habitat for a number of wintering colonial birds as well. For instance, 40 to 50 percent of the world's reddish egrets (*Egretta rufescens*) nest or winter on the narrow strip of the lagoon and in a few bays to the north (Withers 2002c).

Waterfowl. Most waterfowl species use seagrass habitat and wind-tidal flats for foraging. At least 77 percent of all North American redhead ducks forage in Texas' seagrass beds. Their diet may be as much as 85 percent shoalgrass, with the remainder composed of various invertebrates.

Shorebirds. With over 65 miles of beach on the gulf side and large areas of tidal flats on the lee side of the island, Padre Island National Seashore provides valuable, undeveloped habitat for shorebirds, wading birds that frequent mostly seashores and estuaries. These areas are important as foraging habitat during winter and while migrating; inland and lagoon habitats are important for breeding. Probably 75 percent of snowy plovers breeding along the Texas coast do so in La-

guna Madre, and 33 percent of the Texas population of Wilson's plover breeds in the park (TNC 2001).

The primary food source for wintering and migrating shorebirds at the park is macrobenthic invertebrates, small bottom-dwelling animals such as snails and crustaceans common in seagrass beds and wind-tidal flats. The location of their prey source can affect the density and distribution of shorebirds on the wind-tidal flats (Withers 2002b). For instance, summer high tides reduce the abundance of invertebrate prey. Also, because fall high tides reduce foraging area, the number of shorebirds in the fall is much lower than in the spring.

Grassland Birds. Birds that use the park's upland habitats are primarily grassland birds, although Northern cardinals (*Cardinalis cardinalis*) and mourning doves (*Zenaida macroura*) also reside on North Padre Island. Because grassland birds nest on the ground or in the grass, they are often well hidden. Typical grassland species include the Eastern meadowlark (*Sturnella magna*), Sprague's pipit (*Anthus spragueii*), and American bobwhite (*Colinus virginianus*).

Birds of Prey. Birds of prey at Padre Island National Seashore include kites, hawks, falcons, and four species of owls. Because of the park's location, species such as the crested caracara (*Caracara cheriway*) and the swallow-tailed kite (*Elanoides forficatus*) can be sighted. The northern harrier (*Circus cyaneus*) can be found in and near wetland or open areas. American kestrel (*Falco sparverius*), a small falcon, can be sighted along perches and wires over open grassland areas.

Burrowing owls overwinter in burrows in the grassland portions of the park. Research to locate these burrows shows that most burrows are inactive, although foraging owls were reported along park roads, and one roost site was located (Cooper et al. 2005).

The U.S. Geological Survey provides a complete list of bird species sighted in Padre Island National Seashore (USGS 2006).

Reptiles and Amphibians

With the island's high temperatures, the park supports a variety of reptiles, including five species of sea turtles, six species of terrestrial turtles and tortoises, 12 species of lizards, the American alligator, and 25 species of snakes. Snakes include the gulf coast ribbonsnake (*Thamnophis proximus orarius*), the western diamondback rattlesnake (*Crotalus atrox*), western massasauga (*Sistrurus catenatus tergeminus*), desert massasauga (*Sistrurus catenatus edwardsii*), and Texas coral snake (*Micrurus fulvius tenere*). In terms of lizards, the keeled earless lizards (*Holbrookia propinqua*), six-lined racerunner (*Cnemidophorus sexlineatus*), and Texas spotted whiptail (*Cnemidophorus gularis*) use dune areas of the park as their habitat. The Texas tortoise (*Gopherus berlandieri*) feeds on prickly pear common in the dunes and coastal prairie habitats. There are also eight species of frogs and toads in the park (Tunnell and Judd 2002). All sea turtles that occur within the park are either threatened or endangered and are addressed in the "Special Status Species" section.

For a complete list of reptiles and amphibians known to occur in the park, refer to the 2002-2003 survey (NPS 2004c).

Fish

Fish species would not be affected by the fire management plan, thus information is not presented regarding the numerous fish species found in and around the park.

METHODS

The analysis recognizes that many wildlife species are highly mobile and can easily move beyond the area of disturbance and beyond the park boundaries if necessary. Mitigation measures in chapter 2 would be implemented as part of the project and are accounted for in the analyses of effects. Impact threshold definitions for wildlife and their habitats are as follows.

- *Negligible*: Wildlife would not be affected or the effects would be at or below the level of detection and so slight they would not be of any measurable consequence to the population.
- *Minor*: Effects on individual animals and/or their respective habitats would be detectable, although the effects would be localized and would be small and of little consequence to the species' population.
- *Moderate*: Effects on individual animals and their habitat would be readily detectable, with consequences occurring at a local population level.
- *Major*: Effects on individual animals and their habitat would be obvious and would have substantial consequences on a population level.
- *Short-term* effects would last less than one year.
- *Long-term* effects would last longer than one year.

REGULATIONS AND POLICIES

Current regulations and policies related to the analyses of effects on wildlife in the park include the following:

- Migratory Bird Treaty Act of 1918;
- Consolidated Natural Resources Act of 2008;
- *Director's Order #77: Natural Resources Management Guideline* (1991); and
- *Management Policies 2006* (NPS 2006).

IMPACTS OF ALTERNATIVE A, NO ACTION

Analysis

The effects of alternative A on wildlife would be associated with fire suppression would be activities, including vehicular traffic and noise, the presence of fire-fighting crews, the potential disturbance of habitat due to fireline construction, hose laying, and/or water/fire retardant drops by aircraft.

Mammals would be displaced by a grassland wildfire and the subsequent fire suppression actions taken to control the fire. It is possible that mammalian wildlife could not escape a fire and the potential for mortality exists, but the disturbance caused by the fire would likely be much greater than the adverse impact of fire suppression actions that would be characterized as local, short-term, and minor.

Avian species would be affected by fire suppression activities associated with alternative A in several ways. Most birds will leave a burning area to avoid injury and thus not be affected by suppression actions, but a few species are attracted to burning areas to take advantage of altered habitat (USDA 2000). These species may be temporarily displaced by continuing suppression activities, which would represent a short-term, local, negligible to minor adverse impact on some avian spe-

cies. More typically, species on the periphery of a fire may experience temporary displacement as a result of activities associated with fire suppression and this short-term, local, adverse effect would be negligible to minor as suppression of grassland fires would likely be short duration and not involve a great number of firefighters.

Reptiles and amphibians would likely retreat, whenever possible, to underground burrows in the event of a wildfire and subsequent suppression action. Suppression actions associated with alternative A would have short-term, local, negligible to minor, adverse impacts on reptiles and amphibians due to temporary displacement.

Alternately, fire suppression may have some short- and long-term benefits for all wildlife under alternative A because existing excess fuel loads could cause fires to be more intense than those typically encountered in fire-adapted habitats. Suppression would temper the adverse impacts of the unnaturally intense fires on wildlife and their habitats.

Cumulative Impacts

The cumulative impacts of other plans, projects, activities, and park operations on wildlife result from combinations of recreational viewing of wildlife, bird watching, and hunting (migratory waterfowl), current and future oil and gas operations, current and future park operations and development, and chemical spills from operations outside of the park, including tanker traffic in the Gulf of Mexico. In addition, wildlife would continue to be impacted by noise from vehicles and aircraft. Diminishing habitats outside the park for species that migrate to and through the park are a large contributor to these adverse impacts. All these cumulative effects combine to have long-term, local and regional, minor to moderate adverse impacts on wildlife. The negligible to minor adverse impacts of alternative A fire suppression actions would only contribute in a small way to the overall cumulative adverse impacts on wildlife.

Conclusion

Wildfire suppression activities associated with alternative A would have local, short-term, negligible to minor adverse effects on most wildlife species as a result of human and vehicle disturbance and the impacts of suppression on habitats. Suppression of excessively fueled wildfires would benefit wildlife if intense stand replacing fires could be controlled. Other plans and projects would result in minor to moderate long-term cumulative adverse impacts to wildlife, with alternative A have a small contribution to the overall adverse impact.

IMPACTS OF ALTERNATIVE B, WILDLAND FIRES AND FUELS MANAGEMENT PROGRAM

Analysis

The effects of fire suppression under alternative B would be the same as those described for alternative A; short-term, local, negligible to minor, and adverse.

Manual and/or mechanical fuel reduction would cause temporary displacement of mammalian, avian, reptilian and amphibian species. Surveys and species-specific knowledge would be used to avoid affecting breeding species in particular locations or during sensitive breeding seasons, whenever possible. The presence of field crews and noise associated with power tools would have a short-term, local, negligible to minor adverse impact on wildlife. Species would likely return shortly after fuel reduction activities were complete. Some species could find reduced cover as a result of the removal of excess fuels, which would represent a longer-term, minor adverse impact

as they would need to seek adequate cover similar to what they were using prior to the fuel reduction. However, fuel reduction would lower the potential for a stand-replacing intense wildfire that could destroy wildlife habitat and would represent a long-term benefit for wildlife as habitat diversity would be enhanced.

Prescribed fire used under alternative B would displace any mammals or non-breeding birds using the burn site. Mitigation measures, including surveys and reviewing species-specific knowledge in the park, would be used to minimize and offset potential adverse effects, including avoidance of wildlife breeding habitat during the breeding season. On one hand, the effects of prescribed burning on wildlife would be local, short-term, minor, and adverse because of the direct effects of fire and the presence of fire management crews and vehicles. Post-fire conditions could be beneficial to some species by creating an abundance of forage, prey, or habitat. Prescribed fires would result in improved forage vigor by increasing sunlight and releasing nutrients. Species that would benefit from fire would include those that forage for insects in recently burned stands (e.g., warblers), those that prey on mice and other small mammals that would thrive on newly established herbaceous cover (e.g., raptors, foxes, coyotes), and those that eat fresh browse (white-tailed deer). Predatory birds and scavengers are often attracted to burned areas because of the abundance of food and lack of cover for prey. Turkey vultures (*Cathartes aura*) and crested caracaras (*Polyborus plancus*) feed on small mammals and reptiles that may perish in the fire, while northern harriers (*Circus cyaneus*), American kestrels (*Falco sparverius*), red-tailed hawks (*Buteo jamaicensis*), and other predatory birds could locate prey more easily due to lack of cover (Tewes 1984). An abundance of invertebrate prey following a fire often attracts many bird species (Smallwood et al. 1982). Restoration of fire's role in the park ecosystem would increase habitat diversity and provide an overall long-term benefit for all wildlife.

Although most reptiles and amphibians would escape a prescribed burn by going into a burrow or aquatic habitat, there is the possibility that less mobile individual could be killed during a prescribed burn. An individual mortality would represent a long-term, local, minor adverse impact, but would not have an effect at the population level. With prescribed burning, reptiles and amphibians may experience local, short-term, negligible to minor, adverse impacts as a result of reduced ground cover and food. However, long-term benefits would result from creation of a more open vegetative community, enhanced species diversity and abundance, and the regeneration of a forb/grass ground cover that provides food and cover for these species.

Cumulative Impacts

The cumulative effects of other plans, projects, activities, and park operations on wildlife would be similar to those described for alternative A. However, while the fire management actions of alternative B would result in some of the same adverse impacts from human and vehicle impacts, noise, and habitat disturbance, the ecosystem improvements from reduced fuel loads and the restoration of a more natural fire regime would benefit wildlife as habitat quality and diversity would be enhanced. Alternative B would contribute its mix of negligible to minor adverse and beneficial effects in a relatively small proportion to the overall adverse cumulative impacts on wildlife populations. The cumulative effects combine to have long-term, local and regional, minor to moderate adverse impacts on wildlife.

Conclusion

The impacts of fire suppression would be short-term, local, negligible to minor and adverse resulting from displacement wildlife by firefighting crews and vehicles. Manual and/or mechanical fuel reductions and prescribed burning would provide a mix of short-term, local negligible to minor adverse effects associated with field crews and disturbance with the benefits of reduced fuel

loads, less intense wildfires, and improved habitat diversity and health with the return of a more natural fire regime. Cumulative impacts from other plans, projects, and activities on wildlife would be long-term, minor to moderate and adverse, with alternative B contributing to the adverse impacts in a small manner and providing some offsetting beneficial effects to wildlife.

CULTURAL RESOURCES – ARCHEOLOGICAL RESOURCES

AFFECTED ENVIRONMENT

Archeological resources are the material remains or physical evidence of past human activity from prehistoric times to roughly 100 years ago. The most important aspect of archeological resources is their potential to describe and explain human behavior. Typically, archeological resources are buried, but may extend above ground and may include structural ruins. A complete archeological survey of the Padre Island National Seashore has not been conducted, and an assessment of known archeological sites has not been completed since 1974 (NPS 2000).

Prehistoric Resources

Prehistoric sites identified on the island represent human activity from at least 3,000 years B.C. to A.D. 1400. Evidence from the island's archeological sites suggests the area was used seasonally by people who lived on the mainland. Sites left by these prehistoric groups occur primarily along channel cuts and are composed of scatters of stone tools and chipping debris, plus animal bones, shells, occasional ceramic sherds, pumice, hearths, and some evidence of human burials (NPS 2000).

Historic Resources

In 1554, a flotilla of four ships with approximately 300 passengers left Veracruz, Mexico, destined for Spain. The ships were caught in a severe storm and wrecked near the southern end of North Padre Island. Two of the shipwrecks were confirmed within the park. The onshore associated site may either be a survivor's camp or salvagers' camp related to the shipwrecks. These resources comprise the Mansfield Cut Underwater Archeological District, which is eligible for listing on the National Register of Historic Places.

The period from 1805 to 1846 saw the beginning of cattle ranching on North Padre Island. During the Mexican-American War, American soldiers traveled down the island, leaving behind a temporary campsite known as the Zachary Taylor campsite, the only known site of this period within the park. Following the war, ranching continued until 1971.

The Novillo Line Camp is the best remaining example of the island's ranching history and is listed on the National Register of Historic Places. It is discussed further in the historic structures section of this environmental assessment. Two other former ranching sites were recommended as eligible to the national register: Black Hill Line Camp and Green Hill Line Camp (NPS 1999). These three line camps are analyzed in the impact topic of Cultural Resources – Historic Structures.

Other than these ranching sites and the Mansfield Cut district, none of the park's remaining archeological sites have been evaluated for National Register significance (NPS 2000).

METHODS

Certain important research questions about human history can only be answered by the actual, physical material of cultural resources. Archeological resources have the potential to answer, in whole or in part, such research questions.

For an archeological resource to be eligible for the National Register of Historic Places it must meet one or more of the following criteria of significance (Secretary of the Interior 1997):

- A. Associated with events that have made a significant contribution to the broad patterns of our history;
- B. Associated with the lives of persons significant in our past;
- C. Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; and
- D. Have yielded, or may be likely to yield, information important in prehistory or history. In addition, the archeological resource must possess integrity of location, design, setting, materials, workmanship, feeling, association.

For purposes of analyzing impacts to archeological resources either listed in or eligible to be listed in the national register, the thresholds of change for intensity of an impact are defined below:

- *Negligible*: Impact is at the lowest levels of detection - barely measurable with no perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of section 106, the determination of effect would be *no adverse effect*.
- **Minor: Adverse**: disturbance of a site is detectable but results in little, if any, loss of significance or integrity and the national register eligibility of the site is unaffected. **Beneficial**: maintenance/preservation of a site occurs. For purposes of section 106, the determination of effect would be *no adverse effect*.
- **Moderate: Adverse**: disturbance of a site does not diminish the significance or integrity of the site to the extent that its national register eligibility is jeopardized. **Beneficial**: stabilization of the site occurs. For purposes of section 106, the determination of effect would be *no adverse effect*.
- **Major: Adverse**: disturbance of a site diminishes the significance and integrity of the site to the extent that it is no longer eligible to be listed in the national register. **Beneficial**: active intervention to preserve the site occurs. For purposes of section 106, the determination of effect would be *adverse effect*.
- *Short-term* impacts would last less than five years.
- *Long-term* impacts would last more than five years.
- *Permanent* impacts would last indefinitely.

REGULATIONS AND POLICIES

Under the laws and policies listed below, archeological sites are identified and inventoried, their significance is determined and documented, and they are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable. In those cases where disturbance or deterioration is unavoidable, the site is professionally documented and salvaged. Current regulations and policies associated with archeological resources include the following:

- National Historic Preservation Act;
- Archeological and Historic Preservation Act;
- Executive Order 11593 - Protection and Enhancement of the Cultural Environment;

- Archeological Resources Protection Act;
- Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation;
- Programmatic memorandum of agreement (National Park Service, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers 2008);
- *Management Policies 2006* (NPS 2006); and
- *Director's Order #28: Cultural Resources Management* (NPS 1998a).

IMPACTS OF ALTERNATIVE A, NO ACTION

Analysis

Overall, wildfire suppression under alternative A provides incidental, indirect, parkwide, long-term benefits to archeological resources in reducing the size of a wildfire and thus the extent of adverse impacts to these resources in the park. Suppression tactics such as use of hand-held tools, and aircraft would have localized direct impacts as discussed below.

Under alternative A, hand-held tools to suppress wildfires would be used to extinguish flames or to create fire breaks to prevent further spread of the fire. Resource protection measures would be specifically designed to limit impacts to the park's archeological resources through avoidance of areas known to contain archeological sites to the greatest extent possible. Therefore, hand crew fire management activities would result in negligible to minor, localized, permanent adverse impacts to archeological resources.

Suppression activities using fire engines would be conducted so engines remain on existing roads unless extreme conditions warrant otherwise. Water would be sprayed from hoses and hose work will stay off of known archeological sites when possible. When the application of water is necessary, the nozzle setting will be selected to disperse the water across the site. Therefore, any ground disturbance from use of engine suppression tools would be limited to hoses and foot traffic extending outward from engines parked on the road. Impacts to archeological resources would be negligible.

Wildfire suppression using aircraft, whether by helicopter or fixed-wing, could potentially result in ground disturbance from water dropped from above to the extent that soil strata are mixed or archeological resources are exposed. Such ground disturbance would vary according to several factors, some of which include vegetative ground cover, topographic slope, direction and angle of water impact, and height of drop. To the greatest extent possible, water or retardant drops would avoid known archeological sites. Overall, impacts associated with aircraft suppression tools would result in permanent, localized, negligible to minor, adverse effects.

Suppression tactics included as an option in alternative A would use natural barriers and fuel breaks as a means to suppress wildfires. Fires can damage artifacts by destroying or degrading cultural material, rendering identification and documentation more difficult. The amount of damage depends on the severity and duration of the fire, as well as whether artifacts are on the surface of the ground or buried. Fast-moving fires typically burn through an area at a low heat with minimal damage to buried resources, while some damage would likely occur to surface resources. Slow fires combined with abundant accumulated fuel tend to burn at higher temperatures and can damage both surface and subsurface resources.

Because of the vegetation types found at the park, fire behavior aligns more closely with the former scenario (that is, fast-moving fires). A fire with short residence time would result in limited heat pulse below the ground surface. Much of the vegetative root mass would be unaffected, thereby maintaining soil matrix and archeological resources intact. Some surface artifacts would potentially be adversely affected by smudging, crazing, and cracking. Effects of the fire would mostly involve the production of black or light brown carbonaceous residues, which would not impact the scientific value of the objects (Buenger 2003). Furthermore, the island's fire history suggests archeological resources within the park have been previously subjected to the effects of fire. Therefore, the effects of this suppression tactic on archeological resources would be permanent, localized, negligible to minor, and adverse.

Cumulative Impacts

Prior to creation of the park, many of the prehistoric sites were excavated and collected by others. In addition, wind, tides, hurricanes, natural processes, and human activities have modified or destroyed cultural sites in the park. Ground-disturbing construction and rehabilitation activities; inadvertent visitor use impacts; artifact looting; and oil and gas exploration are also likely to have affected archeological resources. These ongoing factors represent the greatest threat to archeological resources and contribute to permanent, parkwide, minor, adverse impacts on archeological resources.

National Park Service acquisition of the land helped ensure future protection of all cultural resources within the park, and the progressive identification, evaluation, and protection of park resources associated with NPS stewardship have resulted in a long-term, localized, benefit.

Implementation of alternative A would have incidental, indirect, parkwide, long-term beneficial impacts as well as permanent, localized, negligible to minor, adverse impacts on the archeological resources in the park. Impacts of this alternative, in combination with the long-term beneficial and permanent, minor, adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a permanent, parkwide, negligible to minor, adverse cumulative impact. Effects of the no action alternative would slightly contribute to the adverse cumulative impacts.

Conclusion

Wildfire suppression under alternative A would provide incidental, indirect, parkwide, long-term benefits to archeological resources in reducing the size of a wildfire and thus the extent of adverse impacts to these resources in the park. Although resource protection measures would limit adverse impacts, suppression activities involving engine crews, hand crews, and aircraft dropping water or retardant could result in ground disturbance, causing permanent, localized, and negligible to minor adverse effects. Impacts to archeological resources from using natural barriers and fire breaks to suppress a wildfire would also be permanent, negligible to minor, and adverse, as short residence time and limited heat pulse would prevent more substantial effects. This alternative, in combination with other actions, plans, and policies, would result in a permanent, parkwide, negligible to minor, adverse cumulative impact.

IMPACTS OF ALTERNATIVE B, WILDLAND FIRES AND FUELS MANAGEMENT PROGRAM

Analysis

The impacts associated with suppression tactics under alternative B would be the same as described under alternative A. The overall benefits of fire suppression are incidental, indirect,

parkwide, and long-term. Adverse impacts associated fire suppression tactics, including hand crews, engine crews, and aircraft would be permanent, localized, and negligible to minor.

Under alternative B, various tools would be used to thin existing vegetation to reduce fuel loads. Ground disturbance associated with thinning using hand-held tools can disturb archeological resources. Archeological sites would be excluded from fuel reduction project areas or would be protected during project implementation; therefore, impacts would be negligible. Use of wheeled or tracked vehicles for mechanical thinning could inadvertently damage sites. The use of mechanical tools to reduce fuel loads would be conducted to the greatest extent possible along paved roads in the park, which have been subject to prior ground disturbance. When equipment would be needed off-road, park staff would plan routes in advance to avoid any known sites. With resource identification and site avoidance, impacts from use of wheeled or tracked vehicles would be negligible.

Under alternative B, prescribed fire would also be used to reduce fuel loads. Prescribed burns would be designed to protect any sensitive archeological sites. Localized soil erosion and loss of vegetation could result from prescribed fire, which in turn could remove artifacts from their original context and potentially increase cases of artifact looting due to the resultant exposure. These indirect impacts would be permanent, localized, negligible to minor, and adverse.

Fuel reduction activities in the park would reduce the frequency, duration, and intensity of wildfires. Given these improvements associated with fuel load reductions, the likelihood of more severe impacts that can result from wildfires such as widespread erosion would be lessened. Therefore, alternative B would result in long-term, parkwide, beneficial impacts to archeological resources.

Under alternative B, wildfire would be managed for multiple objectives that would include benefits to natural and cultural resources from the fire. Implementation of this strategy would include point-protection strategies to protect cultural resources when appropriate. Point-protection strategies allow fire to move past the specific resource without burning the identified resource. As a result the localized, permanent, adverse impacts would not exceed negligible. .

