

U.S. Fish and Wildlife Service

DRAFT LAND PROTECTION PLAN AND ENVIRONMENTAL ASSESSMENT

BIG BOGGY NATIONAL WILDLIFE REFUGE

Jackson and Matagorda Counties, Texas



Contacts:

**Big Boggy National Wildlife Refuge
6801 CR 306
Brazoria, TX 77422-7896**

**U.S. Fish and Wildlife Service
National Wildlife Refuge System
P.O. Box 1306
Albuquerque, New Mexico 87103**

Table of Contents

Executive Summary	1
Introduction	2
BACKGROUND	2
PROPOSED ACTION	2
PURPOSE AND NEED	4
STRATEGIC GROWTH OF THE NATIONAL WILDLIFE REFUGE SYSTEM.....	4
AUTHORITIES FOR EXPANDING THE REFUGE	5
REFUGE PURPOSES	6
PLAN VISION AND GOALS	7
PLAN PREPARERS AND CONSULTANTS	7
Resources	9
RESOURCES TO BE PROTECTED	9
Land Protection Priorities.....	15
PRIORITY CONSERVATION SPECIES AND SURROGATES.....	15
POPULATION AND HABITAT OBJECTIVES.....	15
PRIORITY CONSERVATION AREAS, THREATS AND RESILIENCY	17
PARCEL PRIORITIES.....	22
Plan Implementation	24
LAND PROTECTION GOALS AND OPTIONS.....	24
LAND PROTECTION METHODS.....	26
MINERAL AND OTHER RIGHTS	27
LAND ACQUISITION PROCEDURES.....	27
OPERATIONS AND MAINTENANCE.....	29
Planning Outreach and Coordination.....	32
STATE AND LOCAL GOVERNMENTS.....	32
CONGRESSIONAL CONTACTS	32
TRIBAL COMMUNICATION.....	32
PUBLIC OUTREACH.....	33
References.....	35
Appendix A – Draft Environmental Assessment and Intra-Service Section 7	37
PURPOSE AND NEED FOR PROPOSED ACTION.....	39
SCOPING: PUBLIC INVOLVEMENT AND ISSUES IDENTIFIED.....	42
ALTERNATIVE ACTIONS	42
AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES	44
CONSULTATION, COORDINATION AND DOCUMENT PREPARATION.....	51
REFERENCES.....	52
Intra-Service Section 7 Biological Evaluation Form	53
Listed/Pertinent Species and Habitat.....	53
Location	54
Project Description	54
Determination of Effects.....	55

Effects Determination and Response Requested	57
References.....	60

Table of Figures

Figure 1. Boundary of Texas Coastal Bend Landscape Conservation Design.....	3
Figure 2. Existing conservation lands within the Conservation Partnership Area around Big Boggy NWR.	4
Figure 3. Areas of greatest value for whooping cranes assuming a 1-meter sea-level rise by 2100.	18
Figure 4. Areas of greatest value for mottled ducks assuming a 1-meter sea-level rise by 2100.....	19
Figure 5. Areas of greatest value for wintering waterfowl based on Duck-Energy-Days and assuming a 1-meter sea-level rise by 2100.	20
Figure 6. Potential high-quality habitat for Attwater’s prairie-chicken.....	21
Figure 7. Potential habitat for eastern black rail.	22

Executive Summary

In accordance with U.S. Fish and Wildlife Service (Service) policy, a Land Protection Plan (LPP) has been prepared describing the priorities for acquiring up to 55,000 acres to expand the Big Boggy National Wildlife Refuge (NWR) by including lands within several counties of the Texas Coastal Bend. The refuge is currently 4,526 acres in size, so that under this proposal the refuge could undergo a major expansion. The plan outlines the options and methods that could be used to further preserve and protect the area's fish, wildlife and plant resources.

Protection methods would primarily consist of the purchase of conservation easements or fee-title ownership from willing sellers. Under a conservation easement, a landowner retains title to the land but agrees not to alter the land in a way that would damage its biological value.

The lands and easements to be acquired are within a limited acquisition boundary, or Conservation Partnership Area (CPA), that includes the existing refuge in Matagorda County along with additional wetlands and coastal prairie in Matagorda and Jackson counties. Within such a large area, the Service expects to find enough willing sellers of high-quality wildlife habitat to achieve the acquisition objective. Most of the property within the CPA would remain in private ownership, and some areas have already been urbanized. Establishing the CPA does not impose any new regulations on land within its boundary, nor does it authorize the use of eminent domain to obtain title to land. Other conservation partners, such as the Texas Parks and Wildlife Department, also protect land within the CPA and will likely continue to acquire fee-title or conservation easement interests.

A number of species that depend on the habitat of the Texas coast are considered threatened or endangered by the federal or state government. Other important species are in decline. In setting priorities for this LPP, the Service focused on the habitat needs of whooping crane, mottled ducks, and wintering waterfowl (modeled using duck-energy-days or DEDs). In addition, two other priority species and their habitats, Attwater's prairie-chicken and eastern black rail, were included in the prioritization process. The Service's habitat analysis was based on current conditions as well as a potential projected rise in sea-level of approximately 1-meter between now and the year 2100.