Cumulative Impacts

The cumulative impacts on archeological resources would be the same as described in alternative A and would be short- and long-term, beneficial as well as permanent, minor, and adverse. Implementation of alternative B would have long-term, parkwide, beneficial impacts, as well as permanent, localized, negligible to minor, adverse impacts on the archeological resources of the park. Impacts of this alternative, in combination with the impacts of other past, present, and reasonably foreseeable future actions, would result in a permanent, parkwide, negligible to minor, adverse cumulative impact. Impacts of alternative B would contribute to the overall cumulative impacts.

Conclusion

Wildfire suppression would provide incidental, indirect, parkwide, long-term benefits to archeological resources in reducing the size of a wildfire and thus the extent of adverse impacts to these resources in the park. As discussed in alternative A, adverse impacts stemming from wildfire suppression tactics using hand crews, engine crews, and aircraft would be permanent, localized, and negligible to minor. Managing wildfire for multiple objectives would include benefits to natural and cultural resources from the fire, and would include point-protection strategies when appropriate. Point-protection strategies allow fire to move past the specific resource without burning the identified resource. Planned projects like manual and/or mechanical thinning and prescribed fire would be designed to protect archeological resources; therefore adverse effects would be

permanent, localized, and negligible to minor. The resulting fuel load reduction would be a long-term benefit to archeological resources, since they could be better defended during wildfires. When alternative B is combined with other actions, plans, and policies, the resulting cumulative impact would be permanent, parkwide, negligible to minor, and adverse.

Section 106 Summary

After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of the Preferred Alternative would have *no adverse effect* on the historic properties of Padre Island National Seashore.

CULTURAL RESOURCES – HISTORIC STRUCTURES

AFFECTED ENVIRONMENT

From 1804 to approximately 1970, Padre Island was used almost solely for ranching. In the 1870's Richard King and Mifflin Kennedy acquired giant ranches between Corpus Christi and Brownsville. As they fenced off their territories with barbed wire, the era of open range cattle ranching ended, forcing many smaller landowners out of business. One of these was Patrick Dunn, who moved east and set up cattle operations on the island. By the 1940's, he owned most of the island. During the 1960s the National Park Service bought the Dunn Ranch to establish Padre Island National Seashore (NPS 2013c).

Historic structures and cultural landscapes within the boundaries of Padre Island National Seashore are generally composed of the remnants of this ranching activity on the island and include the Black Hill, Green Hill, and Novillo line camps. The ranching era on the island occurred from roughly the turn of the nineteenth century to 1971. Remaining structural features that represent this part of Padre Island's history include post and wire fencing, wood corrals and chutes, a bunk house, a cook house, and small-scale features such as a water pump and hitching post. These features represent development of ranching on the island and demonstrate how the owners, the Dunn family, adapted to technological changes. Together the three camps also illustrate the particular patterns of ranching adapted to the configuration of the barrier island (NPS 1999). Cultural Landscape Inventories have been completed on each of these line camps (NPS 2011b; NPS 2011c; NPS 2011d). The National Park Service will complete Cultural Landscape Reports (CLRs) for these three properties; CLRs are the primary documents for guiding the management and preservation of cultural landscapes.

The Novillo Line Camp is listed on the National Register of Historic Places, and the Green Hill Line Camp and the Black Hill Line camp have been determined eligible for inclusion on the National Register of Historic places, but have not yet been listed (NPS 1999). According to the national register nomination form for Novillo Line Camp, it is significant because it is the "best single remaining artifact of the primary historical land utilization activity on Padre Island, namely cattle raising, from 1805 to 1971" (NPS 1974).

METHODS

For a structure or building to be listed in the National Register of Historic Places, it must meet one or more of the following criteria of significance (Secretary of the Interior 1997):

- A. Associated with events that have made a significant contribution to the broad patterns of our history;
- B. Associated with the lives of persons significant in our past;
- C. Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; and
- D. Have yielded, or may be likely to yield, information important in prehistory or history.

In addition, the structure or building must possess integrity of location, design, setting, materials, workmanship, feeling, and association.

For purposes of analyzing potential impacts to historic structures/buildings, the thresholds of change for the intensity of an impact are defined as follows:

- *Negligible*: Impact is at the lowest levels of detection - barely perceptible and not measurable. For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Minor: Adverse*: impact would be detectable but would not affect the character-defining features of a National Register of Historic Places-eligible or -listed structure or building. **Beneficial**: stabilization or preservation of character-defining features would occur in accordance with the Secretary of the Interior's Standards (1995). For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Moderate: Adverse*: impact would alter a character-defining feature of the structure or building but would not diminish the integrity of the resource to the extent that its national register eligibility is jeopardized. **Beneficial**: rehabilitation of a structure or building would occur in accordance with the Secretary of Interior's Standards (1995). For purposes of section 106, the determination of effect would be *no adverse effect*.
- *Major: Adverse*: impact would alter a character-defining feature of the structure or building, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the national register. **Beneficial**: restoration of a structure or building would occur in accordance with the Secretary of Interior's Standards (1995). For purposes of section 106, the determination of effect would be *adverse effect*.
- *Short-term* impacts would last less than five years.
- *Long-term* impacts would last more than five years.
- *Permanent* impacts would last indefinitely.

REGULATIONS AND POLICIES

Historical properties are inventoried and their significance and integrity are evaluated under National Register of Historic Places criteria. Qualities that contribute to the eligibility for listing or listing of historic properties in the National Register of Historic Places are protected in accordance with the Secretary of the Interior's Standards, as amended and annotated (1983), unless it is determined through a formal process that disturbance or natural deterioration is unavoidable. Current laws and policies associated with historic structures include the following:

- National Historic Preservation Act;
- Archeological and Historic Preservation Act;
- Executive Order 11593 - Protection and Enhancement of the Cultural Environment;
- Archeological Resources Protection Act;
- *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation, as Amended and Annotated* (1983);
- Programmatic memorandum of agreement (National Park Service, Advisory Council on Historic Preservation, and National Council of State Historic Preservation Officers 2008);
- *Management Policies 2006* (NPS 2006), and
- *Director's Order #28: Cultural Resources Management* (NPS 1998a).

IMPACTS OF ALTERNATIVE A, NO ACTION

Analysis

Under alternative A, full suppression of wildfires would occur. The contributing elements identified in the National Register nominations, and in the Cultural Landscape Inventories for the Black Hill, Green Hill, and Novillo Line Camps will be protected as much as possible during management responses to wildfires. When necessary to protect irreplaceable cultural resources, suppression tactics using hand crews, engine crews, or aircraft would be conducted around historic structures before wildfire damage could occur. Hand and engine crews would not come into direct contact with historic structures; however, treatment of areas around structures could result in soil erosion and removal of stabilizing root structures. Resource protection measures would ensure that water dropped from aircraft would not directly strike historic structures; however, such drops nearby could result in additional erosion and instability that could threaten structures. Therefore, suppression activities would have short-term, localized, negligible to minor, adverse impacts on historic structures.

Cumulative Impacts

Repair and maintenance projects are sometimes insufficient to keep pace with deterioration of historic structures, leading to permanent, minor to moderate, adverse impacts. No other plans or actions have been identified that would contribute to the cumulative impacts to historic structures.

Implementation of alternative A would have short-term, localized, negligible to minor, adverse impacts on the park's historic structures. Impacts of this alternative, in combination with the permanent, minor to moderate, adverse impacts of other past, present, and reasonably foreseeable future actions, would result in a permanent, parkwide, minor, adverse cumulative impact. Effects of the no action alternative would very slightly contribute to the adverse cumulative impact.

Conclusion

Fire suppression tactics would be employed around historic structures to prevent damage from wildfire. With resource protection measures in place to protect the structures and cultural landscapes from suppression actions, potential adverse impacts to these resources would be short-term, localized, and negligible to minor. When the impacts of this alternative are combined with other plans, actions, and policies, the resulting cumulative impact would be permanent, minor, and adverse.

IMPACTS OF ALTERNATIVE B, WILDLAND FIRES AND FUELS MANAGEMENT PROGRAM

Analysis

Impacts associated with suppression of wildfires would be the same as described under alternative A. Adverse impacts to historic structures resulting from fire suppression activities such as use of hand crews, engine crews, and aircraft would be no more than short-term, localized, and negligible to minor.

Under alternative B, wildfire would be managed for multiple objectives that would include benefits to natural and cultural resources from the fire. Implementation of this strategy would include point-protection strategies to protect cultural resources when appropriate. Point-protection

strategies allow fire to move past the specific resource, like a structure, without burning the identified resource. As a result, there would be no adverse impact to historic structures.

Under alternative B, tools would be used in some portions of the park to thin existing vegetation and reduce fire fuel loads. The contributing elements identified in the National Register nominations, and in the Cultural Landscape Inventories for the Black Hill, Green Hill, and Novillo Line Camps will be avoided and/or protected during planned fuels projects. Historic structures would be protected during fuel reduction activities; therefore, there would be no adverse impacts. By reducing fuel loading in the park, wildfire events would be less likely to affect historic structures. Thus, manual and/or mechanical thinning would result in short-term, localized, beneficial impacts to historic structures.

Any prescribed fire treatments occurring under alternative B would account for the presence of historic structures, thereby avoiding any adverse impacts. As with manual and/or mechanical thinning discussed above, prescribed fire could be used to reduce fuel loading in the park, which would decrease the likelihood or severity of wildfire events. This would result in an additional short-term, parkwide, beneficial impact to historic structures.

Cumulative Impacts

The cumulative impacts on historic structures would be the same as described in alternative A and would be permanent, minor to moderate, and adverse. Implementation of alternative B would have long-term, parkwide, beneficial, as well as short-term, localized, negligible to minor adverse impacts on the historic structures of the park. Impacts of this alternative, in combination with impacts of other past, present, and reasonably foreseeable future actions, would result in permanent, parkwide, minor, adverse cumulative impacts. The beneficial and adverse effects of the preferred alternative would slightly reduce the adverse cumulative impact.

Conclusion

Impacts associated with suppression strategies would be the same as described under alternative A and would result in no more than localized, short-term, negligible to minor adverse impacts. Managing wildfire for multiple objectives would include benefits to natural and cultural resources from the fire, and would include point-protection strategies when appropriate. Point-protection strategies allow fire to move past the specific resource like a structure or other landscape element without burning the identified resource. Planned projects like manual and/or mechanical thinning and prescribed fire would be designed to result in no adverse impacts to historic structures and cultural landscapes. The resulting fuel load reduction would be a long-term benefit to historic structures, since they could be better defended during wildfires. When the impacts from this alternative are combined with other actions, plans, and policies, the resulting cumulative impacts would be permanent, parkwide, minor, and adverse. Section 106 Summary

After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of the Preferred Alternative would have *no adverse effect* on the historic properties of Padre Island National Seashore.

VISITOR USE AND EXPERIENCE

AFFECTED ENVIRONMENT

The park provides a variety of water-based recreational opportunities, including surf, Laguna Madre, and boat fishing, swimming, shell collection, sunbathing, camping, and vehicle access to more remote areas of the beach. Park visitation is primarily concentrated along the Gulf shoreline with minimal use of the Laguna Madre. Use of backcountry areas, the area behind the dune line and across the island to the Laguna Madre, is less popular than the beach in part because of the lack of access and park regulations restricting the use of the dunes and wind tidal flats and sensitive habitats found in the center of the island.

The majority of park development is concentrated in the northern portion of Padre Island National Seashore and currently includes a visitor center, entrance station, administrative office area, housing area, maintenance facility, water and wastewater treatment facility, turtle research laboratory, campground, trail, and the Bird Island Basin recreational area.

Visitation to Padre Island begins to increase in April and peaks in July, with the fewest visitors in December (NPS 2013b). Consequently, the summer months constitute the park's peak visitation period.

Malaquite Visitor Center and its nearby beach are the most popular destinations at the park. Less-visited areas include the Grasslands Nature Trail, Wreck of the Nicaragua, and Yarborough Pass. Many visitors who camp in the park use areas such as Malaquite Campground, Bird Island Basin, Yarborough Pass, areas along the road adjacent to the Mansfield Channel, and areas of the beach open to vehicles. Beach camping is popular, and campsites may become concentrated immediately south of the visitor center (NPS 2000). Some people camp at Little Shell and Big Shell beaches and near Mansfield Channel. Most visitors do not use backcountry areas of the park.

Bird Island Basin, located in the developed area of the park adjacent to the Laguna Madre, is a popular destination for day visitors and longer-term camping. This area is rated as one of the top five windsurfing areas in the world due to the shallow Laguna Madre waters and consistent offshore winds.

The primary access route into the park is Texas State Highway 358, which leads from the city of Corpus Christi and to Padre Island National Seashore via a causeway over the northern Laguna Madre. Once on the island, Park Road 22 leads to the park, providing access (from north to south) to North Beach, Novillo Line Camp, park headquarters, Bird Island Basin, and the visitor center complex before terminating just south of Closed Beach, one-half mile south of the visitor center. Access to backcountry areas of the park is by boat or by driving on the beach to unpaved roads such as Yarborough Pass and Back Island Road.

Annual park visitation in 2012 was 573,855, representing a 6 percent decrease from 2010 (NPS 2013b). Scott and Lai's (2004) publication, "A Survey of Visitors to Padre Island National Seashore: A Final Report," in conjunction with Ditton and Gramann's (1987) publication, "A survey of Down-Island Visitors and Their Use Patterns at Padre Island National Seashore," indicated the following patterns:

- Twenty-seven percent (179,976) of visitors interviewed reported traveling no farther down-island than the end of the paved road (Park Road 22)
- Thirty-eight percent (253,300) of beach users interviewed utilize the first ten miles of south beach for their visit

- Thirty-five percent (233,303) of interviewed visitors travel south of Little Shell Beach, even though individual destinations south of Little Shell Beach do not display high visitation
- Twenty-four percent (159,979) of visitors stay overnight with most visitors staying for three to five days
- Visitation patterns are similar in July, August, and September
- Fishermen use areas south of Yarborough Pass (15-mile Marker) more than beach users

METHODS

The impact on the ability of the visitor to experience a full range of park resources was analyzed by examining resources mentioned in the park significance statement. The following definitions are used to define intensity levels:

- *Negligible*: Visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.
- *Minor*: Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.
- *Moderate*: Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.
- *Major*: Changes in visitor use and/or experience would be readily apparent and have important long-term consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.
- *Short-term*: Effects would occur only during and shortly after a specified action or treatment.
- *Long-term*: Effects would persist well beyond the duration of a specified action or treatment, or would not be associated with a particular action.

REGULATIONS AND POLICIES

Current regulations and policies associated with visitor use and experience include the following:

- Americans with Disabilities Act;
- Architectural Barriers Act;
- 1998 Executive Summary to Congress;
- National Parks and Recreation Act of 1978;
- *Management Policies 2006* (NPS 2006a);
- National Park Service Organic Act; and
- Rehabilitation Act.

IMPACTS OF ALTERNATIVE A, NO ACTION

Analysis

Overall, wildfire suppression under alternative A would provide indirect, parkwide, long-term benefits to visitor use and experience by reducing the potential size of a wildfire and thus the extent of adverse impacts to resources in the park. Suppression tactics would have localized direct impacts as discussed below.

Under alternative A, the use of fire engines, hand-held tools, and tools and tactics for suppression strategies. These suppression tactics could result in temporary disruption of access and use to park visitors in certain areas, including roads, beaches, visitor facilities, or other interpretive areas. These temporary closures would result in localized short-term adverse impacts to the visitor experience. Due to the temporary nature of these closures, the level of impact could range from negligible to moderate depending on the time of year, location, and the duration of the closure.

Wildfire suppression using aircraft, whether by helicopter or fixed-wing, could result in temporary disruption of access and use of the park by visitors. As with the other suppression tactics, these temporary closures would result in local, short-term, minor to moderate, adverse effects. Additionally, aircraft use would increase noise levels in parts of the park. Aircraft noise intrusions would be short-term, minor, and adverse, depending on the visitor's distance from the area being treated and the number of aircraft in operation.

Following a wildfire, possible impacts to visitor use and experience would include altered viewsheds. There would be short-term, minor to moderate, adverse visual impacts within the vicinity of affected areas due to the change in appearance following treatment or wildland fire use. The sight of blackened vegetation could be perceived as a visual impact to visitor experience, although many visitors would view this as an educational opportunity if provided with appropriate interpretation. The park would take the opportunity to use the changes to the landscape to educate visitors about the role of fire in the ecosystem. These interpretive opportunities could educate visitors about the park's resources and management goals, providing short- and long-term beneficial effects.

Cumulative Impacts

Other plans and projects implemented or proposed in the park are primarily management and resource-oriented plans and projects that assist the National Park Service in meeting park mandates now and in the future. As a result, these plans and projects contribute substantial parkwide beneficial impacts on visitor use and experience inherently.

Oil and gas development in the park has limited direct effects on visitors. Industry traffic accounts for about one percent of beach travel, and most facilities are not visible or readily accessible from visitor use areas. However, for some visitors, the knowledge that these activities take place in a national park, combined with evidence of the activities, would produce long-term, localized, minor, adverse effects. Other park activities that could contribute to impacts include routine maintenance of park roads and park and visitor vehicle use, which would cause short to long-term, negligible to minor adverse impacts to visitor use and experience.

Padre Island's location within the gulf makes it prone to frequent debris pile up on the beaches. The presence of this debris can have short-term, negligible to minor impacts on visitor use and experience depending on the type and extent of the debris. The park relies heavily on organized clean-up efforts to remove debris from the beaches. These efforts rely heavily on volunteer groups and both the volunteer experience and the cleaner beaches result in long-term beneficial impacts to visitor use and experience.

Fire management activities to reduce fuels in the park have been conducted to protect visitors, resources, and infrastructure. In the past, fuel reduction actions were conducted at numerous places to protect infrastructure that supports visitor services. Past actions provided long-term beneficial effects on visitor use and experience. When the long-term beneficial, and short- to long-term negligible to minor adverse effects of other past, on-going, and future plans, projects, and activities affecting visitor use and experience are combined with the local, short-term, negligible to moderate, adverse and long- and short-term, beneficial effects under alternative A, the cumulative effects would be long-term and beneficial. Past management actions to protect park resources and provide quality visitor use experiences outweigh the short-term adverse impacts on visitor use.

Conclusion

Alternative A would have local, short-term, negligible to moderate, adverse impacts from temporary area closures and noise associated with suppression activities. Long- and short-term beneficial effects on visitor use and experience would result from educational and interpretative opportunities. Due to the nature of most beneficial impacts, this alternative, in combination with other actions, plans, and policies, would result in parkwide long-term beneficial cumulative impacts.

IMPACTS OF ALTERNATIVE B, WILDLAND FIRES AND FUELS MANAGEMENT PROGRAM

Analysis

The impacts of fire suppression under alternative B would be the same as described for alternative A. Overall benefits of fire suppression would be parkwide, and long-term. Adverse impacts associated with fire suppression tactics, including hand crews, engine crews, aircraft, and a strategy of contain and confine, would be short-term, localized, and negligible to moderate.

Under alternative B, several fuel reduction methods would be implemented, including manual and/or mechanical thinning and prescribed fire, as described below.

Manual and/or mechanical thinning of vegetation to reduce fuel loads would result in noise intrusions to the visitor experience. Noise intrusions would result in local, short-term, and negligible to minor impacts to visitor use and experience depending on their proximity to the area being thinned. Any temporary closures associated with manual and/or mechanical thinning would have similar impacts to those closures described under alternative A and would result in local, short-term, negligible to minor, and adverse impacts. Visual impacts to the visitor experience from manual and/or mechanical thinning would be associated with the presence of work crews and the visual evidence of the thinning. Due to their temporary nature, the visual presence of work crews and the visual evidence of manual and/or mechanical thinning on the landscape would result in local, short-term, negligible to minor, adverse impacts to the visitor experience.

Prescribed fires would also be used to reduce fuel loads under alternative B. Prescribed fire would be planned in accordance with weather conditions and lower visitation times to minimize road closures and impacts to health and safety. Any temporary closures would result in short-term, negligible to minor, adverse impacts. Immediately following a prescribed fire, impacts to visitor use and experience would include visual evidence of the fire. Grassland vegetation recovers quickly from fire events, usually within a couple of months. Given the size and extent of prescribed burns in the park and the relatively quick recovery of vegetation, the visual impacts would be localized, short-term, negligible, and adverse. Continued use of prescribed fire would reduce fuel loads resulting in beneficial effects to visitor use and experience. However, smoke from pre-

scribed fires may temporarily adversely affect visitors' recreational experience and night sky visibility, but these effects would be mitigated in part from a smoke management program and an effective public information and interpretation program.

Fuel reduction activities in the park would reduce the frequency, duration, and intensity of wildfires. Given these improvements associated with fuel load reductions, the likelihood of more severe impacts that can result from wildfires would be lessened and therefore, impacts to visitor use and experience would be parkwide, long-term, and beneficial.

The use of wildland fire to accomplish specific resource management goals and/or objectives in pre-defined fire management units would have similar impacts to fire suppression tactics described under alternative A. Temporary closures and visual impacts resulting from wildland fire would result in short-term, negligible to moderate impacts to visitor use and experience depending on the season and location of the fire. However, over the long-term, the restoration and maintenance of natural ecosystems through the management of wildland fire would result in long-term benefits to visitor use and experience.

Cumulative Impacts

The cumulative impacts on visitor use and experience would be the same as described in alternative A and would be long-term beneficial. Implementation of alternative B would have long-term, parkwide, beneficial impacts, as well as short-term, negligible to moderate, adverse impacts on visitor use and experience. Impacts of this alternative, in combination with the impacts of other past, present, and reasonably foreseeable future actions, would result in long-term beneficial cumulative impact. The impacts of alternative B would contribute to the overall cumulative impacts.

Conclusion

Wildfire suppression would provide parkwide, long-term benefits to visitor use and experience by reducing the size of a wildfire and thus the extent of adverse impacts to these resources in the park. As discussed in alternative A, adverse impacts stemming from wildfire suppression tactics using hand crews, engine crews, and aircraft would be short-term, localized, and negligible to moderate. Fuel reduction activities under this alternative would result in short-term negligible to minor adverse impacts. However, the use of fuel reduction activities would provide greater protection to park resources from impacts of wildfire, which would be a long-term beneficial impact. Use of wildland fire for resource management would have similar impacts to fire suppression tactics, which are negligible to moderate and adverse over the short-term and beneficial over the long-term. When alternative B is combined with other actions, plans, and policies, the resulting cumulative impact would be long-term and beneficial.

PARK OPERATIONS

AFFECTED ENVIRONMENT

Padre Island National Seashore currently employs 45 full-time employees who are supplemented by 41 temporary and seasonal staff. Duties and assignments are distributed among three operational divisions, including the following divisions: Division of Science and Resource Management, Facilities Management, and Law Enforcement. Collectively, the park staff provide the full scope of functions and activities to accomplish management objectives and meet the requirements of park protection, emergency services, public health and safety, science, resource protection and management, emergency services, interpretation and education, utilities, and management support.

Fire response management at Padre Island National Seashore falls under an interpark agreement with Big Thicket National Preserve. The duties of Big Thicket include providing, as requested and required, professional and technical support for the fire management programs of Padre Island National Seashore. Performance of these responsibilities is based on communications between the area superintendent, Big Thicket's fire management officer, and other staff as appropriate.

Under the interpark agreement (NPS 2004d), Big Thicket is responsible for the following fire management responsibilities at Padre Island National Seashore: assisting in development and implementation of prevention, suppression, rehabilitation, and aviation programs, assisting in the coordination and preparation of reports and fire management plans; coordinating the mobilization of Padre Island personnel to interagency fire assignments, developing and coordinating fire-related training; and providing Padre Island with daily situation and fire weather reports as requested during the identified fire season. The superintendent at Padre Island is responsible for designating an onsite collateral duty fire management officer who requests program assistance, budget, supplies, and training needs through the Big Thicket fire management officer. The Padre Island fire management officer is responsible for maintaining fire readiness to the level identified in the fire management plan, for notifying the Big Thicket fire management officer of any fire restrictions, closures, fire occurrences, or support actions, and for participating in the overall fire management of Big Thicket and of the National Park Service by shared training and available personnel upon request.

Typically, Padre Island maintains several law enforcement staff with some fire training, but they are not equipped to respond to fires in the park without assistance. Additional staff and equipment are provided by the Flour Bluff Volunteer Fire Department in Corpus Christi who typically is the first responder to wildland fire, the U.S. Fish and Wildlife Service at Aransas Pass, and/or Big Thicket National Preserve depending on the nature of the fire, its size, and duration. Additional park staff are responsible for traffic control, visitor evacuations, and any other tasks indirectly associated with fire management activities. The chief ranger at the park reports directly to the superintendent and is responsible for the fire management program.

METHODS

Effects on park operations were evaluated qualitatively based on the professional judgment of NPS staff and consultants. Primary sources of information used in this analysis included existing park management documents, NPS policy documents, and unpublished observations and insights from knowledgeable park staff.

The intensity of impacts used the following criteria:

- *Negligible*: National park operations would not be affected, or effects would not be perceptible or measurable outside normal variability.
- *Minor*: Effects would be measurable but would not appreciably change park operations. They may be perceived by park staff, but probably not by visitors.
- *Moderate*: Effects would be readily apparent and would result in a substantial change in park operations, or would result in a situation that would be noticed by many park visitors.
- *Major*: Effects would be readily apparent, with a substantial change in park operations in a manner that would be noticed by park visitors as markedly different from existing operations.
- *Short-term*: Effects would occur only during and shortly after a specified action or treatment.
- *Long-term*: Effects would persist well beyond the duration of a specified action or treatment, or would not be associated with a particular activity.

REGULATIONS AND POLICIES

Current laws and policies associated with park operations include the following:

- *Management Policies 2006 (NPS 2006)*

IMPACTS OF ALTERNATIVE A, NO ACTION

Analysis

There would be no change in current park operations under alternative A. The fire management officer would follow protocol set up in the interpark agreement with Big Thicket National Preserve. In the event of a large fire that persists beyond an initial response by the local fire department, additional personnel would be brought in from outside the park to assist. The impact on park operations would be commensurate with the nature and extent of the fire, with consideration given to the season and weather conditions. In most cases, the adverse effects on park operations would be negligible to minor, and short-term, because fire suppression efforts are accounted for through regional protocols and contingencies are in place to avoid unwanted impacts to normal park operations. Large fires may require closure of park roads, areas, or campgrounds, but closures would not typically last more than a day. These types of impacts on park operations, which would require personnel to manage closures, would likely result in minor short-term adverse impacts.

Cumulative Impacts

Other past, present and reasonably foreseeable actions or plans that may affect park operations would include fire management collaborative processes and agreements, interpark and interagency standards, and other park improvements (see the “Relationship of the Proposed Action to Other Planning Efforts” section in chapter 1 for more information on these actions).

Two other projects or plans are especially relevant to cumulative effects on park operations:

Acquiring approximately 3,882 acres of General Land Office land that abut the park’s northern boundary. The addition of this land would require additional general and fire management. How-

ever, due to its undeveloped nature and proximity to existing land within the park, the long-term impacts to park operations from having to manage the additional territory would be negligible to minor.

Construction of two new cabins down island to provide sleeping accommodations for turtle monitors. This would provide long-term benefits to park operations by enhancing the ability of sea turtle patrollers to effectively patrol the park's beach down island. Additionally, the cabins would provide accessible shelter for patrollers during storm events, which would increase the patroller's safety and reduce the need for park operations to respond to emergency situations. Any adverse impacts to park operations from the need to protect the cabins from a wildlife event would be short-term and negligible to minor.

When the short- and long-term negligible to minor adverse and long-term beneficial effects of other past, current, and future plans and projects affecting park operations are combined with the short-term negligible to minor potential adverse impacts under alternative A, the cumulative effects would be considered long-term, negligible, and adverse. The short-term negligible to minor adverse effects of alternative A would contribute slightly to the overall long-term negligible adverse cumulative effects of other plans and projects.

Conclusion

The impacts of alternative A on park operations would be negligible to minor, and short-term, because fire suppression efforts are accounted for with advanced planning and contingencies to deal with fire fighting are in place to avoid unwanted impacts to normal park operations. If temporary closures are necessary, impacts would be minor. This alternative, in combination with other actions, plans, and policies, would result in long-term negligible adverse cumulative impacts on park operations.

IMPACTS OF ALTERNATIVE B, WILDLAND FIRES AND FUELS MANAGEMENT PROGRAM

Analysis

The effects of fire suppression efforts on park operations would be similar to those described for alternative A and would be negligible to minor, adverse, and short-term.

Under alternative B, several fuel reduction methods would be implemented, including manual and/or mechanical thinning and prescribed fire, as described below.

Manual and/or mechanical thinning of vegetation to reduce fuel loads would be executed by existing Padre Island National Seashore staff. Because these projects are planned and park resources are allocated in advance, there would be negligible, short-term adverse impacts on park operations as a result of manual and/or mechanical thinning.

Prescribed fires would be managed and scheduled by the fire management officer at Big Thicket National Preserve. Implementation of these prescribed burns could include fire-trained park staff when possible. While there is the potential for temporary closures associated with prescribed fire, advance planning would take staffing needs and park operations into account prior to igniting any burns and therefore impacts to park operations would be negligible to minor, short-term and adverse.

Cumulative Impacts

The cumulative effects of other projects and plans would be the same as described for alternative A. There would be an incrementally greater adverse effect on park operations from manual and/or mechanical thinning and prescribed fire projects under alternative B when compared to alternative A, but overall, the cumulative effects would be negligible. Alternative B's contribution to the overall long-term, negligible, and adverse cumulative impacts would be relatively small.

Conclusion

The effects of wildfire suppression efforts on park operations would be the same as described for alternative A. Fuel reduction and prescribed fire activities would have short-term, negligible to minor, adverse impacts on park operations. This alternative, in combination with other actions, plans, and policies, would result in long-term, negligible, and adverse cumulative impacts on park operations.

PUBLIC HEALTH AND SAFETY

AFFECTED ENVIRONMENT

Padre Island National Seashore receives nearly 600,000 visitors annually (NPS 2013). Park facilities are currently open all but two days of the year and therefore, park personnel are present throughout the year to respond to the safety needs of staff and visitors. While there have been no deaths or serious injuries to visitors, adjacent property owners, park staff, or firefighters resulting from wildfire or fire management activities at Padre Island National Seashore, health and safety of everyone is a high priority of the National Park Service. Wildland fire and fire management activities present risks to the public, firefighters, and NPS staff through the dangers of smoke inhalation, flames, falling debris or vegetation, equipment accidents, tripping/falling, and vehicle accidents.

METHODS

The larger context for analyzing the impact of each alternative on public health and safety is established by the legislation establishing the national park, as well as *Management Policies* (NPS 2006). NPS policies provide service-wide guidelines and mandates for public health and safety. The protection and saving of human life take precedence over all other management actions. The National Park Service does this within the constraints of the 1916 Organic Act. The primary—and very substantial—constraint imposed by the Organic Act is that discretionary management activities may be undertaken only to the extent they will not impair park resources and values.

Effects on public health and safety were evaluated and determined qualitatively based on the professional judgment of NPS staff and consultants. Primary sources of information used in this analysis included existing park management documents, NPS policy documents, and unpublished observations and insights from knowledgeable park staff.

The predicted intensity of impacts was based on the following criteria:

- *Negligible*: Public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on public health or safety.
- *Minor*: The effect would be detectable, but would not have an appreciable effect on public health and safety.
- *Moderate*: The effects would be readily apparent and would result in substantial, noticeable effects to public health and safety.
- *Major*: The effects would be swiftly apparent and would result in substantial, noticeable effects to public health and safety.
- *Short-term*: Effects would occur only during and shortly after a specified action or treatment.
- *Long-term*: Effects would persist well beyond the duration of a specified action or treatment.

REGULATIONS AND POLICIES

Current regulations and policies associated with health and safety include the following:

- Director's Order #50 and *Reference Manual 50, Safety and Health*;
- Director's Order #58 and *Reference Manual 58, Structural Fire Management*;
- Director's Order #83 and *Reference Manual 83, Public Health*;

- Director's Order #51 and *Reference Manual 51, Emergency Medical Services*;
- Director's Order #30 and *Reference Manual 30, Hazard and Solid Waste Management*;
- *Management Policies 2006* (NPS 2006); and
- Occupational Safety and Health Administration regulations in 29 *Code of Federal Regulations*.

IMPACTS OF ALTERNATIVE A, NO ACTION

Analysis

The health and safety of visitors, fire personnel, park staff, and adjacent landowners is the highest priority of the National Park Service. In keeping with this priority, fire suppression tactics would be selected based on fire conditions and safety considerations. Implementation methods would be performed by trained fire fighters using the appropriate safety gear and tools, and would follow safety procedures laid out by the local fire department, the National Park Service, and/or the National Wildfire Coordinating Group.

The use of direct attack methods, such as the use of hand crews along a fire's edge, to suppress fire would require firefighting personnel to be closer to a wildland fire than during use of indirect suppression methods, such as aircraft. However, the use of some indirect suppression methods such as aircraft would involve an inherent risk and, therefore, impacts from both suppression tactics could be similar. Due to safety procedures and the use of trained personnel, impacts to the health and safety of firefighting and NPS personnel would be short-term, minor, and adverse.

Use of contain and confine tactics to suppress a fire would not be used if human safety, property, or park resources in the area were threatened. Monitoring and confining the fire would be conducted by trained firefighting professionals. Using this suppression tactic would limit firefighter exposure to the fire and therefore, result in long-term beneficial effects to health and safety.

In the event of a wildland fire, the affected areas of the park could be temporarily closed to visitors and any visitors in these areas would be safely escorted out of the area. As a result, impacts to visitor health and safety from fire suppression tactics would be short-term, negligible, and adverse. Suppression of wildland fires would reduce the duration and extent of a fire and would result in local to widespread, long-term, beneficial effects to health and safety in the park.

Cumulative Impacts

The other plans and projects implemented or proposed are primarily management and resource-oriented plans and policies that assist the National Park Service in meeting the mandates of the park now and in the future. As a result, these plans and policies would contribute beneficially to cumulative impacts on health and safety inherently.

Padre Island's location within the gulf makes it prone to frequent debris pile up on the beaches. Protocols for safe handling and disposal of these wastes are covered in the park's site health and safety plan and include measures to inform and protect the public. While the presence of some debris could result in adverse impacts to the health and safety of park staff and visitors, the extensive protocols and procedures set in place to patrol for, safely handle, and remove any hazardous debris that does wash ashore, adverse impacts to the health and safety of park staff and visitors would be short-term and negligible to minor. The park also has cleanup programs in place for debris removal and these programs provide long-term, localized benefits.

Many visitors to Padre Island National Seashore use the approximately 65.5-mile-long beach as a roadway to travel along the park. Once within the park, visitors without four-wheel-drive vehicles are limited to surfaced roads and the northern five miles of South Beach where the sand is compacted enough for safe two-wheel use. This prevents access to the down-island portion of the park for most visitors. These conditions contribute to overcrowding and pedestrian-vehicle conflicts that would continue to result in long-term, localized, minor to moderate impacts to the health and safety of park visitors. Enforcement of traffic speeds, regulations, and visitor education would continue to decrease some of these conflicts resulting in long-term, localized benefits.

Due to the remote and backcountry nature of down-island areas, impacts to the health and safety of park visitors in these backcountry portions of the park would continue to be long-term, and negligible to minor. Road conditions are monitored by the park to ensure the safety of visitors and staff and to protect natural resources. Visitor access restrictions to the beach and other areas occur periodically because of adverse weather, beach and road conditions, environmental hazards, and emergency situations like hurricanes, wild fires, and oil spills. Such restrictions protect the public and staff from these hazards and would continue to result in short-term, localized benefits to public health and safety.

Padre Island National Seashore is experiencing increased drug smuggling and illegal immigrant traffic. Undocumented aliens are frequently found exhausted, dehydrated, injured, or suffering from a variety of medical problems. Coupled with poor radio communications, these occurrences place visitors and park staff at an increased risk, resulting in long-term, negligible to moderate adverse impacts to public health and safety. Recent installation of a telecommunications tower by the Department of Homeland Security to better support communications and national security drastically improved communications, resulting in long-term benefits to the health and safety of visitors and park staff.

The 2013 *Interagency Standards for Fire and Fire Aviation Operations* outlines principles, policy statements, and interagency cooperation in place for fire prevention, preparedness, suppression, and related fire management activities. These safety standards provide widespread long-term beneficial impacts to health and safety in the park regarding fire management and fire suppression.

When the localized, short- and long-term, negligible to moderate adverse impacts and short- and long-term beneficial effects of other past, current, and future plans and projects affecting public health and safety are combined with the short-term, negligible to minor adverse and long-term, beneficial effects under alternative A, the cumulative effects would be considered long-term, negligible to minor and adverse. The long-term beneficial effects of alternative A would act to offset slightly the cumulative effects of other plans and projects.

Conclusion

Alternative A would have short-term, negligible to minor, adverse impacts given the risk involved in fighting wildland fire. Long-term beneficial effects on health and safety in the park would accrue from suppression of wildfires. This alternative, in combination with other actions, plans, and policies, would result in long-term, negligible to minor, adverse cumulative impacts.

IMPACTS OF ALTERNATIVE B, WILDLAND FIRES AND FUELS MANAGEMENT PROGRAM

Analysis

Under alternative B, impacts from wildfire and suppression efforts on health and safety in the park would be the same as those described for alternative A. Impacts would be short-term, negligible to minor adverse and long-term, beneficial.

Under alternative B, several fuel reduction methods would be implemented, including manual and/or mechanical thinning and prescribed fire, as described below.

Manual and/or mechanical thinning of vegetation to reduce fuel loads would be completed by trained NPS staff. The area being thinned would be closed to park visitors if there were any risk associated with the machinery and/or debris. As a result, impacts to health and safety from manual or mechanical thinning of vegetation would be short-term, negligible, and adverse.

Prescribed fires would be planned to minimize impacts to health and safety and the risk of the fire expanding beyond the intended boundaries. Prescribed fires would be conducted with trained NPS firefighting staff. Due to planning efforts, use of interagency and NPS safety procedures, application of mitigation measures, and use of trained personnel, impacts to the health and safety of firefighting and park personnel from prescribed fire would be short-term, minor, and adverse. During a prescribed fire event, affected areas of the park would be temporarily closed if there was any risk to visitors. As a result impacts to visitor health and safety would be short-term, negligible, and adverse.

Smoke and particulate matter in the atmosphere resulting from a prescribed fire at the park could affect the respiratory systems and vision of NPS staff and visitors. Severity of the fire's effect would depend on each individual's sensitivity to these irritants. It is assumed that the duration of their exposure would range from a few hours to a full day. Due to closures of the immediate area and the short duration of most prescribed fires in the park, smoke exposure under alternative B would have local, short-term, negligible to minor, adverse effects on health and safety.

Overall, the use of fuel reduction methods would help control a prescribed fire, and/or reduce the duration and extent of a wildland fire and therefore result in local, long-term, beneficial effects to health and safety.

Cumulative Impacts

Past, current, and foreseeable future actions within and outside Padre Island National Seashore that cumulatively could impact health and safety would be the same as those described for alternative A. Collectively, these other actions would result in long-term beneficial cumulative impacts on health and safety.

When the short- and long-term negligible to moderate adverse impacts and short- and long-term beneficial effects of other past, current, and future plans and projects affecting public health and safety are combined with the short-term, negligible to minor, adverse and long-term beneficial effects under alternative B, the cumulative effects would be considered long-term, negligible to minor and adverse. The long-term beneficial effects of alternative B would act to offset slightly the cumulative effects of other plans and projects. .

Conclusion

Alternative B would have short-term negligible to minor adverse impacts associated with suppression and fuel reduction activities on firefighters, park staff, and visitors. Long-term beneficial effects on health and safety would result from reduced fuel loads that would minimize the

size and intensity of future wildland fires. This alternative, in combination with other actions, plans, and policies, would result in long-term, negligible to minor, adverse cumulative impacts.

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Chapter 4: Consultation and Coordination

SCOPING PROCESS AND PUBLIC INVOLVEMENT

Scoping is an early and open process used to determine the breadth of environmental issues and alternatives to be addressed in an environmental assessment and assessment of effect. Padre Island National Seashore conducted both internal scoping with appropriate NPS staff and external scoping with the public and interested and affected groups and agencies. Copies of the scoping notice, press release, letters to agencies and tribes are included in appendix B.

INTERNAL SCOPING

An internal scoping meeting was held on November 30, 2012. Participants included the project interdisciplinary team and the consultant preparing the environmental assessment. Products included clarification of the project scope and features, information on site visit findings, scoping and consultation, definition of the action alternative, determination of the relevant impact topics, and identification of issues.

EXTERNAL SCOPING

The following actions were taken to inform the public about the intent to prepare this National Environmental Policy Act environmental assessment for Padre Island National Seashore.

A public notice was published on January 8, 2013. The public scoping period was from January 8, 2013 through February 10, 2013.

Scoping letters or notices were sent to 231 people and organizations on the park's mailing list. These included local, tribal, state, and federal agencies; organizations; and individuals.

The scoping notice was made available electronically on the National Park Service Planning, Environment, and Public Comment website at <http://parkplanning.nps.gov/PAIS>.

The agency response letters are provided in appendix B. Contents of the environmental assessment were reviewed to ensure that all concerns identified in public scoping were adequately addressed.

AGENCY CONSULTATION

The agencies, organizations, and experts who were consulted in the process of preparing this environmental assessment are listed below. Where specific information from one of these people was cited, complete source information was provided in the "Bibliography" section in chapter 5.

- U.S. Fish and Wildlife Service
- Texas Parks and Wildlife
- Texas State Historic Preservation Office
- Director of Coastal Resources, Texas General Land Office

U.S. Fish and Wildlife Service

As part of the consultation process under the Endangered Species Act section 7, the National Park Service sent a letter to U.S. Fish and Wildlife Corpus Christi office, inviting them to participate in the planning process. U.S. Fish and Wildlife responded with a letter that reminded the National Park Service that, as a federal agency, it has legal obligations under section 7 of the Endangered Species Act of 1973, as amended, and the Migratory Bird Act and their implementing

regulations. The letter outlines the process and information needed for review for section 7 compliance. The letter also included an updated list of federally listed or proposed threatened and endangered species documented or known to occur in Kenedy, Kleberg, and Willacy Counties, Texas. This list was used when preparing the analysis and the biological assessment included in appendix C. The National Park Service is coordinating with the U.S. Fish and Wildlife to fulfill the requirements of section 7 of the Endangered Species Act.

Texas Parks and Wildlife

As part of the consultation process, the National Park Service sent a letter to Texas Parks and Wildlife, inviting it to participate in the planning process. Texas Parks and Wildlife responded with a letter commending the National Park Service for utilizing prescribed fire as a management tool. The letter recommended the fire management plan include specific natural resource management and ecological goals to be achieved by using fire as a management tool. The letter also recommended the National Park Service consider time of year, existing fuel load, and climatic conditions before utilizing prescribed burns and provided a link to a document entitled, "Prescribed Range Burning in Texas." The National Park Service will take these recommendations into consideration.

Texas State Historic Preservation Office

As part of the consultation process under the National Historic Preservation Act section 106, the National Park Service sent a letter to the Texas State Historic Preservation Office (Texas Historical Commission), inviting it to participate in the planning process. The Texas Historical Commission responded with a letter reminding the National Park Service that, as a federal agency, it has legal obligations under section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations. The letter informed NPS staff that its agency has made efforts to standardize the information required by section 106 and submitted to its office. The letter pointed park staff to a website that outlines the information needed for review for section 106 compliance. The National Park Service is coordinating with the Texas Historical Commission to fulfill the requirements of section 106 of the National Historic Preservation Act.

NATIVE AMERICAN CONSULTATION

A number of tribes traditionally, and currently, value the Padre Island area. Traditionally associated tribes include those listed below. No responses were received to the scoping letters sent at the project inception. All associated tribes will continue to be kept informed about the status of the environmental assessment. When the environmental assessment is released to the public, the National Park Service will again send letters to the tribes, formally asking for their input.

The following tribes were contacted to participate in the planning process:

- Tonkawa Tribe of Oklahoma
- Alabama-Coushatta Tribe of Texas

LIST OF PREPARERS

The people identified in table 4 were primarily responsible for preparing this environmental assessment.

Table 4: Preparers

National Park Service, Padre Island National Seashore	
Joe Escoto / Mark Spier	Superintendent
James Lindsay	Chief of Resources
Wade Stablein	Biological Technician
Scott Martin	Acting Chief Ranger
Travis Clapp	Cartographer/GIS Specialist
National Park Service, Big Thicket National Preserve	
Deanna Boensch	Fire Ecologist
Fulton Jeansonne	Fire Management Officer
DW Ivans	Fire Management Officer
National Park Service, Intermountain Region	
Lisa Hanson	NEPA coordinator
Parsons	
Timberley Belish	Project Manager
Don Kellett	Environmental scientist
Alexa Miles	Environmental scientist
Seth Wilcher	Cultural resources specialist

LIST OF RECIPIENTS

This environmental assessment is being made available to the public, federal, state and local agencies, tribes, and organizations through direct mailing and placement on the PEPC at <http://parkplanning.nps.gov/pais>.

The following agencies, tribes, and organizations are on the mailing list for the project and were informed of the availability of the environmental assessment.

FEDERAL AGENCIES

Bureau of Alcohol, Tobacco, Firearms
National Marine Fisheries Service
Natural Resource Conservation Service
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Customs and Border Protection
U.S. Department of Homeland Security
U.S. Environmental Protection Agency,
Region 6
U.S. Fish and Wildlife Service
U.S. Geological Survey

STATE AND LOCAL AGENCIES

Corpus Christi Fire Department
Corpus Christi Museum of Science & His-
tory
Corpus Christi Parks & Recreation
Corpus Christi Police Department
Flour Bluff Independent School District
Nueces County Emergency Management
Nueces County Inland Parks
South Texas Specialized Crimes & Nar-
cotics Task Force
Texas Commission on Environmental
Quality
Texas General Land Office
Texas Historical Commission
Texas Parks and Wildlife
Willacy County Navigation District

AMERICAN INDIAN TRIBES

Tonkawa Tribe of Oklahoma
Alabama-Coushatta Tribe of Texas

ELECTED OFFICIALS

U.S. Senator, John Cornyn
U.S. Senator, Ted Cruz
U.S. Representative, Rubén Hinojosa
U.S. Representative, Blake Farenthold
U.S. Representative, Lamar Smith
Texas State Senator, Juan “Chuy” Hino-
josa
Texas State Senator, Eddie Lucio, Jr.
Texas State Senator, Kirk Watson
Texas State Senator, Judith Zaffirini
Texas State Representative, Todd A.
Hunter
Texas State Representative, Jose Manuel
Lozano
Texas State Representative, Elliott
Naishtat
Texas State Representative, Aaron Peña
Texas State Representative, Ron Reynolds
Texas State Representative, Raul Torres

ORGANIZATIONS

Animal Protection Institute
American Bird Conservancy
Audubon Texas
Coastal Bend Audubon Society
Coastal Bend Chapter Sierra Club
Columbia University Action Coalition

Lone Star Chapter Sierra Club
Lower Laguna Madre Foundation
Manomet Center for Conservation Sciences
National Fish & Wildlife Foundation
National Parks Conservation Association
Nature Conservancy of Texas
Northwestern University
Our Texas Wild Organization
Sierra Club/Lone Star Chapter

Student Conservation Association
Texas A&M University-Corpus Christi
Texas Colonial Waterbird Society
University of Texas Marine Science Institute
University of Miami
World Center for Birds of Prey
Western National Parks Association
Wilderness Society

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Chapter 5: References

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**APPENDIX A:
NATIONAL PARK SERVICE MEMORANDUM – USE OF HEALTHY FOREST
INITIATIVE HAZARDOUS FUELS REDUCTION
CATEGORICAL EXCLUSION (2012)**

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United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, D.C. 20240

IN REPLY REFER TO:

APR 24 2012

Memorandum

To: Regional Directors

From: Associate Director, Natural Resource Stewardship and Science
for Associate Director, Visitor and Resource Protection

Subject: Use of Healthy Forest Initiative Hazardous Fuels Reduction Categorical Exclusion

On May 28, 2008, the acting Associate Director for Natural Resource Stewardship and Science issued a memorandum prohibiting use of the Healthy Forest Initiative Hazardous Fuels Reduction Categorical Exclusion (HFICE) (found at 43 CFR 46.210(k) and Director's Order 12 (DO-12) Handbook Section 3.4 (G)(1)) for any new treatments within the 9th Circuit's jurisdiction in response to a lawsuit (Sierra Club v. Bosworth, 510 F.3d 1016). The jurisdiction of the 9th Circuit includes the states of Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, Washington, and U.S. territories in the Pacific, including Guam.

Due to issues that could arise should the HFICE continue to be used by park units outside of the 9th Circuit, this memorandum expands the prohibition on use of the HFICE to all park units service-wide. Due to the fiscal and programmatic impacts of the expanded prohibition, the phased approach described below should be implemented, with the intent of obtaining full compliance with the service-wide prohibition within three years of the date of this memorandum.

For park units outside of the 9th Circuit, existing Fire Management Plans (FMP) or amendments to plans that used the HFICE may remain in effect for up to three years from the date of this memorandum. Unless prior written authorization is obtained from the Associate Director for Natural Resource Stewardship and Science, through the Associate Director for Visitor and Resource Protection, FMPs not in compliance at the end of three years will be suspended, and fuels work and wildfires managed for benefit may not be permitted until such a time as an approved FMP and related compliance is in place.

Use of the HFICE for individual fuels treatments will also be allowed outside of the 9th Circuit for up to three years from the date of this memorandum. However, you should begin to reduce reliance on the use of the HFICE immediately.

It is strongly recommended that fuels work be incorporated into a programmatic FMP and covered by an associated NEPA compliance document (environmental assessment or

environmental impact statement). The FMP should describe the routine scope of the anticipated fuels program, and the related environmental analysis should evaluate the effects of such a program.

The FMP should include a description of a typical program of fuels work representative of the long-term fuels program. A list of anticipated fuels treatments for five out-years should be included in an FMP appendix and updated annually or as needed. The list of treatments may be amended and updated to include specific new treatments and remove completed or outdated ones.

New treatments added to the revised program of work should be evaluated through use of an environmental screening form (ESF) and reviewed to determine whether the revised program of work remains within the scope and effects outlined in the FMP and related NEPA compliance document. If the review finds no new impacts other than those already analyzed in the FMP and related compliance document, and use of a categorical exclusion (CE) is appropriate pursuant to DO-12 and the DO-12 Handbook, then the ESF should document the application of the CE found in the DO-12 Handbook at Section 3.4 (A)(1) (“*Changes or amendments to an approved action when such changes would cause no or only minimal environmental impact*”) and work should proceed according to procedures outlined in the FMP. If new fuels treatments evaluated using the ESF are found to be beyond the scope and effects contained in the approved FMP and related NEPA compliance document, then additional NEPA reviews, pursuant to DO-12 and the DO-12 Handbook, would be necessary.

The Environmental Quality Division and Fire Management Program Center will evaluate the feasibility of creating a new NPS-specific CE for certain hazardous fuels treatments. However, promulgation of a new CE would be a lengthy process, and therefore it is strongly recommended that you proceed as quickly as possible to reduce reliance on the HFICE.

As a reminder, there are various compliance processes other than the HFICE available for program managers to deal with common situations. Please consult with your Fire Program planning contacts and park or regional compliance specialists as needed.

This memorandum and any subsequent documents that implement its directives are intended only to improve the internal management of the National Park Service; they are not intended to, and do not, create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the United States, its departments, agencies, instrumentalities or entities, its officers or employees, or any other person.

If you have any questions concerning this issue, please contact Patrick Walsh, Chief, Environmental Planning & Compliance Branch, Environmental Quality Division, at (303) 987-6620; or Jeff Manley, Deputy, Fire Program Planning, National Interagency Fire Center, at (208) 387-5221.

cc:

Regional Environmental Coordinators
Regional Fire Management Officers
Director, Fire & Aviation Management

**APPENDIX B:
PRESS RELEASE, SCOPING LETTERS, AND RESPONSES**

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United States Department of the Interior



NATIONAL PARK SERVICE

Padre Island National Seashore

P.O. Box 181300

Corpus Christi, Texas 78418

IN REPLY REFER TO:

9.D.

January 8, 2013

Dear Friends and Neighbors:

The National Park Service (NPS) will be preparing an environmental assessment (EA) which will analyze the environmental effects of a new fire management plan that is proposed for Padre Island National Seashore, Texas. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives.

The purpose of the proposed fire management plan for the Padre Island National Seashore is to comply with new federal and NPS policies and to incorporate new scientific information into fire management planning within parks. In addition, the proposed plan intends to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and infrastructure within the National Seashore. The plan also allows for the use of wildfire and prescribed fire to promote a healthy and sustainable ecosystem.

An environmental assessment will be prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates issues and impacts to national seashore resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts.

The NPS encourages public participation throughout this planning process. There will be two opportunities to comment formally on the project—once during initial project scoping and again following release of the environmental assessment. The NPS is currently in the scoping phase of the proposed project and invites the public to submit written suggestions, comments, and concerns regarding the project online at the NPS Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/pais>.

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Comments also may be sent to the address below no later than February 10, 2013. If you have questions about the project or would like more information, please contact Scott Martin, Operations Supervisor, at (361) 949-9238 ext. 22 or by email at p_scott_martin@nps.gov.

Written comments can be sent to:

Padre Island National Seashore
ATTN: Fire Management Plan EA Comments
P.O. Box 181300
Corpus Christi, TX 78480

Sincerely,



Joe Escoto
Superintendent

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United States Department of the Interior



NATIONAL PARK SERVICE

Padre Island National Seashore
P.O. Box 181300
Corpus Christi, Texas 78418

IN REPLY REFER TO:

9.D.

January 8, 2013

Mr. Allan Strand
Supervisor, USFWS Field Ecological Services Office
6300 Ocean Drive, Unit 5837
Corpus Christ, TX 78412-5837

Dear Mr. ^{Allan} Strand:

The National Park Service (NPS) will be preparing an environmental assessment (EA) which will analyze the environmental effects of a new fire management plan that is proposed for Padre Island National Seashore, Texas. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives.

The purpose of the proposed fire management plan for Padre Island National Seashore is to comply with new federal and NPS policies and to incorporate new scientific information into fire management planning. In addition, the proposed plan intends to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and infrastructure within the national seashore. The plan also allows for the use of wildfire and prescribed fire to promote a healthy and sustainable ecosystem.

An environmental assessment will be prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates issues and impacts to national seashore resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts.

The NPS encourages public and agency participation throughout the planning process. There will be three opportunities for your office to comment formally on the project—once during initial project scoping, during your review of the biological assessment (BA) (if a separate BA is warranted), and again following release of the environmental assessment. The NPS is currently in the scoping phase of the proposed project and is beginning the process of information gathering. We would like to request any information that your office may have regarding the

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presence of listed Federal threatened or endangered species, species proposed for listing, and existing or proposed critical habitats, which may exist at Padre Island National Seashore, which includes portions of Kleberg, Kenedy, and Willacy Counties. This request is made pursuant to Section 7 of the Endangered Species Act.

We would like to invite your agency to provide written suggestions, comments, and concerns regarding the project online at the NPS Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/pais>.

Comments also may be sent to the address below no later than February 10, 2013. If you have questions about the project or would like more information, please contact Scott Martin, Operations Supervisor, at (361) 949-9238 ext. 22 or by email at p_scott_martin@nps.gov. Written comments can be sent to:

Padre Island National Seashore
ATTN: Fire Management Plan EA Comments
P.O. Box 181300
Corpus Christi, TX 78480

Sincerely,



Joe Escoto
Superintendent





United States Department of the Interior



NATIONAL PARK SERVICE

Padre Island National Seashore
P.O. Box 181300
Corpus Christi, Texas 78418

IN REPLY REFER TO:

9.D.

January 8, 2013

John Gillen
Director of Coastal Resources
Texas General Land Office
P.O. Box 12873

Dear Mr. Gillen:

The National Park Service (NPS) will be preparing an environmental assessment (EA) which will analyze the environmental effects of a new fire management plan that is proposed for Padre Island National Seashore, Texas. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives.

The purpose of the proposed fire management plan for Padre Island National Seashore is to comply with new federal and NPS policies and to incorporate new scientific information into fire management planning. In addition, the proposed plan intends to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and infrastructure within the National Seashore. The plan also allows for the use of wildfire and prescribed fire to promote a healthy and sustainable ecosystem.

An environmental assessment will be prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates issues and impacts to national seashore resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts.

The NPS encourages public and agency participation throughout the planning process. There will be two opportunities to comment formally on the project—once during initial project scoping, and again following release of the environmental assessment. The NPS is currently in the scoping phase of the proposed project and invites your office to submit written suggestions, comments, and concerns regarding the project online at the NPS Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/pais>.

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Comments also may be sent to the address below no later than February 10, 2013. If you have questions about the project or would like more information, please contact Scott Martin, Operations Supervisor, at (361) 949-9238 ext. 22 or by email at p_scott_martin@nps.gov. Written comments can be sent to:

Padre Island National Seashore
ATTN: Fire Management Plan EA Comments
P.O. Box 181300
Corpus Christi, TX 78480

Sincerely,



Joe Escoto
Superintendent

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NATIONAL PARK SERVICE

Padre Island National Seashore
P.O. Box 181300
Corpus Christi, Texas 78418

IN REPLY REFER TO:

9.D.

January 8, 2013

Mr. Tom Heger
Wetlands Director, Texas Parks and Wildlife
4200 Smith School Road
Austin, TX 78744

Dear Mr. Heger:

The National Park Service (NPS) will be preparing an environmental assessment (EA) which will analyze the environmental effects of a new fire management plan that is proposed for Padre Island National Seashore, Texas. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives.

The purpose of the proposed fire management plan for Padre Island National Seashore is to comply with new federal and NPS policies and to incorporate new scientific information into fire management planning. In addition, the proposed plan intends to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and infrastructure within the National Seashore. The plan also allows for the use of wildfire and prescribed fire to promote a healthy and sustainable ecosystem.

An environmental assessment will be prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates issues and impacts to national seashore resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts.

The NPS encourages public and agency participation throughout the planning process. There will be two opportunities to comment formally on the project—once during initial project scoping, and again following release of the environmental assessment. The NPS is currently in the scoping phase of the proposed project and invites your office to submit written suggestions, comments, and concerns regarding the project online at the NPS Planning, Environment, and Public Comment (PEPC) website at: <http://parkplanning.nps.gov/pais>.



Comments also may be sent to the address below no later than February 10, 2013. If you have questions about the project or would like more information, please contact Scott Martin, Operations Supervisor, at (361) 949-9238 ext. 22 or by email at p_scott_martin@nps.gov.

Written comments can be sent to:

Padre Island National Seashore
ATTN: Fire Management Plan EA Comments
P.O. Box 181300
Corpus Christi, TX 78480

Sincerely,



Joe Escoto
Superintendent

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Padre Island National Seashore
P.O. Box 181300
Corpus Christi, Texas 78418

IN REPLY REFER TO:

9.D.

January 8, 2013

Mark Denton
Texas Historical Commission
P.O. Box 12276
Austin, TX 78711-2276

Subject: *Scoping Notice – Fire Management Plan Environmental Assessment, Padre Island National Seashore, Texas*

Dear Mr. Denton:

The National Park Service (NPS) will be preparing an environmental assessment (EA) which will analyze the environmental effects of a new fire management plan that is proposed for Padre Island National Seashore, Texas. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives.

The purpose of the proposed fire management plan for Padre Island National Seashore is to comply with new federal and NPS policies and to incorporate new scientific information into fire management planning within parks. In addition, the proposed plan intends to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and infrastructure within the National Seashore. The plan also allows for the use of wildfire and prescribed fire to promote a healthy and sustainable ecosystem. The project area is comprised of the entirety of NPS ownership within the boundaries of Padre Island National Seashore, in Kleberg, Kenedy, and Willacy Counties, Texas.

An environmental assessment will be prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates issues and impacts to national seashore resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts.

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In accordance with 36 CFR §800.3(c), we take this opportunity to formally initiate the §106 consultation process with you. We are currently in the scoping phase of this project, and invite you to submit your written comments online at the NPS Planning, Environment, and Public Comment website at <http://parkplanning.nps.gov/pais>. Or, you may submit written comments to the Superintendent at the address below.

We would appreciate any preliminary input you may have by February 10, 2013. If you have questions about the project or would like more information, please contact Scott Martin, Operations Supervisor, at (361) 949-9238 ext. 22 or by email at p_scott_martin@nps.gov.

Comments can be sent to:

Padre Island National Seashore
Attn: Fire Management Plan EA
P.O. Box 181300
Corpus Christi, TX 78480

Sincerely,



Joe Escoto
Superintendent

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NATIONAL PARK SERVICE

Padre Island National Seashore
P.O. Box 181300
Corpus Christi, Texas 78418

IN REPLY REFER TO:

9.D.

January 8, 2013

Principal Chief Oscola Clayton M. Sylestine
Alabama-Coushatta Tribe of Texas
571 State Park Road 56
Livingston, TX 77351

Subject: *Scoping Notice – Fire Management Plan Environmental Assessment, Padre Island National Seashore, Texas*

Dear Principal Sylestine:

The National Park Service (NPS) will be preparing an environmental assessment (EA) which will analyze the environmental effects of a new fire management plan that is proposed for Padre Island National Seashore, Texas. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives.

The purpose of the proposed fire management plan for Padre Island National Seashore is to comply with new federal and NPS policies and to incorporate new scientific information into fire management planning within parks. In addition, the proposed plan intends to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and infrastructure within the National Seashore. The plan also allows for the use of wildfire and prescribed fire to promote a healthy and sustainable ecosystem.

The project area is comprised of the entirety of NPS ownership within the boundaries of Padre Island National Seashore. This project will be conducted in accordance with §106 of the National Historic Preservation Act (NHPA) and other applicable laws, regulations, and policies.

To honor our government to government relationship, we hereby extend this opportunity to you for comment on this project. We look forward to your participation in this process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the EA is complete, we will make a copy available for your review and comment.

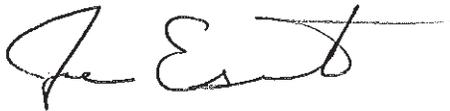
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We would appreciate any preliminary input you may have by February 10, 2013. If you have questions about the project or would like more information, please contact Scott Martin, Operations Supervisor, at (361) 949-9238 ext. 22 or by email at p_scott_martin@nps.gov.

Comments can be sent to:

Padre Island National Seashore
Attn: Fire Management Plan EA
P.O. Box 181300
Corpus Christi, TX 78480

Sincerely,

A handwritten signature in black ink, appearing to read "Joe Escoto". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Joe Escoto
Superintendent

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United States Department of the Interior



NATIONAL PARK SERVICE

Padre Island National Seashore
P.O. Box 181300
Corpus Christi, Texas 78418

IN REPLY REFER TO:

9.D.

January 8, 2013

President Don Patterson
Tonkawa Tribe of Oklahoma
1 Rush Buffalo Road
Tonkawa, OK 74653

Subject: Scoping Notice – Fire Management Plan Environmental Assessment, Padre Island National Seashore, Texas

Dear President Patterson:

The National Park Service (NPS) will be preparing an environmental assessment (EA) which will analyze the environmental effects of a new fire management plan that is proposed for Padre Island National Seashore, Texas. The proposed fire management plan is intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives.

The purpose of the proposed fire management plan for Padre Island National Seashore is to comply with new federal and NPS policies and to incorporate new scientific information into fire management planning within parks. In addition, the proposed plan intends to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and infrastructure within the national seashore. The plan also allows for the use of wildfire and prescribed fire to promote a healthy and sustainable ecosystem.

The project area is comprised of the entirety of NPS ownership within the boundaries of Padre Island National Seashore. This project will be conducted in accordance with §106 of the National Historic Preservation Act (NHPA) and other applicable laws, regulations, and policies.

To honor our government to government relationship, we hereby extend this opportunity to you for comment on this project. We look forward to your participation in this process and believe that it will help ensure that cultural resources are adequately considered and evaluated in the EA. When the EA is complete, we will make a copy available for your review and comment.



We would appreciate any preliminary input you may have by February 10, 2013. If you have questions about the project or would like more information, please contact Scott Martin, Operations Supervisor, at (361) 949-9238 ext. 22 or by email at p_scott_martin@nps.gov.

Comments can be sent to:

Padre Island National Seashore
Attn: Fire Management Plan EA
P.O. Box 181300
Corpus Christi, TX 78480

Sincerely,



Joe Escoto
Superintendent

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
c/o TAMU-CC, Campus Box 338
6300 Ocean Drive
Corpus Christi, Texas 78412

February 19, 2013

Joe Escoto
Padre Island National Seashore
ATTN: Fire Management Plan EA Comments
P.O. Box 181300
Corpus Christi, TX 78480

Consultation Number: 02ETCC00-2013-TA-0090

Dear Mr. Escoto:

This responds to your January 18, 2013, letter requesting that the U.S. Fish and Wildlife Service (Service) comment and provide information on federally listed threatened or endangered species that may occur on Padre Island National Seashore, Texas. The National Park Service (NPS) will be preparing an environmental assessment that will analyze the effects of a new fire management plan.

Federally Listed Species

We have enclosed an updated list of federally listed or proposed threatened and endangered species that have been documented or are known to occur in Kenedy, Kleberg and Willacy counties, Texas. Species information may be obtained at <http://ifw2es.fws.gov/endangeredspecies/lists/>. The species information should help you determine if suitable habitat for these listed species exists in any of the proposed project areas or if project activities may affect species on-site, off-site, and/or result in "take" of a federally listed species.

"Take" is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. In addition to the direct take of an individual animal, habitat destruction or modification can be considered take, regardless of whether it has been formally designated as critical habitat, if it would result in the death or injury of wildlife by removing essential habitat components or impairing essential behavior patterns, including breeding, feeding, or sheltering.

Section 7

Section 7 of the Endangered Species Act of 1973, as amended (ESA) requires that all Federal agencies consult with the Service to ensure that actions authorized, funded or carried out by such agencies do not jeopardize the continued existence of any listed

threatened or endangered species or adversely modify or destroy critical habitat of such species. *It is the responsibility of the Federal action agency to determine if the proposed project may affect threatened or endangered species.* If a “may affect” determination is made, the Federal agency shall initiate the formal section 7 consultation process by writing to: Field Supervisor; U.S. Fish and Wildlife Service; c/o TAMU-CC, Unit 5837; 6300 Ocean Drive; Corpus Christi, Texas 78412-5837. If no effect is evident, no further consultation is needed; however, we would appreciate the opportunity to review the criteria used to arrive at that determination.

No effect – the action agency determines its proposed action will not affect federally listed species or critical habitat. No section 7 consultation is necessary and the Service believes the agency has complied with section 7(a)(2) of the ESA by making the determination. However, if the project changes or additional information on the distribution of listed or proposed species becomes available the project should be reanalyzed for effects not previously considered.

May Affect, but is not likely to adversely affect – the action agency determines their project may affect listed species and or critical habitat; however, the effects are expected to be discountable, or insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effects. The action agency should seek written concurrence from the Service that adverse effects have been eliminated. If agreement cannot be reached the agency is advised to initiate formal consultation.

Is likely to adversely affect – the action agency determines adverse effects to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species but also is likely to cause some adverse effects to individuals of that species, then the proposed action “is likely to adversely affect” the listed species. An “is likely to adversely affect” determination requires formal section 7 consultation.

The Service recommends the action agency and/or non-federal representative maintain a complete record that identifies steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related articles. The Service’s Consultation Handbook is available at <http://endangered.fws.gov/consultations/s7hndbk/s7hndbk.html> for further information on definitions and process.

Migratory Birds

The Migratory Bird Treaty Act implements various treaties and conventions for the protection of migratory birds. Under the Act, taking, killing or possessing migratory birds is unlawful. Many may nest in trees, brush areas or other suitable habitat. The Service recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals, nests or eggs. If project activities must be conducted during this time, we recommend surveying

for nests prior to commencing work. If a nest is found, and if possible, the Service recommends a buffer of vegetation ($\geq 50\text{m}$ for songbirds, $> 100\text{m}$ for wading birds, and $> 180\text{m}$ for terns, skimmers and birds of prey) remain around the nest until young have fledged or the nest is abandoned. A list of migratory birds may be viewed at <http://migratorybirds.fws.gov/intrnltr/mbta/proposedbirdlist.pdf> or <http://federalregister.gov/a/2010-3294>.

State Listed Species

The State of Texas protects certain species. Please contact the Texas Parks and Wildlife Department (Endangered Resources Branch), 4200 Smith School Road, Austin, Texas 78744 (telephone 512/389-8021) for information concerning fish, wildlife, and plants of State concern or visit their website at <http://www.tpwd.state.tx.us/nature/endang/animals/mammals/>.

Beneficial Landscaping

In accordance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, where possible, any landscaping associated with project plans should be limited to seeding and replanting with native species. A mixture of grasses and forbs appropriate to address potential erosion problems and long-term cover should be planted when seed is reasonably available. Although Bermuda grass is listed in seed mixtures, this species and other introduced species should be avoided as much as possible. The Service also recommends the use of native trees, shrubs, and herbaceous species that are adaptable, drought tolerant and conserve water.

If we can be of further assistance, or if you have any questions about these comments, please contact Doug Phillips at 361/994-9005, or douglas_phillips@fws.gov. Please refer to the Service Consultation number listed above in any future correspondence regarding this project.

Sincerely,



for Allan M. Strand
Field Supervisor

Federally Listed as Threatened and Endangered Species of Texas
September 26, 2012

County-by-County lists containing species information is available at the U.S. Fish and Wildlife Service's (Service), Southwest Region, web site <http://www.fws.gov/southwest/es/EndangeredSpecies/lists>.

This list represents species that may be found in counties throughout the state. It is recommended that the field station responsible for a project area be contacted if additional information is needed.

DISCLAIMER

This County by County list is based on information available to the U.S. Fish and Wildlife Service at the time of preparation, date on page 1. This list is subject to change, without notice, as new biological information is gathered and should not be used as the sole source for identifying species that may be impacted by a project.

Kenedy County

Brown pelican	(DM)	<i>Pelecanus occidentalis</i>
Green sea turtle	(T)	<i>Chelonia mydas</i>
Gulf Coast jaguarundi	(E)	<i>Herpailurus yagouaroundi cacomitli</i>
Hawksbill sea turtle	(E w/CHI)	<i>Eretmochelys imbricata</i>
Kemp's Ridley sea turtle	(E)	<i>Lepidochelys kempii</i>
Leatherback sea turtle	(E w/CHI)	<i>Dermochelys coriacea</i>
Loggerhead sea turtle	(T)	<i>Caretta caretta</i>
Northern aplomado falcon	(E)	<i>Falco femoralis septentrionalis</i>
Ocelot	(E)	<i>Leopardus pardalis</i>
Piping plover	(T w/CH)	<i>Charadrius melodus</i>
Red knot	(C)	<i>Calidris canutus ssp. rufa</i>
Sprague's pipit	(C)	<i>Anthus spragueii</i>
West Indian manatee	(E)	<i>Trichechus manatus</i>
Whooping crane	(E w/CH)	<i>Grus americana</i>

Kleberg County

Black lace cactus	(E)	<i>Echinocereus reichenbachii</i> var. <i>albertii</i>
Brown pelican	(DM)	<i>Pelecanus occidentalis</i>
Green sea turtle	(T)	<i>Chelonia mydas</i>
Gulf Coast jaguarundi	(E)	<i>Herpailurus yagouaroundi cacomitli</i>
Hawksbill sea turtle	(E w/CHI)	<i>Eretmochelys imbricata</i>
Kemp's Ridley sea turtle	(E)	<i>Lepidochelys kempii</i>
Leatherback sea turtle	(E w/CHI)	<i>Dermochelys coriacea</i>
Loggerhead sea turtle	(T)	<i>Caretta caretta</i>
Northern aplomado falcon	(E)	<i>Falco femoralis septentrionalis</i>
Ocelot	(E)	<i>Leopardus pardalis</i>
Piping plover	(T w/CH)	<i>Charadrius melodus</i>
Red knot	(C)	<i>Calidris canutus ssp. rufa</i>
Slender rush-pea	(E)	<i>Hoffmannseggia tenella</i>
South Texas ambrosia	(E)	<i>Ambrosia cheiranthifolia</i>
Sprague's pipit	(C)	<i>Anthus spragueii</i>

West Indian manatee	(E)	<i>Trichechus manatus</i>
Whooping crane	(E w/CH)	<i>Grus americana</i>
Willacy County		
Brown pelican	(DM)	<i>Pelecanus occidentalis</i>
Green sea turtle	(T)	<i>Chelonia mydas</i>
Gulf Coast jaguarundi	(E)	<i>Herpailurus yagouaroundi cacomitli</i>
Hawksbill sea turtle	(E w/CHI)	<i>Eretmochelys imbricata</i>
Kemp's Ridley sea turtle	(E)	<i>Lepidochelys kempii</i>
Leatherback sea turtle	(E w/CHI)	<i>Dermochelys coriacea</i>
Loggerhead sea turtle	(T)	<i>Caretta caretta</i>
Northern aplomado falcon	(E)	<i>Falco femoralis septentrionalis</i>
Ocelot	(E)	<i>Leopardus pardalis</i>
Piping plover	(T w/CH)	<i>Charadrius melodus</i>
Red knot	(C)	<i>Calidris canutus ssp. rufa</i>
Sprague's pipit	(C)	<i>Anthus spragueii</i>
Texas Ayenia	(E)	<i>Ayenia limitaris</i>
West Indian manatee	(E)	<i>Trichechus manatus</i>

INDEX

Statewide or areawide migrants are not included by county, except where they breed or occur in concentrations. The whooping crane is an exception; an attempt is made to include all confirmed sightings on this list.

- E = Species in danger of extinction throughout all or a significant portion of its range.
- T = Species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
- DM = Delisted, monitoring for 5 years
- C = Species for which the Service has on file enough substantial information to warrant listing as threatened or endangered.
- CH = Critical Habitat (in Texas unless annotated I)
- P/ = Proposed ...
- P/E = Species proposed to be listed as endangered.
- P/T = Species proposed to be listed as threatened.
- G = with special rule
- I = CH designated (or proposed) outside Texas
- ~ = protection restricted to populations found in the Ainterior@ of the United States. In Texas, the least tern receives full protection, except within 50 miles (80 km) of the Gulf Coast.

TEXAS HISTORICAL COMMISSION
real places telling real stories

1 February 2013

Joe Escoto
Superintendent
Padre Island National Seashore
National Park Service
P.O. Box 181300
Corpus Christi, TX 78480

Re: National Environmental Policy Act Environmental Assessment Notice for the Proposed New Fire Management Plan for Padre Island National Seashore, Corpus Christi, Nueces County, Texas, National Park Service (NPS)

Dear Mr. Escoto:

Thank you for your notice on the above-referenced project which we received on January 14, 2013. This letter serves as official comment from the State Historic Preservation Officer (SHPO), the Executive Director of the Texas Historical Commission (THC).

The review staff, led by Sarah K. Birtchet and Jeff Durst, has completed its review of the notice provided. It is our understanding that the National Park Service (NPS) will be preparing an environmental assessment (EA) in compliance with the National Environmental Policy Act (NEPA) for the proposed new fire management plan for Padre Island National Seashore in Corpus Christi, Texas.

NPS as a federal agency also has legal obligations under Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) and its implementing regulations. As the SHPO for Texas we have made efforts to standardize the information that is required by Section 106 and submitted to our office. Our website outlines the information our staff needs to review these projects for Section 106 compliance. You can find this information at <http://www.thc.state.tx.us/project-review/what-send-project-review>.

Thank you for your cooperation in this federal review process. We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. **If you have any questions regarding our review or if we can be of further assistance, please contact Sarah K. Birtchet, Historian, Federal Programs at sarah.birtchet@thc.state.tx.us or 512/936.7403.**

Best Regards,



Sarah K. Birtchet, Historian, Federal Programs
For: Mark Wolfe, State Historic Preservation Officer

CC: Scott Martin, Operations Supervisor, National Park Service





Life's better outside.®

February 8, 2013

Padre Island National Seashore
ATTN: Fire Management Plan EA Comments
P.O. Box 181300
Corpus Christi, TX 78480

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Houston

Dick Scott
Wimberley

Lee M. Bass
Chairman-Emeritus
Fort Worth

Carter P. Smith
Executive Director

RE: Preparation of an Environmental Assessment for new fire management plan for Padre Island National Seashore, Texas

Dear Superintendent Escoto:

This letter is in response to your request for comments regarding the proposed project referenced above. The National Park Service (NPS) will be preparing an environmental assessment (EA) to analyze the effects of a new fire management plan for Padre Island National Seashore.

Project Description

The NPS will prepare an EA to analyze the environmental effects of a new fire management plan for the Padre Island National Seashore. The purpose of a new fire management plan is to comply with new federal and NPS policies, to incorporate new scientific information into fire management planning, ensure the health and safety of firefighters, NPS staff and the public, and to protect cultural and natural resources and infrastructure within the National Seashore.

General Comments

TPWD agrees that the use of prescribed fire can promote a healthy and sustainable ecosystem and commends the NPS for utilizing prescribed fire as a management tool. Historically, in South Texas and the Coastal Bend, natural and man-caused fires occurred frequently. A prescribed burning program, in conjunction with wildlife management (e.g., deer harvest management), is an effective tool for managing wildlife habitat.

Recommendation: The proposed fire management plan should include specific natural resource management and ecological goals to be achieved by using fire as a management tool. For example, reducing fuel loads to prevent wildfires versus fertilizing range sites to increase plant growth vigor from ash.

Fire plans should consider time of year, existing fuel load, existing grazing practices (if applicable), and climatic conditions (e.g., drought). Considering these factors will allow the behavior of a fire to be determined

Superintendent Escoto
Page 2 of 2
February 8, 2013

as well as predicting the results of the fire. For more information on prescribed burning, please see: http://www.tpwd.state.tx.us/landwater/land/habitats/southtx_plain/habitat_management/fire.phtml and the document entitled, "Prescribed Range Burning in Texas" available from a link on that site.

I appreciate the opportunity to review and comment on this project. Please contact me at (361) 825-3240 if we may be of further assistance.

Sincerely,



Russell Hooten
Wildlife Habitat Assessment Program
Wildlife Division

/rh 4307

**APPENDIX C:
BIOLOGICAL ASSESSMENT**

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National Park Service
U.S. Department of the Interior

Padre Island National Seashore
Texas



Fire Management Plan Biological Assessment

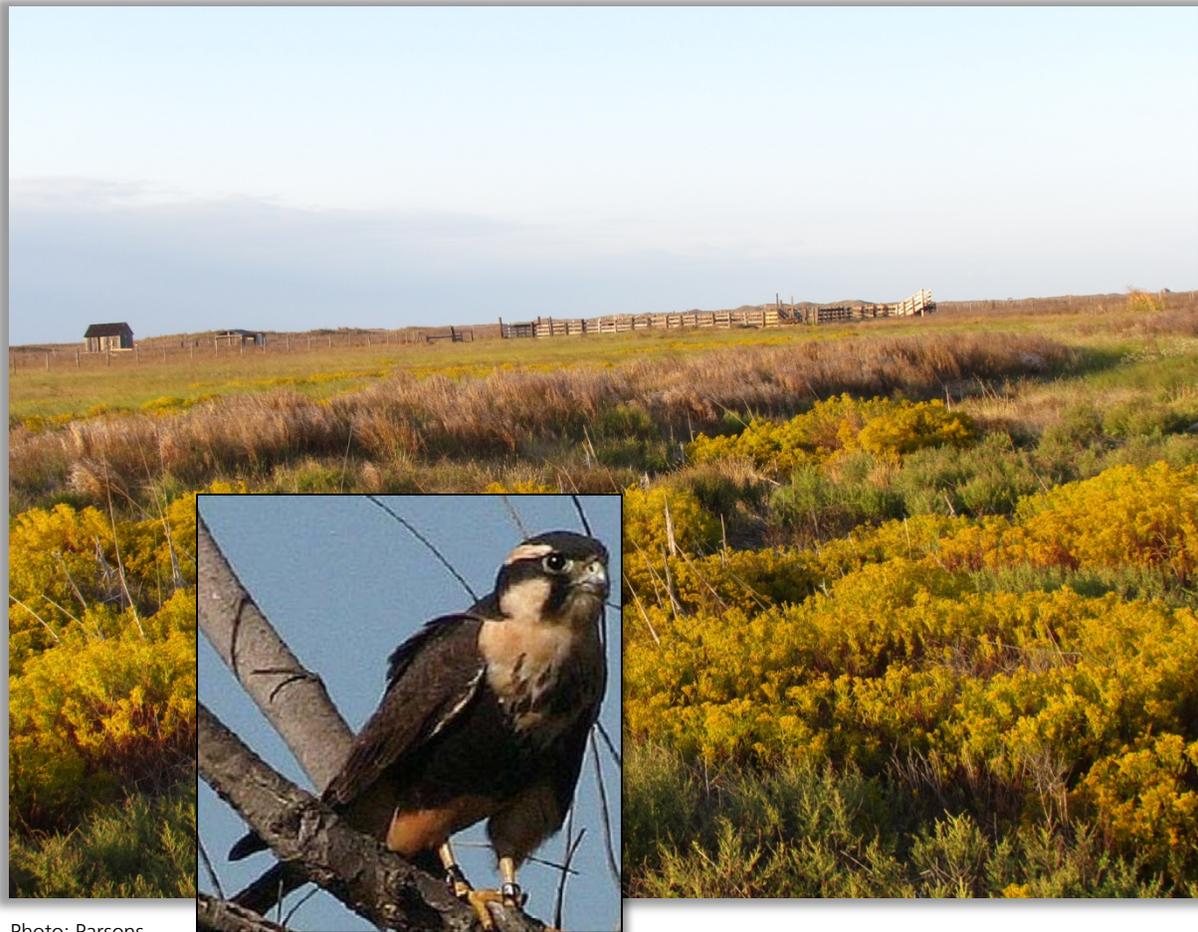


Photo: Parsons

Photo: NPS, Dwight Sokoll

January 2014

Contact:
Travis Poulson, Acting Superintendent
Padre Island National Seashore
Attn: Fire Management Plan Biological Assessment
P.O. Box 181300
Corpus Christi, TX 78480
(361) 949-8068

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CONTENTS

1.0 INTRODUCTION 137

- 1.1 PURPOSE OF THIS BIOLOGICAL ASSESSMENT 137
- 1.2 CURRENT MANAGEMENT DIRECTION 137

2.0 CONSULTATION HISTORY 138

3.0 PROPOSED MANAGEMENT ACTION AND ALTERNATIVES CONSIDERED 138

- 3.1 THE PROPOSED ACTION ALTERNATIVE 138
 - 3.1.1 Fire Suppression Strategy 138
 - 3.1.2 Planned Events 140
- 3.2 The No Action Alternative 142

4.0 PROJECT AREA DESCRIPTION 142

- 4.1 VEGETATION COMMUNITIES 142
 - 4.1.1 Beach 143
 - 4.1.2 Dunes 143
 - 4.1.3 Coastal Prairie 143
 - 4.1.4 Wetlands 144
 - 4.1.5 Vegetation on the Natural and Dredge-Material Islands 144
 - 4.1.6 Exotic Species 144
- 4.2 CLIMATE 144
- 4.3 FIRE MANAGEMENT UNITS 145
 - 4.3.1 Malaquite Beach Fire Management Unit 145
 - 4.3.2 Down Island Fire Management Unit 145

5.0 PRE-FIELD REVIEW 146

6.0 SPECIES CONSIDERED AND EVALUATED 146

7.0 EVALUATED SPECIES INFORMATION 149

- 7.1 FIELD RECONNAISSANCE 149
- 7.2 SPECIES STATUS AND BIOLOGY 149
 - 7.2.1 Kemp's Ridley Sea Turtle 149
 - 7.2.2 Loggerhead Sea Turtle 150
 - 7.2.3 Green Sea Turtle 151
 - 7.2.4 Hawksbill Sea Turtle 151
 - 7.2.5 Leatherback Sea Turtle 151
 - 7.2.6 Piping Plover 152
 - 7.2.7 Northern Aplomado Falcon 152
 - 7.2.8 Black-capped Vireo 153
 - 7.2.9 Red Knot 153
 - 7.2.10 Sprague's Pipit 153

CONTENTS (continued)

8.0 ENVIRONMENTAL BASELINE 154

- 8.1 POTENTIAL VEHICLE EFFECTS ON ALL SPECIES OF SEA TURTLES 154
- 8.2 POTENTIAL FIRE SUPPRESSION EFFECTS ON AVIAN SPECIES 156
- 8.3 PREVIOUS CONSULTATIONS WITHIN THE ANALYSIS AREA 156
- 8.4 PAST AND CURRENT ACTIVITIES WITHIN THE ANALYSIS AREA 156

9.0 EFFECTS TO EVALUATED SPECIES AND DETERMINATIONS 157

- 9.1 FEDERALLY LISTED SPECIES 157
 - 9.1.1 Sea Turtles 157
 - 9.1.2 Northern Aplomado Falcon 158
 - 9.1.3 Piping Plover 158
 - 9.1.4 Black-capped Vireo 158
 - 9.1.5 Red Knot 159
 - 9.1.6 Sprague's Pipit 159
 - 9.1.7 Cumulative Effects 159
- 9.2 INTERRELATED AND INTERDEPENDENT ACTIONS AND THEIR EFFECTS 161
 - 9.2.1 Acquisition of Texas General Land Office Property North of the Seashore 159
 - 9.2.2 Oil and Gas Management Plan and Oil and Gas Operations on Padre Island National Seashore and General Land Office Lands 160
 - 9.2.3 Construction of Cabins for Turtle Monitoring 160
 - 9.2.4 Colonial Waterbird Management Plan 160
 - 9.2.5 Beach Vehicle Environmental Assessment 160
 - 9.2.6 Beach Debris and Clean-Up 160
 - 9.2.7 Interrelated and Interdependent Actions and Their Effects 161
 - 9.2.8 Incidental Take 161
 - 9.2.9 Cumulative Effects Determination 161
- 9.3 CRITICAL HABITAT 161

10.0 EFFECT DETERMINATION SUMMARY 161

11.0 NEED FOR RE-ASSESSMENT BASED ON CHANGED CONDITIONS 162

12.0 LITERATURE CITED 162

TABLES

- TABLE 1. THREATENED, ENDANGERED, AND CANDIDATE/PROPOSED SPECIES WITH THE POTENTIAL TO OCCUR WITHIN PADRE ISLAND NATIONAL SEASHORE 147
- TABLE 2. PAST CONSULTATIONS WITH THE U.S. FISH AND WILDLIFE SERVICE 156
- TABLE 3. EFFECT DETERMINATIONS FOR SPECIES ADDRESSED 162

1.0 INTRODUCTION

The Endangered Species Act of 1973 (16 U.S.C. 153 *et seq.*), as amended (ESA or Act) requires lands under federal jurisdiction to conserve and recover listed species and use their authorities in furtherance of the purposes of the Act by carrying out programs for the conservation of endangered and threatened species (50 CFR §402). ESA directs all federal agencies to consult (referred to as section 7 consultation) with the U.S. Fish and Wildlife Service (FWS) when their activities “may affect” a listed species or designated critical habitat. The Act also mandates that federal agencies contribute to the conservation of federally listed species by utilizing their authorities to conserve (recover) federally listed species so that listing is no longer necessary. Additionally, NPS Management Policy (2006) states we must also “. . .inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible.”

1.1 PURPOSE OF THIS BIOLOGICAL ASSESSMENT

This biological assessment (BA) analyzes the potential effects of the proposed Padre Island National Seashore (Seashore) Fire Management Plan on federally listed endangered, threatened, proposed for listing, or candidate species, and designated critical habitats, pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended. Federally listed endangered, threatened, proposed for listing, or candidate species and designated critical habitat meeting the following criteria are addressed in this assessment:

- Known to occur in the seashore based on confirmed sightings;
- May occur in the seashore based on unconfirmed sightings;
- Potential habitat exists for the species in the seashore; or
- Potential effects may occur to these species.

1.2 CURRENT MANAGEMENT DIRECTION

Current management direction for federally listed and proposed threatened and endangered species can be found in the following documents, filed at our office:

- Endangered Species Act of 1973, as amended (ESA or Act)
- 1916 NPS Organic Act
- NPS General Authorities Act of 1978
- NPS Management Policies 2006
- Migratory Bird Treaty Act (MBTA)
- National Environmental Policy Act (NEPA)
- Species-specific recovery plans which establish population goals for recovery
- Species management plans, guides, or conservation strategies

2.0 CONSULTATION HISTORY

Preparation of the Fire Management Plan and its environmental assessment were started in late 2012. No previous consultation with the U.S. Fish and Wildlife Service has occurred in association with this project.

3.0 PROPOSED MANAGEMENT ACTION AND ALTERNATIVES CONSIDERED

The National Park Service is preparing this fire management plan biological assessment in conjunction with the National Environmental Policy Act (NEPA) environmental assessment. The Secretary of the Interior, through NPS wildland fire policy directives and Director's Order #18 Wildland Fire Management (NPS 2008a), requires parks with burnable vegetation to have a fire management plan. These plans are intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives. In preparing a new fire management plan for Padre Island National Seashore, the National Park Service seeks to provide management direction by following the National Park Service and other federal government policies and scientific information. In addition, the purpose of the fire management plan at Padre Island National Seashore is to ensure the health and safety of firefighters, NPS staff, and the public while protecting cultural and natural resources and developed areas within the park. The plan also allows for the use of wildfire and prescribed fire to promote a healthy and sustainable ecosystem. The National Park Service is considering two alternatives in the preparation and development of a new fire management plan for Padre Island National Seashore; the proposed action and a no action alternative.

3.1 THE PROPOSED ACTION ALTERNATIVE

The proposed action, a mix of fire management tactics and strategies, would include wildfire suppression, mechanical fuel reductions, and the use of prescribed fire. Under the proposed action, wildfire could be used for fuel reduction as well as for resource benefit. Details regarding the proposed actions are presented below.

3.1.1 Fire Suppression Strategy

All wildland fire suppression activities would provide for firefighter and public safety as the highest consideration. Suppression tactics would strive to protect park resources, minimize potential damage to natural and cultural resources, and take into consideration economic expenditures. As stated previously, the incident commander would determine appropriate suppression tactics. Tactics may include creating indirect fuel breaks around a fire, allowing the fire to burn to a fuel break or natural feature and burn itself out, or to create direct fuel breaks to immediately suppress the fire. Tactics used to suppress wildfire include direct and indirect attack, and contain and confine. Based on the National Wildfire Coordinating Group *Wildland Fire Incident Management Field Guide* (2013), these tactics are defined as:

- Direct attack: Any treatment applied directly to burning fuel such as wetting, smothering, or chemically quenching the fire or by physically separating the burning from unburned fuel. For example constructing a fireline on the fire perimeter.
- Indirect attack: A method of suppression in which the control line is located some considerable distance away from the fire's active edge. Generally done in the case of a fast-spreading or high-intensity fire and to utilize natural or constructed firebreaks or fuelbreaks and favorable breaks in the topography. The intervening fuel is usually backfired; but occasionally the main fire is allowed to burn to the line, depending on conditions.

- Confine: To restrict the wildfire within determined boundaries, established either prior to, or during the fire. These identified boundaries will confine the fire, with no action being taken to put the fire out.
- Contain: To restrict a wildfire to a defined area, using a combination of natural and constructed barriers that will stop the spread of the fire under the prevailing and forecasted weather conditions, until out.

The contain and confine tactics include monitoring plus varying types and intensities of operational actions to delay, direct or check fire spread. Actions taken are based on the values at risk and /or resource benefit opportunities. Typically these tactics utilize both direct and indirect strategies.

Creating a fuel break around a fire could include natural barriers or could consist of manually and/or mechanically constructed lines. Using natural fuel breaks could increase fire size, but could provide for firefighter safety and reduce disturbances on the land.

More aggressive fire suppression could employ a variety of tools. An example of an aggressive suppression strategy would be to directly attack along the fire's edge with hand crews, heavy equipment, water pumps (fire engines) with fire hoses, and aircraft. Generally, direct attack using heavy equipment (engines) would be used along existing roads, preventing resource damage from off-road equipment use and reducing firefighter risk. It is possible that heavy equipment may travel off-road if necessary, and with superintendent's approval. In rare situations the use of bulldozers, graders, or other heavy equipment could be used, but only after approval on a case-by-case basis by the Superintendent. It should be noted that fire retardant and the use of heavy equipment off park roads has not occurred on park fires in the past.

Mechanical equipment could be used during response to wildfires. Types of mechanical treatments could include vegetation removal by any of the methods described below.

- Manual equipment (e.g., shovels, saws, axes, Pulaski's, and chainsaws),
- Mechanical equipment (wheeled or tracked) (e.g., light-on-the-land forestry equipment that includes all-terrain-vehicles with attachments, such as mowers, chippers and small tractors pulling/attaching similar equipment, as well as aerial equipment, such as airplanes and helicopters).

Mechanized wheeled or track equipment could be used in wildland urban interface areas within developed areas of the park.

Heavy equipment that uses large tires or large tracks resulting in less ground disturbance would be the first choices for use. Projects that require equipment with possible ground disturbing effects would be planned/mitigated and implemented when resource conditions allow, reducing impacts to soil and vegetation.

Water pumps on fire engines are commonly used to apply water or suppression chemicals to burning material to extinguish fire.

Aircraft used to fight wildfire range from very large tanker planes to small helicopters. These aircraft deliver water or liquid fire retardant from the bodies of planes and large helicopters, or from buckets suspended from other helicopters. The application ranges from hundreds of gallons to thousands of gallons of water or fire retardant.

In accordance with the *Interagency Standards for Fire and Fire Aviation Operations* (USDA and UDSOI 2013) only approved chemicals are to be used in fire operations. Approved chemicals are listed by the U.S. Forest Service (U.S. Forest Service 2012) and include retardants and foam. Retardants are most often delivered in fixed or rotor-wing aircraft although some products are formulated specifically for delivery from the ground. Fire suppressant foams are combinations of wetting and foaming agents added to water to improve the efficiency of water and are delivered by engines and portable pumps. Helicopters and single engine

airtankers can also deliver foam. Foam would not be used near watercourses where accidental spillage or overspray of the chemical could be harmful to the aquatic ecosystem.

3.1.1.1 Use of Wildland Fire

Wildland fires could be managed to accomplish specific resource management goals and/or objectives in pre-defined fire management units within the park. Many of the suppression tactics previously described could be used to manage wildland fire use.

The use of wildland fire would meet similar objectives as prescribed fire. The fire could be managed to:

- Reduce hazardous fuels,
- Reintroduce fire into fire dependent plant communities,
- Restore natural ecosystems that have been modified by prolonged fire exclusion,
- Restore vegetative composition, and
- Maintain natural systems.

Use of wildland fire would follow a Wildland Fire Implementation Plan (WFIP) that would be created for each fire. The plan would describe the maximum manageable areas, available resources, monitoring plans, and identified threatened resources, and would also establish trigger points for implementing suppression actions if, needed.

3.1.1.2 Manual and Mechanical Fuel Reduction

Manual and mechanical equipment could be used to reduce fuels as a stand-alone fuels treatment method or in combination with other treatments in preparation for a prescribed fire project. The equipment used would include non-mechanized and mechanized handheld tools, and mechanized equipment as described above in the fire suppression strategy section.

Mechanical fuel treatments (mowing & line trimmers) along some park road shoulders and around/in the Novillo Line Camp, sensitive resource areas (i.e. oak mottes), and other park facilities, would be conducted to reduce hazardous fuels and reduce accidental vehicle ignitions.

Vegetation thinning would reduce the fuel load available to support either a prescribed fire or wildfire. Fuel reduction could be used alone to reduce the intensity of a potential wildfire or it could be used prior to a prescribed burn to minimize the intensity and help maintain control of the fire. The need for using fuel reduction techniques would be determined in consultations between NPS resource management specialists, fire ecologists, and a fire management officer.

A number of provisions would guide NPS selection and use of mechanical equipment. Prior to implementing fuel reduction efforts, the equipment to be used for the specific vegetation being targeted would be clearly identified. Seasonal use restrictions would be considered as well as any restrictions related to weather or species sensitivity. Both short- and long-term monitoring of fuel reductions would take place to determine the success in meeting project objectives and the effectiveness of protecting resources.

3.1.2 Planned Projects

The proposed action would involve the use of multiple strategies to reduce fuel loads for health and safety purposes, as well as for resource and/or structure protection. Prescribed fire would also be used for resource benefit.

Under the proposed action, fuel reduction actions would involve the use of mechanical thinning and prescribed fire or a combination of these tools around facilities and infrastructure, cultural sites, along roads, trails, and in the wildland urban interface.

3.1.2.1 Prescribed Fire

Prescribed fire would be conducted as described under alternative A. However, the objectives for prescribed fire use under alternative B would be expanded to include:

- Reduce hazardous fuels,
- Reintroduce fire into fire dependent vegetation communities,
- Restore natural ecosystems that have been modified by prolonged fire exclusion,
- Improve vegetative compositions to natural levels (example enhance habitat and forage quality for wildlife),
- Reduce debris or dispose of mechanically treated fuels, and
- Conduct maintenance burning where natural fires could not be managed.

The use of prescribed fire would consider factors such as seasonal use restrictions, weather restrictions, firefighter resources, visitor use, species sensitivity, or other concerns that may affect equipment use or operations related to prescribed fire.

Many methods and strategies that were described previously within the fire suppression strategy section could be used to control and manage prescribed fire (e.g., aviation use for management or control).

Small-scale prescribed fire (50 acres or less) would be used to control hazardous fuels in the urban interface and visitor use areas and to protect petroleum facilities. Park areas likely to be chosen for prescribed fire projects include Bird Island Basin, park headquarters, the Malaquite Visitor Center and campground, oil and gas facilities, and existing road corridors. Prescribed fire would not be used for the benefit of park resources.

The National Park Service would use the most current version of the Interagency Prescribed Fire Planning and Implementation Procedures Guide as direction for planning, implementing, and evaluating prescribed burns. As stated in the guide, “As one component of fire management, prescribed fire is used to alter, maintain, or restore vegetative communities; achieve desired resource conditions; and to protect life, property, and values that would be degraded and/or destroyed by wildfire.”

Operational guidelines for a prescribed fire would be presented for each proposed project in a detailed prescribed fire plan, as described in the Interagency Prescribed Fire Planning and Implementation Procedures Guide (USDA and USDOJ 2008) appendices. The details for each proposed prescribed fire would depend on its purpose, vegetation to be burned, specific objectives, and location of the proposed project. These details would require review and approval by NPS fire specialists and managers.

Prescribed fires are defined as any fire that is ignited by management to meet specific objectives. Prescribed fires could be used anywhere within the park to reduce hazardous fuels and to reduce debris or dispose of mechanically treated fuels or for restoration/maintenance of the ecosystem.

As described for mechanical fuel reduction activities, use of prescribed fire would consider factors such as seasonal use restrictions, weather restrictions, firefighter resources, visitor use, species sensitivity, or other concerns that may affect equipment use or operations related to prescribed fire.

Many of the suppression methods and strategies that were described previously under the fire suppression strategy section could be used to manage prescribed fire.

3.2 THE NO ACTION ALTERNATIVE

The no action alternative would include wildfire suppression as the only strategy to manage fire within the park. The description of fire suppression strategies under the no action alternative is the same as that provided above for the proposed action.

4.0 PROJECT AREA DESCRIPTION

The fire management plan would apply to all of Padre Island National Seashore (see figure 1). Located in Kleberg, Kenedy, and Willacy Counties in southeast Texas, the seashore is comprised of low-lying barrier islands between the Gulf of Mexico and Laguna Madre. The legal description of the seashore is as follows (16 USC § 459d):

Beginning at a point one statute mile northerly of North Bird Island on the easterly line of the Intracoastal Waterway; thence due east to a point on Padre Island one statute mile west of the mean high water line of the Gulf of Mexico; thence southwesterly paralleling the said mean high water line of the Gulf of Mexico a distance of about three and five-tenths statute miles; thence due east to the two-fathom line on the east side of Padre Island as depicted on National Ocean Survey chart numbered 1286; thence along the said two-fathom line on the east side of Padre Island as depicted on National Ocean Survey charts numbered 1286, 1287, and 1288 to the Willacy-Cameron County line extended; thence westerly along said county line to a point 1,500 feet west of the mean high water line of the Gulf of Mexico as that line was determined by the survey of J. S. Boyles and is depicted on sections 9 and 10 of the map entitled "Survey of Padre Island made for the office of the Attorney General of the State of Texas", dated August 7 to 11, 1941, and August 11, 13, and 14, 1941, respectively; thence northerly along a line parallel to said survey line of J. S. Boyles and distant there from 1,500 feet west to a point on the centerline of the Port Mansfield Channel; thence westerly along said centerline to a point three statute miles west of the said two-fathom line; thence northerly parallel with said two-fathom line to 27 degrees 20 minutes north latitude; thence westerly along said latitude to the easterly line of the Intracoastal Waterway; thence northerly following the easterly line of the Intracoastal Waterway as indicated by channel markers in the Laguna Madre to the point of beginning.

Padre Island National Seashore is the longest stretch of undeveloped barrier island in the world. In addition to its 70 miles of protected coastline, it includes important ecosystems such as rare coastal prairie, a complex and dynamic dune system, wind tidal flats, and the Laguna Madre, one of the few hypersaline lagoon environments left in the world. The national seashore and surrounding waters provide important habitat for marine and terrestrial plants and animals, including a number of rare, threatened, and endangered species.

Situated along the Central Flyway, Padre Island is a globally important area for over 380 migratory, overwintering, and resident bird species (nearly half of all bird species documented in North America), some of which are considered species of concern, threatened, or endangered. In addition, the Kemp's ridley sea turtle is the most endangered sea turtle species in the world and nests on the beaches within the seashore from late April through mid-July. The national seashore also has a rich history, including the Spanish shipwrecks of 1554 (NPS 2013a).

4.1 VEGETATION COMMUNITIES

Prior to the park's establishment, cattle grazing, burning, and military activities degraded existing plant communities. Following establishment of the national seashore in 1963, these activities were phased out, allowing vegetation structure and species composition to return to a more natural state. Physical factors such as high temperatures, sun exposure, salinity, isolation from the mainland, and high levels of disturbance from hurricanes and fire influence the structure and composition of plant communities on the island. Low-lying grasses, forbs, and shrubs are the predominant vegetation life forms that have adapted to the harsh, salty

environment. The small tree population primarily consists of mesquite (*Prosopis spp.*), live oak (*Quercus sp.*), and willow (*Salix spp.*). Stunted oak trees grow clustered on low dunes referred to as oak motes. There are over 450 flowering plant species from 77 families in the park (Cooper et al. 2005).

From the gulf to the lagoon, a width that varies along the island from one-half to three miles, the park's landscape changes from beaches to ridges of fore-island dunes, then to grasslands broken by scattered small dunes, ponds, and wetlands, and finally to transitional back-island dunes and mudflats that merge with the waters of Laguna Madre (NPS 2000). Vegetation at Padre Island National Seashore is composed of beach, dune, coastal prairie, and wetland communities that are predominantly herbaceous in nature. Each community is briefly described below.

4.1.1 Beach

On the landward edge of the beach, a few salt-tolerant plants such as glasswort (*Salicornia spp.*), sea purslane (*Sesuvium portulacastrum*), and seashore dropseed (*Sporobolus spp.*) are established. The glassworts are succulent, annual "halophytes", or plants that thrive in saline environments like sea coasts and salt marshes. Dropseed grasses are typical prairie and savanna plants occurring in open habitat in warmer climates (Smith 2002a). These plants can form mats of vegetation important in the initial stages of dune formation. Behind the primary dunes, the landscape becomes a mixture of back dunes, coastal prairie, and wetlands. In the spring and summer, bands of Sargassum seaweed are deposited and provide organic input and forage for many beach species (Withers et al. 2004). This line of vegetation is often referred to as the wrack.

4.1.2 Dunes

Because dunes are constantly being created and eroded, the amount and types of vegetation can vary depending on the development stage of the dune. More-established dunes generally have a larger amount of vegetative cover, while newly forming dunes may be nearly bare. Along the western edge of the island and in some interior locations, active dune fields are continually modified by strong winds and are almost devoid of vegetation. The few plants that can grow in these areas include beach croton (*Croton punctatus*), sedge (*Carex spp.*), and sea oats (*Uniola paniculata*). As vegetation becomes established, it stabilizes dune movement. Other dune species include railroad vine (*Ipomoea pes-caprae*), beach pea (*Lathyrus maritimus*), and beach evening primrose (*Oenothera drummondii*).

Vegetative cover also varies by location. On the windward side of the dune, cover averages 53 percent, while on the leeward side it can increase to 70 percent (Cooper et al. 2005). From the beach to the crest of the dune, sea spray can affect plants, and these species must be salt tolerant. Plant density also affects dune height by increasing sand accumulation (NPS 2000). The park's higher dune fields are typically dominated by seacoast bluestem (*Schizachyrium littorale*), camphor weed (*Heterotheca subaxillaris*), and bitter panicum (*Panicum amarum*), with cover between 75 to 95 percent.

4.1.3 Coastal Prairie

West of the foredune ridge, the coastal prairie begins in the island interior. Topography varies from flat to rolling dunes up to 10 feet high (Cooper et al. 2005). Coastal prairie is somewhat different from the tallgrass prairie communities found in the Midwest because the coastal prairie receives an average of 33.53 inches of precipitation per year versus 28 inches received in the tallgrass prairie (USGS 2005). Like the Midwest prairie, fire plays an important role in maintaining the coastal prairie community.

4.1.4 Wetlands

Based on the Cowardin et al. 1979 classification system, wetland communities found on North Padre Island include ephemeral ponds, freshwater wetlands supported by groundwater, wind-tidal flats, and marine subtidal aquatic beds.

Freshwater wetlands are common in swales in the island's interior. In some instances, the wind has removed sand down to the water table. In others, seasonal rains accumulate in low spots and form ephemeral wetlands. On the west side of the island, marsh vegetation is typically both salt and freshwater tolerant. The dominant species is swordgrass (*Scirpus americanus*), along with seacoast bluestem (*Schizachyrium scoparium* var. *litoralis*), fleabane (*Erigeron procumbens*), roundstem (*Paspalum monostachyum*), narrowleaf sumpweed (*Iva angustifolia*), and marsh hay cordgrass (*Spartina patens*). These marshes often transition to salt flats and seagrass beds in Laguna Madre.

Where barrier islands meet the lagoon side of the island, there typically are salt flats, where the estuarine waters partially inundate the barrier island's edge. Salt flats along the Texas coast are referred to as wind-tidal flats because water movement is largely a function of wind patterns rather than tides. Some sections of the wind-tidal flats are covered by mats of blue-green algae (cyanobacteria). While wind-tidal flats look barren, the amount of algal material produced by photosynthesis, known as primary productivity, may be nearly as much as in marine subtidal aquatic bed such as seagrass beds (Withers 2002). In marine subtidal aquatic beds, dominant vegetation includes shoalgrass (*Halodule wrightii*), turtle grass (*Thalassia testudinum*), widgeon grass (*Ruppia maritima*), and manatee grass (*Syringodium filiforme*). Many species of marine algae are also found in the waters of Laguna Madre and at the Mansfield Channel jetties.

4.1.5 Vegetation on the Natural and Dredge-Material Islands

Some islands in Laguna Madre developed naturally over time, while most are man-made from material dredged from the Gulf Intracoastal Waterway. On the natural islands, such as North Bird and South Bird Islands, vegetation is composed of native herbaceous species. The man-made islands range from unvegetated to heavily vegetated with herbaceous and woody species, including some exotic species.

4.1.6 Exotic Species

On North Padre Island, Kleberg bluestem (*Andropogon annulatus*) is an introduced pasture grass that has become established along the main roadways in the park where regular mowing occurs. Another exotic species, guinea grass (*Urochloa maxima*), has been observed recently as well. These two species, as well as several other exotic grasses, have replaced the native flora to varying degrees. No exotic species have been reported in the inland waters (Withers et al. 2004).

Exotic vegetation is not present on the natural islands but is present on a number of the dredge-material islands. In addition to the grasses noted above, exotic species include tamarisk (*Tamarix spp.*), Brazilian pepper (*Schinus terebinthifolius*), oleander (*Nerium oleander*), and date palm (*Phoenix spp.*) (NPS 2004b). Some of these exotic species were planted around cabins constructed before the area became a national park (NPS 1999). King Ranch bluestem (*Andropogon ischaemum*) is the dominant grass on several of the active nesting islands for colonial waterbirds. In addition, smaller amounts of Johnson grass (*Sorghum halpense*) have invaded these islands (Withers et al. 2004).

4.2 CLIMATE

Padre Island has long, hot summers and short, mild winters. In summer, high temperatures average in the upper 80s and low 90s (Fahrenheit) with lows in the 70s. Afternoon and evening sea breezes help to moderate summer temperatures. In the winter, highs are commonly in the 60s with lows in the 40s and 50s.

Winter cold fronts can occasionally drop temperatures into the upper 30s, but rarely below that. In the spring and fall, highs average in the 70s-80s with lows in the 50s-60s. Throughout the year the relative humidity seldom drops below 70 percent. Most rain falls near the beginning and end of hurricane and tropical storm season, which lasts from June to October (NPS 2013a NPS park website).

4.3 FIRE MANAGEMENT UNITS

The proposed fire management plan would apply to all of Padre Island National Seashore and would be implemented in two fire management units as described below.

4.3.1 Malaquite Beach Fire Management Unit

The Malaquite Beach Fire Management Unit encompasses 5,018 acres extending from the northern park boundary to Pan Am Road at approximately milepost 7 (see figure 2 in the EA). As in alternative A, the management actions in this unit would emphasize the protection of life and safety of park staff, visitors, and fire personnel, and the protection of all structures and facilities.

Within this unit, all wildland fires would be suppressed using the appropriate management response. A confine and contain action could be used if risks to life and safety of suppression personnel prohibit direct attack. Otherwise, direct attack would be used to suppress wildland fires at a minimum size.

Use of wildland fire for resource benefit would be allowed in this unit. Fire could be allowed to enter the Malaquite Beach Fire Management Unit from an adjoining unit or outside of the park from State lands, where the appropriate response would be used to reach containment and control of the fire.

Prescribed fire treatments would be allowed as part of a hazardous fuel reduction project to protect park infrastructure. Prescribed fire would be used to reduce dead and down fuel loading and decrease live fuel densities. Treatments could also be implemented in fire dependent ecosystems within this unit for resource benefit.

Mechanical methods would be primarily implemented near developed areas to protect private property (i.e., cars and boats at Bird Island Basin) and park infrastructure. Mechanical methods could also be used to protect cultural or natural resources. These methods would be used to thin or reduce fuels and vegetation in and around these resources.

4.3.2 Down Island Fire Management Unit

The Down Island Fire Management Unit encompasses 38,153 acres. The northern boundary of this unit is Pan Am Road at approximately Mile Marker 7 and continues south to the Mansfield Channel (see figure 2 in the EA). This unit contains two historic structures and minimal park development.

All wildland fires would be assessed to determine if use of wildland fire to meet resource objectives would be appropriate. If it was determined that use of wildland fire was not appropriate, the fire would be suppressed. Direct attack tactics could be implemented to contain and control the fire.

Use of wildland fire for resource benefit would be considered in lieu of suppression in this fire management unit. Location, weather trends, and the time of season for each wildland fire would be considered.

Prescribed fire would be allowed, as part of a hazardous fuel reduction project, to protect cultural and natural resources, or as a restoration treatment in fire dependent ecosystems.

Mechanical methods would be primarily used near non-federal oil and gas sites and historic structures to protect non-federal interests or to protect natural or cultural resources. These methods could be used to thin

or reduce hazard fuels or non-native vegetation. Some areas may need to be treated yearly because of the type of vegetation being treated.

5.0 PRE-FIELD REVIEW

A species list from the FWS (dated February 19, 2013) with all federally listed and candidate species within Kenedy, Kleberg, and Willacy counties in Texas was reviewed for this analysis. Using this list, we determined which of those species had a potential to occur within the analysis area (shown in table 1 below). Species not known or with no potential of occurring in the analysis area are documented with rationale in table 1 and will not be discussed further in this document. Excluded species have been dropped from further analysis by meeting one or more of the following conditions:

- Species does not occur nor is expected in the project area during the time period activities would occur;
- Occurs in habitats that are not present; and/or
- Is outside of the geographical or elevational range of the species.

In addition, table 1 gives a very brief summary of federally listed/candidate species, designated critical habitat, species' habitat requirements, and known occurrence information of species that are known or may occur in the analysis area.

There is no proposed or designated critical habitat for any federally listed species addressed in this assessment within the analysis area; therefore, there will be no direct, indirect, or cumulative effects to critical habitat. Critical habitat will not be addressed further in this assessment.

6.0 SPECIES CONSIDERED AND EVALUATED

The following table indicates whether the species from the FWS official species list (dated February 19, 2013) are known or expected to occur within the analysis/action area, suitable habitat is present, or if not, why they are excluded from further analysis (with rationale).

Table 1. Threatened, endangered, and candidate/proposed species with the potential to occur within Padre Island National Seashore

SPECIES COMMON AND SCIENTIFIC NAME	STATUS ¹	POTENTIAL TO OCCUR	RATIONALE FOR EXCLUSION ²	HABITAT DESCRIPTION AND RANGE IN TEXAS ³
PLANTS				
Black lace cactus <i>Echinocereus reichenbachii</i> var. <i>albertii</i>	E	No	ODR	Black lace cactus is found in grassy openings on south Texas rangeland invaded by mesquite and other shrubs (Kleberg County)
South Texas ambrosia <i>Ambrosia cheiranthifolia</i>	E	No	ODR	South Texas ambrosia occurs in open grasslands or savannas on soils varying from clay loams to sandy loams (Kleberg County).
Slender rush-pea <i>Hoffmannseggia tenella</i>	E	No	ODR	Slender rush-pea grows on clayey soil of blackland prairies and creek banks in association with short and midgrasses such as buffalograss, Texas wintergrass, and Texas grama (Kleberg County).
Texas ayenia <i>Ayenia limitaris</i>	E	No	ODR	This species is found on terraces and floodplains. It grows in dense, relatively moist, subtropical riparian woodlands, with an overall canopy cover of about 95% (Willacy County).
AMPHIBIANS AND REPTILES				
Green sea turtle <i>Chelonia mydas</i>	T	Yes		Marine; nesting occurs on beaches, usually on islands but also on the mainland. Sand may be coarse to fine, has little organic content; physical characteristics vary greatly in different regions. Most nesting occurs on high energy beaches with deep sand. Rarely nests in Georgia, North Carolina, and Texas.
Atlantic hawksbill sea turtle <i>Eretmochelys imbricata</i>	E	Yes		Marine; nests on beaches generally between 25 degrees latitude north and south, including tropical Gulf Coast of Mexico. Nesting occurs on undisturbed, deep-sand, insular or mainland beaches, from high energy ocean beaches to tiny pocket beaches several meters wide contained in crevices of cliff walls; a typical site would be a low-energy sand beach with woody vegetation, such as sea grape or saltshrub, near the water line.
Kemp's ridley sea turtle <i>Lepidochelys kempii</i>	E	Yes		Adults essentially are restricted to the Gulf of Mexico; about 100 nests in Texas. Nesting occurs on well-defined elevated dune areas, especially on beaches backed up by large swamps or bodies of open water having seasonal, narrow ocean connections.
Leatherback sea turtle <i>Dermochelys coriacea</i>	E	Yes		Marine; open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Mainly pelagic, seldom approaching land except for nesting; Nests on sloping sandy beaches backed up by vegetation, often near deep water and rough seas.
Loggerhead sea turtle <i>Caretta caretta</i>	T	Yes		Marine; migrates between nesting beaches and marine waters. At least some temperate zone nesters migrate to tropical waters after the nesting season. Females that nest on east coast of Florida migrate to the Gulf of Mexico and West Indies for non-nesting periods; a few have nested on barrier islands along the Texas coast.

Table 1. Threatened, endangered, and candidate/proposed species with the potential to occur within Padre Island National Seashore (continued)

SPECIES COMMON AND SCIENTIFIC NAME	STATUS ¹	POTENTIAL TO OCCUR	RATIONALE FOR EXCLUSION ²	HABITAT DESCRIPTION AND RANGE IN TEXAS ³
BIRDS				
Northern aplomado falcon <i>Falco femoralis septentrionalis</i>	E	Yes		Aplomado falcons require open grassland or savannah habitat with scattered trees or shrubs. In Texas, aplomado falcons are found in the South Texas and Trans-Pecos regions.
Piping plover <i>Charadrius melodous</i>	T	Yes		These shorebirds live on sandy beaches and lakeshores; Gulf Coast beaches from Florida to Mexico provide winter homes for plovers.
Black-capped vireo	E	Yes		Rangelands with scattered clumps of shrubs separated by open grassland are preferred habitat for the black-capped vireo; found throughout the Edwards Plateau and eastern Trans-Pecos regions of Texas.
Red knot <i>Calidris canutus</i>	C	Yes		Long distance migratory; in Texas, primarily found on seacoasts on tidal flats and beaches, less frequently in marshes and flooded fields
Sprague's pipit <i>Anthus spragueii</i>	C	Yes		Nonbreeding range extends from south-central and southeastern Arizona, occasionally southern New Mexico, Texas, and points south and east. Habitat during migration and in winter consists of pastures and weedy fields, including grasslands with dense herbaceous vegetation or grassy agricultural fields. Feeds on insects during the summer and seeds during the fall and winter. Forages on the ground.
Whooping crane <i>Grus americana</i>	E	No	ODR	Winters in coastal marshes in Texas, although most are north of Padre Island. Habitat during migration and winter includes marshes, shallow lakes, lagoons, salt flats, grain and stubble fields, and barrier islands
MAMMALS				
West Indian manatee <i>Trichechus manatus</i>	E	No	HAB	Found in marine, estuarine, and freshwater environments of the national seashore.
Gulf Coast jaguarundi <i>Herpailurus yaguarondi</i>	E	No	ODR, HAB	Thick brushlands (patchy or continuous) within the U.S. Throughout rest of its range prefers tropical forests and swamps, lowland forests and thickets. Habitat near water is favored. Texas population probably consists of only a few individuals.
Ocelot <i>Leopardus pardalis</i>	E	No	ODR, HAB	Inhabits dense chaparral thickets in Texas; currently found regularly only in southern Texas (e.g., Laguna Atascosa National Wildlife Refuge, site of a recent radiotelemetry study).

¹ Status Codes: E = federally endangered; T = federally threatened; P = federally proposed for listing; C = federal candidate; DL = delisted.

² Exclusion Rationale Codes: ODR = outside known distributional range of the species; HAB = no habitat present in analysis area.

³ Source = NatureServe Explorer (<http://www.natureserve.org/explorer/servlet/NatureServe?init=Species>).

As indicated in the above table, there are ten federally listed threatened or endangered, candidate/proposed species with the potential to occur and be affected by actions associated with the proposed fire management plan. These species include five sea turtles, northern aplomado falcon, piping plover, black-capped vireo, red knot, and Sprague's pipit. Therefore, only those species will be addressed hereafter in this assessment (evaluated species). The remaining species shown above without a potential to occur or be affected will not be analyzed further based on the rationale provided. The proposed action will have no effect on any of these other species.

7.0 EVALUATED SPECIES INFORMATION

7.1 FIELD RECONNAISSANCE

Field reconnaissance for the ten species to be fully evaluated was not performed. As a result, it is assumed that these species are present within Padre Island National Seashore and could be affected by actions associated with the proposed fire management plan.

7.2 SPECIES STATUS AND BIOLOGY

7.2.1 Kemp's Ridley Sea Turtle

The Kemp's ridley sea turtle is federally listed as an endangered species. It is the smallest of the sea turtles, and adults reach maturity at about 10-15 years of age. Kemp's ridley turtles nest mostly during the daytime, often in groups called "arribadas." An individual Kemp's ridley may nest as many as three times a season. Clutch size averages around 100 eggs. Hatchlings emerge after about 50 days of incubation and hatchling emergence occurs during the night or day. Kemp's ridley turtles are found in the Gulf of Mexico and Atlantic Ocean and some adjoining estuarine areas. Nesting occurs primarily near Rancho Nuevo, Tamaulipas, Mexico. Each year, some nests are also found at scattered locations between the Texas coastline and Veracruz, Mexico (NMFS, USFWS, and SEMARNAT 2011). Very rarely, Kemp's ridley turtles nest at other locations in the U.S. outside of Texas. More Kemp's ridley nests are consistently found at Padre Island National Seashore than at any other location in the U.S., making it the most important nesting beach in the U.S. for this species.

Historic nesting frequency of this sea turtle on the south Texas coast is poorly known and only six Kemp's ridley turtles were documented there prior to 1979 (Shaver and Caillouet 1998). Kemp's ridley is a native nester at Padre Island National Seashore (Hildebrand 1981, 1983; Shaver, 1998a; Shaver and Caillouet 1998), with a total of 199 Kemp's ridley nests documented along the Texas coast between 1979 and 2004, 104 of them at the National Seashore.

Since 1978, an international, experimental project involving the National Park Service at Padre Island National Seashore, USFWS, NMFS/NOAA, etc., has been on-going to establish a secondary nesting colony of Kemp's ridley turtles at the park. Eggs were collected in Mexico, transported to Padre Island National Seashore, and placed into an NPS incubation facility in the park. Hatchlings were released on the beach, allowed to enter the surf and were recaptured. They were then shipped to the National Marine Fisheries Service Laboratory in Galveston, Texas, for 9-11 months of rearing in captivity (head-starting) and the yearling turtles were subsequently released into the Gulf of Mexico. It was hoped that these procedures would cause the turtles to be imprinted to Padre Island National Seashore and return there to nest when they were sexually mature. Since 1996, some turtles from this project have been documented returning to Padre Island National Seashore and the nearby vicinity to lay eggs (Shaver 1997, 1998a, 1999a, 1999b; Shaver and Caillouet 1998).

In 1986, an NPS program was initiated to detect, monitor, and protect sea turtle nests at Padre Island National Seashore. Detection involves patrols to look for nesting activity, public education, and investigation of reports from patrollers, beach workers, and the public. Patrollers (NPS staff members and volunteers) use UTVs to search the park and adjacent State beaches to the north of the park for sea turtle tracks and nesting Kemp's ridley turtles each day, from April through mid-July. From 1979-2005, 132 Kemp's ridley nests were confirmed in the park, but additional nests were likely missed, especially when patrols were not conducted or were less comprehensive. During 2002, three Kemp's ridley nests were found hatching on the Texas coast,

including one within the patrol route at the park. The 132 Kemp's ridley nests were distributed along the entire Gulf beachfront length of Padre Island National Seashore.

The date of the nesting season varies slightly each year. In Mexico, Kemp's ridley nests have been recorded as early as March and as late as August. The 132 nests documented at Padre Island National Seashore from 1979-2005 were found during the months of April, May, June, and July; the months that beach surveys were conducted most intensively. Nesting may also occur at the national seashore during other months, but this has not been confirmed.

At the national seashore, some Kemp's ridley turtles nest every year and many are found stranded (washed ashore, alive or dead) (Shaver 1997, 1998a, 1998b, 1999a, 1999b; Shaver and Caillouet 1998). Additionally, Kemp's ridley turtles sometimes inhabit nearshore Gulf of Mexico waters at Padre Island National Seashore for foraging or migration.

No critical habitat has been designated for this species. An existing Recovery Plan for the Kemp's ridley defines specific park tasks in the recovery efforts, which are being conducted (patrols, monitoring, and habitat management). This is the only federally listed species for which the park has Recovery Plan responsibilities.

As mentioned above, an NPS and USFWS program was initiated in 1986 to detect, study, and protect Kemp's ridley turtle nests at Padre Island National Seashore and this on-going program has expanded to include the four other species of sea turtle that occur. Detection for the following four species of sea turtles involves patrols to look for nesting activity, public education, and investigation of reports from patrollers, beach workers, in-park contractors, and the public. Patrollers (NPS staff members and volunteers) use UTVs to search Padre Island National Seashore and the adjacent northern area of State beaches for sea turtle tracks and nesting turtles. Each day, from April through mid-July, they repeatedly patrol the entire Gulf beachfront of the national seashore during daylight hours. The patrol season and procedures are designed primarily to detect nesting by Kemp's ridley turtles, but the other sea turtle nests have also been documented and recovered. Daily runs to the Mansfield Channel and back are made from mid-July through August to look for signs of nesting activity, but these patrols are subject to funding and staff availability, and reports from the public.

No critical habitat has been designated in the park for any sea turtle species. NPS staff members and volunteers conduct, support, and assist in the daily patrols for sea turtle species to protect, document, and monitor nesting occurrence.

7.2.2 Loggerhead Sea Turtle

The **loggerhead sea turtle** is federally listed as a threatened species. It occurs in temperate and tropical waters of both hemispheres. The species inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian oceans. Historic nesting frequency on the Texas coast is poorly known. Hildebrand (1981) suggested that nesting likely occurred within the last 300 years, but the earliest loggerhead nest that he was able to confirm for the Texas coast was found in 1977.

Adult loggerhead turtles reach maturity in 25 to 30 years. Loggerheads are nocturnal nesters, although some daytime nesting occurs. They nest from one to seven times within a nesting season (average of approximately 4.1 clutches); clutch size averages 100-125 eggs along the southeastern U.S. coast (NMFS and USFWS 1991b, 2008). Hatchling emergence typically occurs at night. In the Gulf of Mexico, there are distinct nesting populations on the coast of the Florida panhandle and the Yucatan Peninsula. Scattered nests can be found occasionally along other areas of the U.S. Gulf coast including the Chandeleur Islands, Louisiana, in the north and to the U.S./Mexico border in the south.

At the national seashore, loggerhead turtles sometimes inhabit nearshore Gulf of Mexico waters for foraging or migration. A few occasionally nest and many more are found stranded at the seashore (Shaver 1998b, 1999b). From 1979-2005, 25 loggerhead nests were documented at Padre Island National Seashore (at various locations scattered along the coast of the national seashore), but additional nests were likely missed, especially when patrols are reduced and less comprehensive after the mid-July Kemp's ridley patrol season ends. Loggerhead nests are found on North Padre Island from mid-May through early August, although nesting has been documented in the southeastern U.S. from late-April through early September.

7.2.3 Green Sea Turtle

The green sea turtle is federally listed as threatened in all of its range except the waters of Florida and the Pacific coast of Mexico, where it is endangered. It is circumglobal in tropical and sub-tropical waters. A green turtle fishery, operating almost exclusively within inshore waters (bays, estuaries, passes), began in Texas in the mid-1800's. By the early 1900's, the catch declined to such an extent that the turtle fishing and processing industry collapsed (Hildebrand 1981). Although historic nesting by green turtles on the Texas coast is suspected, the first confirmed nest was not documented there until 1987 (Shaver 2000).

Adult green turtles reach maturity at 30 to 50 years of age. Female green turtles nest at night. From one to seven clutches are deposited within a breeding season (the average number is usually two to three clutches) (NMFS and USFWS 1991a). Average clutch size is usually 110-115 eggs. Hatchling emergence occurs at night. In this region, nesting sites include southern Florida and scattered locations in Mexico, although nesting occasionally occurs in south Texas.

At the park, juvenile green sea turtles inhabit waters of the nearshore Gulf of Mexico, the Laguna Madre, and the Mansfield Channel. Additionally, a few green turtles occasionally nest within the national seashore and many are found stranded there each year (Shaver 1989, 1998b, 2000). Between 1979 and 2005, 16 green turtle nests were documented at the park, all in roughly the southern two-thirds of the park (Shaver 1989, 2000). The 16 green turtle nests were found during June and July, although nesting occurs from May through September in this region.

7.2.4 Hawksbill Sea Turtle

The hawksbill sea turtle is federally listed as endangered. It occurs in tropical and subtropical seas of the Atlantic, Pacific, and Indian oceans. Young hawksbills occur with some regularity in Texas waters, since northern currents carry them from nesting beaches in Mexico (Hildebrand 1981). Historic nesting by this species on the Texas coast is unknown. Female hawksbill turtles nest mostly during the night, but rare daytime nesting is known. They nest an average of 4.5 times per season (up to 12 clutches); clutch size averages approximately 140 eggs (NMFS and USFWS 1993). Hatchling emergence occurs at night. Hawksbills nest on scattered islands and beaches between 25 degrees north and south latitude, including beaches in southeastern Florida and the states of Campeche and Yucatan in Mexico. Nesting does not regularly occur on the Texas coast.

At the park, young hawksbills occasionally inhabit waters of the nearshore Gulf of Mexico and Mansfield Channel. Additionally, many are found stranded in the park each year, but nesting very rarely occurs here (Shaver 1998b, 1999b).

7.2.5 Leatherback Sea Turtle

The leatherback sea turtle is federally listed as an endangered species. It ranges throughout the tropical waters of the Atlantic, Pacific, and Indian oceans, but has also been recorded from the North Atlantic, North Pacific, South Atlantic, and South Pacific. The leatherback is the largest and most pelagic sea turtle species

and is normally found in the deeper waters of the Gulf of Mexico where it may undertake extensive migrations.

Nesting occurs primarily at night and diurnal nesting occurs only occasionally. They nest five to seven times per year, with an average clutch size of 110-116 eggs (NMFS and USFWS 1992). Hatchling emergence typically occurs at night. Leatherback nesting grounds are distributed circumglobally. Leatherbacks infrequently strand at Padre Island National Seashore (Shaver 1998b).

Hildebrand (1981) reported leatherback nesting at Little Shell on Padre Island National Seashore, including one documented nesting in 1928 and at least one observed nesting in the mid 1930's. No leatherback nests have been confirmed on the Texas coast since that time.

No leatherback nests have been recorded within the national seashore during recent years, although it is possible that a few were missed, especially when patrols were not conducted or were less comprehensive. In the U.S. and Caribbean, nesting begins in February and continues through July.

7.2.6 Piping Plover

The piping plover is federally and state-listed as threatened. Piping plovers breed along prairie rivers and on alkali wetlands of the Northern Great Plains, sandy beaches along Great Lakes shorelines, and Atlantic coast beaches. These birds nest in shallow depressions built in the sand with both parents incubating the eggs and exhibiting a monogamous mating system. Breeding generally occurs between March and August with both fledglings and parents leaving the nest by September. It is clear that direct interference of nests by vehicles, humans, and dogs significantly affects breeding success (USFWS 2003). Piping plovers disturbed during nesting by flooding or other disturbance may abandon the nest and establish an additional nest in the vicinity at a new location (USFWS 2003).

Piping plovers forage mostly on benthic invertebrates, insects, and crustaceans found within the inter-tidal areas of ocean beaches, wash over areas, mudflats, sand flats, wrack lines, and shorelines of coastal ponds, lagoons, or salt marshes. Piping plovers have been documented defending feeding territories.

Piping plovers have been documented throughout the national seashore as a winter resident and fall/spring migrant (Chaney *et. al.* 1993a, 1993b, 1995a, and 1995b). Piping plovers are generally found along the Laguna Madre, Gulf beach, and washover channels within the park. Piping plovers occur at the park 11 months of the year with the exception of February (Chaney *et. al.* 1993a and 1993b). The highest concentrations of piping plovers within the national seashore occur between August and December with September having the highest incidence (Chaney *et. al.* 1995b).

Padre Island National Seashore protects substantial acreage of wintering habitat for the piping plover. The most important area used by piping plovers is the broad wind tidal flat located at the north boundary of the park. It is estimated that between 60-65% of all piping plovers winter in south Texas (Chaney *et. al.* 1995a).

Piping plovers have been documented foraging on benthic invertebrates and insect larvae along both the Laguna Madre and Gulf beach inter-tidal areas. No critical habitat has been designated within the park for this species. No nesting has been documented in south Texas or Padre Island National Seashore.

7.2.7 Northern Aplomado Falcon

The northern aplomado falcon was listed as endangered because of large population declines of the black-tailed prairie dog, in Arizona, New Mexico, and Texas; loss of prey habitat from farming and overgrazing; and pesticides in the food chain. Populations in the United States almost disappeared in the 1930s. Aplomado falcons eat mostly birds and insects. They are fast fliers, and often chase prey animals as they try to escape into dense grass. It is hypothesized that overall abundance, biomass, and catchability of avian and

small mammal prey were greater inside prairie dog towns with close-cropped vegetation than in the surrounding grasslands and the decline of prairie dog populations has adversely affected foraging opportunities for the falcon. The falcon's preferred habitats include open grassland and savannah with shrubs and trees. Since 1997, over 100 captive-reared young have been released annually on the Texas gulf coast, resulting in successful nesting pairs and rearing of young (TPW 2013a).

The northern aplomado falcon is considered a rare species at Padre Island National Seashore. Over the past ten years, approximately four sightings of individual northern aplomado falcons have occurred in the park along the main road, beach foredunes, and grasslands of the northern 10 miles of the park. These sporadic sightings generally occurred in winter and early spring. Individuals sighted appear to be transients, and no established adult pairs, territories, or nests have been documented within the park.

7.2.8 Black-capped Vireo

Black-capped vireos typically nest in shrublands and open woodlands with a distinctive patchy structure. Typically, the vegetation will be from 3 to 15 feet high and have a highly variable canopy. Brush cover usually ranges from 30 percent to 70 percent and territories include adjacent open areas, and woody areas with up to 100 percent canopy closure. Woody shrubs with foliage from ground level to about four feet appear to be a critical component of breeding habitat as it provides the supporting vegetation for nest and foraging sites. Throughout the habitat, plant composition appears less important than the presence of adequate broadleaved shrubs, foliage to ground level, and the mixture of open grassland and woody cover. These factors are also important in providing habitat for the insects on which the vireo feeds. The black-capped vireo was listed as endangered because of population decline, reduced reproductive success, low recruitment rates, parasitism of nests by brown-headed cowbirds, pesticides, direct habitat loss, and the indirect effects on habitat from land uses (TPW 2013b). Black-capped vireos migrate through North Padre Island in the spring and summer and use the grasslands of the park as stopover habitat (USGS 2006).

7.2.9 Red Knot

The red knot, a large shorebird known for its extremely long migrations, is a federal candidate species for listing. Red knots migrate in larger flocks than do most other shorebirds. They break their spring and fall migrations into nonstop segments of 1,500 miles and more, ending at stopover sites called staging areas. Although the knot does not breed in the national seashore, the shoreline habitats provide important staging areas (NatureServe 2013). Red knots' unique and impressive life history and survival depend on certain conditions. One of the most important conditions is the continued availability of billions of horseshoe crab eggs at major North Atlantic staging areas, notably the Delaware Bay and Cape May peninsula. An increase in utilizing horseshoe crabs for bait in commercial fisheries in the 1990s may be a major factor in the decline in red knots. Another necessary condition for red knots' survival is the continued existence of middle- and high-arctic habitat for breeding. Red knots could be particularly affected by global climate change, which may be greatest at the latitudes where this species breeds and winters (USFWS 2013).

7.2.10 Sprague's Pipit

Sprague's pipit is currently considered a candidate for listing by the U.S. Fish and Wildlife Service. The principal causes for the declines in Sprague's pipit populations are habitat conversion to seeded pasture, hayfield, and cropland, as well as overgrazing by livestock. Moreover, management favoring intensive cattle grazing and reduced fire frequency may lead to the degradation of remaining suitable grassland tracts over much of their range. Without proper fire intervals, shrubs and excessive vegetative litter may reduce habitat quality; in addition, grasslands may even eventually succeed to shrubland or savannah. The pipit breeds in Canada and the northern U.S. and its nonbreeding range extends from south-central and southeastern

Arizona, occasionally southern New Mexico, Texas, southern Oklahoma, southern Arkansas, northwestern Mississippi, and southern Louisiana south into Mexico (Jones 2010). Sprague's pipits feed primarily on arthropods during migration and on wintering grounds, with the addition of seeds during the later part of the winter. In southern Texas, Sprague's pipits are located almost exclusively in grass-forb prairie and rarely in shrub grassland. In Texas, Sprague's pipits winter in heavily grazed grasslands dominated by little bluestem (*Schizachyrium scoparium*) and *Andropogon* spp., and in large, over-grazed pastures; they are often found in patches where the grass is very short (Jones 2010).

8.0 ENVIRONMENTAL BASELINE

As defined under the ESA, the environmental baseline includes past and present impacts of all federal, state, and private actions in the action area; the anticipated impacts of all proposed federal actions in the action area that have undergone formal or early section 7 consultation; and the impact of state and private actions which are contemporaneous with the section 7 consultation process. Future actions and their potential effects are not included in the environmental baseline. This section in combination with the previous section defines the current status of the species and its habitat in the action area and provides a platform to assess the effects of the proposed action under consultation with the FWS. The impacts related to current conditions (i.e., baseline) are related to fire suppression actions, including, but not limited to, beach driving, the presence of fire crews in wildlife habitat, fireline construction, and aerial retardant drops. The only aspect of fire suppression with the potential to affect sea turtles would be vehicles driving on the beach, while the avian species could be affected by all fire management actions and these are briefly described below.

8.1 POTENTIAL VEHICLE EFFECTS ON ALL SPECIES OF SEA TURTLES

There may be times when turtle eggs, nesting turtles, hatchlings, and stranded turtles could be directly vulnerable to vehicle traffic on the Gulf beach. Operation of all vehicles on the beach can crush nesting turtles, stranded turtles, hatchlings, and some eggs, producing an immediate, lethal impact. Additionally, vehicles may cause changes in the structure or density of beach sand which could indirectly affect nesting and incubation habitat (Mann 1977; NMFS and USFWS 1991a, 1991b, 1992-1993; Ernest et al. 1998). Vehicles could also remove sea turtle tracks, making it impossible for the NPS staff members and volunteers to find a nest for investigation and protection.

Eggs could also be crushed in nests that are not detected. Eggs located close to the sand surface would be most vulnerable to crushing. Each year, portions of the nests found have the uppermost eggs within only an inch or two of the sand surface. Patrollers and monitors locate nests primarily by searching for the tracks left in the sand by the nesting females. However, the nesting turtles do not always leave visible tracks on the beach, particularly in areas with very hard packed sand, very soft and blowing sand, and thick seaweed. For example, at the first nest discovered at Padre Island National Seashore during 2003, the female barely left any trace of tracks on the hard-packed sand at the nest site, 0.5 miles south of the end of the paved road. Patrol staff that arrived while the turtle was nesting noted that they would not have found her tracks and that the nest would not have been found if visitors had not spotted her crawling on the beach.

Vibrations and noise caused by moving vehicles on the beach could frighten nesting turtles, causing them to abandon their nesting attempt (false crawl) (NMFS and USFWS 1991a, 1991b, 1992). Turtle hatchlings and smaller stranded sea turtles could become trapped in the ruts created by tires for short or long periods of time causing them to weaken, invert, or succumb due to predation, disorientation, crushing, or dehydration (Hosier et al. 1981; Fletemeyer 1996). The depth and slope of the ruts will influence the amount of impact. Deeper and more steeply sloped ruts will cause the greatest impact. Hosier et al. (1981) found that 10-15 cm deep tracks may serve as a significant impediment to loggerhead hatchlings. The smaller the turtle, the more

that it will be impacted by rut size. Large vehicles could produce deeper ruts in the sand, which could affect movements of nesting females and hatchlings. The small number of fire related vehicles on the beach would have little impact on sand compaction and rutting.

A study in Florida found that vehicles could also compact the sand, making it more difficult or impossible for nesting turtles to excavate a nest cavity leading to increased false crawls and nests with shallow egg chambers (Fletemeyer 1996). Compaction could also make it more difficult for hatchlings to emerge from an undetected nest. Data on the level of compaction necessary to inhibit or prevent nesting, or inhibit or prevent hatchling emergence is not available. There is no documented evidence that suggests that the level of traffic in this sandy environment, of Padre Island National Seashore, is of serious concern or noticeable to the sea turtle.

Vehicles, lights, and smoke could cause direct impacts on nesting turtles leading to false crawls and could disorient hatchlings so that they crawl in the wrong direction rather than enter the sea, thereby becoming vulnerable to crushing, predation, and dehydration (NMFS and USFWS 1991a, 1991b; Fletemeyer 1996). Nesting Kemp's ridley turtles, which are primarily daytime nesters and Kemp's ridley hatchlings, which emerge generally in the daytime, will most likely not be affected.

Species of sea turtle that nest primarily at night (green, loggerhead, and hawksbill) are likely to be the most affected by night driving and associated lighting. Based on documented nesting, the total number of these three species of sea turtle nesting within the analysis area at Padre Island National Seashore would be less than three over a 15-year span. The risk of loss to nesting turtles of these species would therefore be discountable and insignificant. This would also apply to those hatchlings that emerge at night or early in the morning from the few in-situ nests possibly missed by the daily patrols conducted by the NPS and volunteers.

Currently the NPS removes all sea turtle eggs that are located on the beach and transfers them to the incubation facility within the park. Hatching success is usually elevated substantially for eggs that are transferred to this facility. Some nests missed by the patrol and monitoring effort may go undetected and therefore unprotected from predation, insect infestation, tidal inundation, and crushing. Additionally, some nesting and stranded turtles are not immediately found and protected by the NPS.

There has been vehicle traffic, from both visitors and heavy equipment operators, on the Gulf of Mexico shoreline for over 50 years with no documented case of a crushing of a nesting sea turtle within the park. However, outside the park, a passing vehicle struck a Kemp's ridley turtle that laid eggs on the Matagorda Peninsula in 2002. Visitors put her back into the water, but they noted that she was injured and two weeks later a dead adult Kemp's ridley washed ashore about five miles away. During 2002, beach visitors found and reported three Kemp's ridley nests at hatching, including one located at Padre Island National Seashore, one on North Padre Island north of the national seashore, and one on Mustang Island. No hatchlings were killed at the park, but 14 were crushed and killed by passing vehicles at the two nests sites outside the park. During 2003, three turtles were documented nesting in the vehicular roadway at the park, including two within visible ruts. Two hatchlings were killed by passing vehicles at the Kemp's ridley nest found hatching on Mustang Island during 2004.

The risk to a sea turtle in the analysis area is extremely low when looking at past nesting activity. Within the first 15 miles of south beach, the average number of nests per year, over a five-year span, is approximately three. Current nesting activity does not appear to be negatively impacted by compaction from vehicles, either by visitors, park employees, or nonfederal oil and gas operations.

8.2 POTENTIAL FIRE SUPPRESSION EFFECTS ON AVIAN SPECIES

Fire suppression actions would have the potential to affect avian species as a result of vehicular traffic, the presence of firefighters in sensitive species' habitats, or the direct fire suppression activities such as fireline construction or aerial retardant drops. However, because of the inherent mobility of birds with the ability to quickly fly away from disturbance, these temporary effects would be discountable and not cause any adverse impacts. Vehicular impacts to shorebird species could be associated with beach driving and the ability of shorebirds, the piping plover in particular, to avoid adverse effects and quickly resume normal activities would eliminate the potential for adverse effects. Other species that use more densely vegetated habitats could be affected to a greater degree by fire suppression vehicles, crews, or activities, but because the federally listed or candidate avian species at Padres Island National Seashore are not resident breeding birds, there is no reason why they cannot temporarily relocate away from disturbance and avoid adverse impacts.

8.3 PREVIOUS CONSULTATIONS WITHIN THE ANALYSIS AREA

Previous consultations with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service regarding potential effects to federally listed and candidate species include the projects shown in table 2.

Table 2. Past consultations with the U.S. Fish and Wildlife Service

Project	Park Unit	Type of Project	Species Addressed	Determination ¹	Date
Sea Turtle Facilities Expansion	Padre Island National Seashore	EA - Capital Improvement	Sea Turtles	Not Likely to Adversely Affect	1/19/2011
Beach Vehicle EA	Padre Island National Seashore	EA - Capital Improvement	Sea Turtles	Not Likely to Adversely Affect	6/29/2011
Law Enforcement Facilities	Padre Island National Seashore	EA - Capital Improvement	N/A	No Effect	8/30/2011
Communications Tower	Padre Island National Seashore	EA - Capital Improvement	Sea Turtles, Aplomado Falcon, Piping Plover	Not Likely to Adversely Affect	10/7/2011
Road Pavement Preservation	Padre Island National Seashore	EA - Capital Improvement	Sea Turtles, Aplomado Falcon, Piping Plover	Not Likely to Adversely Affect	11/13/2013
Sargasm Removal	Padre Island National Seashore	EA - Facility Maintenance	Sea Turtles, Piping Plover, Red Knot	To Be Determined	Underway
Fire Management Plan	Padre Island National Seashore	EA - Prescribed Fire Plan	To Be Determined	To Be Determined	Underway
Bird Island Basin Stabilization	Padre Island National Seashore	CE or EA - Facility Maintenance	To Be Determined	To Be Determined	Underway

¹ ESA determinations: NE = No effect; NLAA = may affect, not likely to adversely affect; and LAA = may affect, likely to adversely affect.

8.4 PAST AND CURRENT ACTIVITIES WITHIN THE ANALYSIS AREA

Because the analysis area is a unit of the National Park Service, the most ubiquitous activity with potential to affect federally listed or candidate species is visitor use. This use includes vehicle use on roadways and beach driving, hiking, camping, and other activities commonly associated with outdoor recreation. Management of visitor use is directly related to these activities and entails vehicle use in the national seashore, as well as public safety and regulation enforcement actions. Many, if not most, of these activities occur within developed areas of the national seashore (e.g., roadways, campgrounds, offices) and therefore have little impact on the habitats used by federally listed or candidate species. There are numerous mitigation and resource protection measures that ensure that visitors and park staff do not have adverse impacts on federally listed or candidate species. For example, beach driving speeds are strictly regulated to avoid adverse impacts on nesting sea turtles or avian species that use the shoreline and nearby vegetation for nesting and foraging (NPS 2011).

None of the NPS management actions would be expected to have adverse impacts on any of the federally listed or candidate species because of the inherent resource protection practices that are included in NPS *Management Policies* (2006) and various Superintendent Compendiums that address resource protection.

9.0 EFFECTS TO EVALUATED SPECIES AND DETERMINATIONS

The following mitigation measures refer specifically to special status species and would be implemented under the proposed fire management plan. These mitigation measures should be considered when evaluating the effects to federally listed and candidate species

- Conduct surveys for special status species before deciding to take any action that may cause harm. In consultation with the U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department, take appropriate measures to protect any sensitive species whether identified through surveys or presumed to occur.
- Turtle spotters would be used on all fire management vehicles driving on beaches and in sea turtle habitat to ensure no vehicle/turtle conflicts.

There would be no expected incidental take of any federally listed or candidate species as a result of implementation of the proposed fire management plan.

9.1 FEDERALLY LISTED SPECIES

9.1.1 Sea Turtles

This evaluation applies to Kemp's ridley, loggerhead, green, hawksbill, and leatherback sea turtle species.

The effects of the proposed fire management plan on the five species of sea turtles with potential to occur in the national seashore would be primarily related to vehicles driving on the beach. Details regarding the impacts of vehicles on sea turtles are previously described in section 8.0 Potential Vehicle Effects on Sea Turtles. Before any planned fire management activities such as mechanical fuel reductions and prescribed burns, survey results, as described in the mitigation measure above, would be consulted to determine the potential to affect sea turtles. The likelihood that fuel management or prescribed burning would be needed in turtle nesting habitat is very low and insignificant. Schedules and/or locations of the planned fire management activities would be adjusted to avoid any direct or indirect adverse impacts from operating fire management vehicles.

Nesting sea turtles and hatchlings could be impacted by the smoke column from a prescribed burn. The smoke column may cause nesting sea turtles to avoid a local area, or may block sunlight needed for hatchlings to guide themselves offshore. There could be some effect to sea turtle eggs that have been excavated and are being transported to the park's incubation facility. Smoke from prescribed fire could result in temporary road closure that could slow the transport of eggs to the incubation facility. Application of mitigation measures, such as scheduling and avoidance of specific known nesting locations and seasons would avoid impacts to sea turtles during peak nesting season. Burns could also be scheduled during periods of predominant southeast winds, directing the smoke column away from the Gulf beaches.

In the event of an unplanned wildfire, suppression efforts would take the following into consideration; the season, location, and potential for suppression actions to affect nesting turtles or hatchlings. Suppression actions would be altered to avoid adversely affecting sea turtles in all but the most severe emergencies with potential to harm human life or property. Because a fire with potential to harm human life or property would

not be likely outside developed areas, the likelihood of affecting nesting turtles, hatchlings, or their habitat with suppression actions would be insignificant and discountable.

As a result of the mitigation measures and resource protection actions described above, the impacts of the proposed fire management plan would result in an effect determination of *may affect, not likely to adversely affect* for the five listed sea turtle species.

9.1.2 Northern Aplomado Falcon

Wildland fire suppression, mechanical fuel reductions, and prescribed fire activities could disturb northern aplomado falcons using grassland habitats for foraging because of the presence of suppression vehicles, firefighters, and fire management personnel. Disturbances would be temporary, lasting only long enough to complete the operation. This could cause northern aplomado falcons to take flight and move to a more suitable area outside the disturbance area. Mechanical fuel reductions and prescribed fire would provide long-term, beneficial impacts to the falcon as a result of reduced fuel loads and a more natural fire regime that would reduce vegetative litter, increase prey diversity, and improve foraging opportunities for small prey (USDA 2000). Because the effects of fire management actions would be short-term, and the species would resume normal activities after suppression, fuel reduction, or burning, the proposed fire management plan *may affect, but would not adversely affect* the northern aplomado falcon. There is no designated critical habitat that would be affected.

9.1.3 Piping Plover

The piping plover preferentially uses the beach east of the foredune ridge, unconsolidated shorelines within storm overwash areas, and tidal flats adjacent to the Laguna Madre. These habitats are not fire dependent and therefore are unable to sustain fire due to sparse vegetative cover, high fuel moisture, and topography. As a result, fire suppression actions would be unlikely in plover habitat. However, if suppression vehicles were to travel within or close to the tide line, their noise or presence could disturb piping plover along the shoreline. Operation of any vehicle along the shoreline could disturb loafing shorebirds causing them to take flight to a more suitable shoreline or offshore location. This displacement is temporary because shorebirds disturbed by vehicles are generally seen landing a short distance away continuing their pre-disturbance behavior. Mitigation measures such as reduced speed and driving further away from loafing shorebirds would reduce the potential for any impacts to the piping plover.

Mechanical fuel reductions would not likely be needed or used in habitats preferred by the plover, thus these activities would not affect the plover beyond the temporary vehicle disturbance described above.

Smoke columns resulting from prescribed fire could impact the piping plover by causing them to avoid the local area and/or temporarily move to another location. However, smoke columns would dissipate quickly with the predominant southeast winds. As a result, the proposed fire management plan *may affect, but would not adversely affect* the piping plover. There is no designated critical habitat that would be affected.

9.1.4 Black-capped Vireo

Fire suppression activities could affect the black-capped vireo as a result of vehicular traffic and suppression actions. Wildfire occurring in the spring or fall could affect the oak motes or black willows used by the vireo for resting. Additionally, suppression actions could disturb vireos by causing the birds to fly to another area away from the disturbance.

Mechanical fuel reductions would have similar short-term impacts that would result in temporary relocation of the black-capped vireo as they would tend to avoid disturbance and the presence of fire management crews. However, no adverse effects would occur for the species.

Similar to other avian species, smoke from prescribed fire could impact the vireo by causing them to avoid the local area and/or temporarily move. The smoke column would dissipate quickly with the predominant southeast winds. Mechanical fuel reductions and prescribed fires could provide short-term, beneficial impacts for foraging as a result of increased flora and insect diversity caused by burning habitat. As a result, the proposed fire management plan *may affect, but would not adversely affect* the black-capped vireo. There is no designated critical habitat that would be affected.

9.1.5 Red Knot

The potential effects of the proposed fire management plan on the red knot would be similar to those described for the piping plover, another non-resident shorebird that uses the park as a stopover and resting location. The effects of fire suppression activities, fuel reductions, and prescribed burning would be essentially the same for the knot as the plover; namely, short-term relocation followed by a relatively quick return to normal activities. The proposed fire management plan *may affect, but would not adversely affect*, the red knot. There is currently no designated critical habitat that would be affected by the fire management plan for the red knot. Padre Island is currently being considered as critical habitat for the red knot.

9.1.6 Sprague's Pipit

Similar to the other avian species described, the pipit could be affected by fire management actions that would cause the bird to fly away from the area where activities were to occur. Such relocation would be temporary, and following completion of the actions, the potential for the pipit to return to normal activity would be high. There would be potential for beneficial effects from mechanical fuel reductions or prescribed burns in grassland habitats preferred by the pipit, as foraging opportunities could be improved. As described for the other avian species, breeding would not be affected for this non-resident species, and the fire management plan *may affect, but would not adversely affect*, Sprague's pipit at Padre Island National Seashore. There is currently no designated critical habitat for Sprague's pipit that would be affected by the fire management plan.

9.2 CUMULATIVE EFFECTS

Cumulative effects are defined somewhat differently under ESA and NEPA. Under ESA, cumulative effects include the environmental baseline plus the additive effect of reasonably foreseeable future state, private, and tribal activities. Under ESA, we do not consider the effect of future federal actions. Under NEPA, the cumulative effects are almost identical to those described for the ESA, the only difference being that cumulative effects under NEPA also include the effect from reasonably foreseeable future federal actions as well. Below is a summary of future federal and non-federal (private, state, or tribal) activities that are reasonably likely to occur within the action area that directly and indirectly affect species addressed in this assessment. These are added to the environmental baseline (discussed above). In many instances, these past activities and their effects remain to this day and are also ongoing.

Other plans and projects undertaken in the area of concern have the potential to contribute to the cumulative effects of other plans and projects in or near the national seashore. The following projects and plans have the ability to contribute to cumulative effects of the project. These are included in the analyses of the cumulative scenario for the various impact topics addressed in this environmental assessment.

9.2.1 Acquisition of Texas General Land Office Property North of the Seashore

The NPS recently acquired approximately 3,800 acres of General Land Office land that abuts the Seashore's northern boundary. The parcel is undeveloped and provides similar beach and inland conditions to those in the Seashore. The parcel adds to the undeveloped acreage of North Padre Island, and would be protected

from development into perpetuity. The proposed action involves fire management actions within the newly acquired lands.

9.2.2 Oil and Gas Management Plan and Oil and Gas Operations on Padre Island National Seashore and General Land Office Lands

All subsurface mineral interests underlying the land within the seashore were retained by private owners. Those underlying the submerged lands in Laguna Madre and the Gulf of Mexico were retained by the state of Texas and are administered by the Texas General Land Office. The National Park Service manages the exercise of nonfederal oil and gas rights under 36 CFR 9.30, et seq. according to its Oil and Gas Management Plan. Oil and gas drilling and production equipment and associated vehicles are escorted down the beach to reach sites behind the dunes; occurrence is variable and dependent on demand/oil and gas development in the area. Oil and gas prices have increased substantially over the past 10 years, resulting in increased exploration and development activities at the Seashore.

9.2.3 Construction of Cabins for Turtle Monitoring

The National Park Service is currently constructing new corrals on the beach in addition to two new cabins down island to provide sleeping accommodations for turtle monitors. These new facilities would increase the existing single corral 40 nest capacity to 200 nests in two corrals with the ability to further expand in the future. The two new cabins will enable turtle monitors to patrol down island in a more timely manner (NPS 2011). The cabins would provide accessible shelter for sea turtle patrollers during storm events and would reduce the number of miles needed to be driven to reach the ends of the patrol routes, and thus enhance the ability to effectively patrol the Seashore's beach down island.

9.2.4 Colonial Waterbird Management Plan

This plan was developed as a portion of the U.S. Army Corps of Engineers (USACE) environmental impact statement (EIS) addressing maintenance dredging of the Gulf Intracoastal Waterway (USACE 2003). The plan highlights management options for the dredge-material islands in Laguna Madre, including possible predator control of coyotes and raccoons, habitat improvements, continuation of rookery monitoring, and conducting prescribed fires. The proposed action would not conflict with the activities undertaken by the U.S. Army Corps of Engineers.

9.2.5 Beach Vehicle Environmental Assessment

This plan and its associated NEPA compliance document provide for management of vehicles driving on the beaches at the park. Because offroad vehicles have the potential to affect nesting sea turtles and avian species using the beaches or adjacent areas for foraging or resting, this plan contributes to the cumulative effects on the federally listed and candidate species considered in this biological assessment. Although beach driving has an inherent potential to adversely affect these species, there are various mitigation measures and management options in the Beach Driving Environmental Assessment to offset and minimize impacts so that no adverse impacts to listed or candidate status species would occur.

9.2.6 Beach Debris and Clean-Up

Marine debris arrives at the seashore from many sources including the Mississippi River, storms, the commercial shrimping industry, the offshore oil and gas industry, Mexico, and many other sources. With over 65 miles of shoreline and no road behind the dunes, removing trash is an immense task for seashore staff. The seashore relies heavily on volunteer groups from the general public for assistance. Periodic, organized efforts are sponsored by local visitor groups, and can include use of dump trucks to remove large debris items. The seashore also participates in statewide beach clean-ups and the Adopt-a-Beach program.

Beach cleaning operations routinely occur to remove sargassum along an approximately 500-yard stretch of Malaquite Beach closed to beach vehicles. The seashore also performs frequent patrols to locate, document, and remove containers of hazardous waste. Similar to the management of beach driving, mitigation measures would be implemented to ensure that federally listed and candidate sea turtles and avian species would not be adversely affected by beach clean-up activities. In fact, the impacts would be beneficial as potential hazards such as plastics and hazardous waste would be removed from the species habitats.

9.2.7 Interrelated and Interdependent Actions and Their Effects

Interrelated activities are components of the action that have no independent utility apart from the action and therefore rely on the action for their justification. Aside from the other plans and projects considered in the evaluation of cumulative effects, there are no interrelated or interdependent actions associated with this project; therefore, there are no anticipated adverse effects to any of the federally listed or candidate species.

9.2.8 Incidental Take

No incidental take (as defined by ESA) is anticipated for any federally listed or candidate species as a result of implementation of the proposed fire management plan.

9.2.9 Cumulative Effects Determination

The cumulative impacts of other plans and projects on federally listed and candidate species in conjunction with the effects of the proposed action, would not adversely affect any of the species shown in table 1. Generally, cumulative impacts could result from present and future nonfederal oil and gas operations within the park, development, past wildland fires, park visitors, and spills from oil and gas activities located adjacent to the park, including tanker traffic in the Gulf of Mexico. While the other plans and projects do have some potential to adversely affect federally listed or candidate species, no adverse cumulative effects associated with the proposed action are expected.

Biological surveys would be performed before conducting park operations or selecting a prescribed burning site. These surveys would identify whether a species was in the proposed project vicinity or if suitable habitat exists so that avoidance and minimization of impacts could be planned. As a result, impacts to habitat would be limited to developed areas and sites with little potential to support listed or candidate species, or actions would be deferred to take place when no potential adverse effects could occur (e.g., outside the season when a species may be present at the national seashore). The effects would thus be discountable. With the implementation of mitigation measures and numerous resource protection actions taken by the National Park Service, the cumulative effects of other plans and projects, in combination with the potential effects of the proposed fire management plan, would result in a “may affect, not likely to adversely affect” determination for all the species shown in table 1.

9.3 CRITICAL HABITAT

There is no designated or proposed critical habitat for any of the federally listed or candidate species being evaluated within Padre Island National Seashore and the proposed fire management plan would not affect any designated or proposed critical habitat.

10.0 EFFECT DETERMINATION SUMMARY

Table 3 presents a summary of the effects determinations for each of the federally listed and candidate species based on the information presented above.

Table 3. Effect determinations for species addressed

Common Name	Scientific Name ¹	Status	Determinations of Effects ²	
			Proposed Action	No Action
Green sea turtle	<i>Chelonia mydas</i>	T	NLAA	NLAA
Atlantic hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E	NLAA	NLAA
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	E	NLAA	NLAA
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	NLAA	NLAA
Loggerhead sea turtle	<i>Caretta caretta</i>	T	NLAA	NLAA
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	E	NLAA	NLAA
Piping plover	<i>Charadrius melodous</i>	T	NLAA	NLAA
Black-capped vireo	<i>Vireo atricapillus</i>	E	NLAA	NLAA
Red knot	<i>Calidris canutus</i>	C	NLAA	NLAA
Sprague's pipit	<i>Anthus spragueii</i>	C	NLAA	NLAA

¹ **Status Codes:** **E** = federally endangered; **T** = federally listed threatened; **P** = federally proposed for listing; **C** = federal candidate for listing

² **NE**=no effect; **NLAA**=may affect, not likely to adversely affect; **LAA**=may affect, likely to adversely affect; **BI**=beneficial impact

11.0 NEED FOR RE-ASSESSMENT BASED ON CHANGED CONDITIONS

This BA and findings above are based on the best current data and scientific information available. A new analysis and revised BA must be prepared if one or more of the following occurs: (1) new species information (including but not limited to a newly discovered activity area or other species information) reveals effects to threatened, endangered, proposed species, or designated/proposed critical habitat in a manner or to an extent not considered in this assessment; (2) the action is subsequently modified or it is not fully implemented as described herein which causes an effect that was not considered in this assessment; or (3) a new species is listed or critical habitat is designated which may be affected by the action that was not previously analyzed herein.

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