A similar Land Protection Plan has been prepared for the Aransas National Wildlife Refuge. The CPA for the Big Boggy refuge is contiguous with the boundary of the Aransas CPA. This allows for a landscape conservation strategy that creates a series of protected habitats throughout the Coastal Bend of Texas.

In accordance with the National Environmental Policy Act (NEPA), a Final Environmental Assessment that analyzes the impacts of expanding both the Aransas and Big Boggy refuges has been completed. The Service developed and analyzed two alternatives: Alternative A (No Action or status quo) and Alternative B (expansion of the Aransas and Big Boggy Refuges by up to 150,000 acres). A third potential alternative of acquiring up to 323,000 acres of habitat within the acquisition boundary was considered but eliminated from detailed analysis due to the lack of sufficient quality habitat within the more limited LPP-derived acquisition area and because of the costs associated with land acquisition, restoration, maintenance and operation of those acres within the refuge system. Under Alternative B, land would be protected by the Service through fee-title acquisition or conservation easements.

The Service believes Alternative B best serves the purpose and need, as well as the stated goals, objectives, vision, and purposes of the two refuges. The No Action alternative would not allow the Service to fully participate with other conservation partners in the management and protection of wildlife and habitats within the Coastal Bend. Beaches, dunes, salt marsh, prairie and freshwater wetlands would not be protected from fragmentation, and connectivity between existing conservation lands would not be achieved. In choosing Alternative B, the Service has concluded that land protection efforts focused on strategically acquiring the highest-quality habitats and natural resources available within the CPA will allow it to make sufficient progress toward achieving habitat protection goals.

Introduction

BACKGROUND

The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, directs the Secretary of the Interior to “*plan and direct the continued growth of the System in a manner that is best designed to accomplish the mission of the System, to contribute to the conservation of the ecosystems of the United States, to complement efforts of States and other Federal agencies to conserve fish and wildlife and their habitats, and to increase support for the System and participation from conservation partners and the public ...*”

In 2011, the U.S. Fish and Wildlife Service (Service) published its guiding vision document for the continued success of the Refuge system in conserving the nation’s fish, wildlife, plants and the habitats that sustain them. “Conserving the Future” outlines the guiding principles for conservation planning and explains that “*the expansive new challenges we face from environmental stressors such as climate change and increasing fragmentation of wildlife habitats demand that we take an adaptive, broad, landscape-level approach to our conservation actions. Such an approach requires that we tap into the knowledge base of our neighbors and partners to help identify conservation priorities. We will address these issues using State Wildlife Action Plans, other federal agency plans and conservation organizations’ strategic plans.*”

Many government agencies, nonprofit organizations and academic institutions are active in studying, protecting, restoring and managing open-space land in the Texas Coastal Bend region. They are all important contributors to the overall conservation goals and strategies for this region, and the Service has coordinated and collaborated with a variety of these entities in developing a Landscape Conservation Design (LCD; USFWS 2016, 2021).

The LCD document was developed in 2016 and revised in 2021 with the assistance of many regional partners to create a shared conservation strategy across the Texas Coastal Bend landscape in response to stressors such as climate change, including sea-level rise, development, and land/water use practices. This planning process used a science-based modeling approach focused on generating a sustainable strategy of landscape stewardship that addresses the resource needs of multiple species and the specific habitat requirements of whooping crane (*Grus americana*), mottled duck (*Anas fulvigula*), eastern black rail (*Laterallus jamaicensis jamaicensis*), wintering waterfowl, and Attwater’s prairie-chicken (*Tympanuchus cupido attwateri*). Figure 1 shows the area within which species-based models were applied and represents the landscape of interest to the Service and conservation partners in the region.

This Land Protection Plan (LPP) is the next step in the Service’s strategic growth process for Big Boggy National Wildlife Refuge.

PROPOSED ACTION

The Proposed Action analyzed in this Draft Environmental Assessment (EA) is to publish and implement the actions identified in this LPP. The plan describes how the Service will identify and acquire certain lands and their associated biodiversity in the landscape surrounding Big Boggy National Wildlife Refuge. Refuge System policy states that land protection planning seeks to “ensure the future growth of the Refuge System supports species-based population objectives derived from landscape conservation designs that further an ecologically-connected network of public and private lands that are resilient to climate change and support a broad range of species under changed conditions.”

This plan describes the use of science-based criteria to identify priority conservation areas for potential acquisition by the Service and establish a limited acquisition boundary that is referred to in this plan as a Conservation Partnership Area (CPA), emphasizing the fact that conservation partners are already actively protecting land and waters in this area (Figure 2) and have played a major role in preparing this plan. The Service welcomes the cooperation of its many conservation partners in further protecting this landscape.

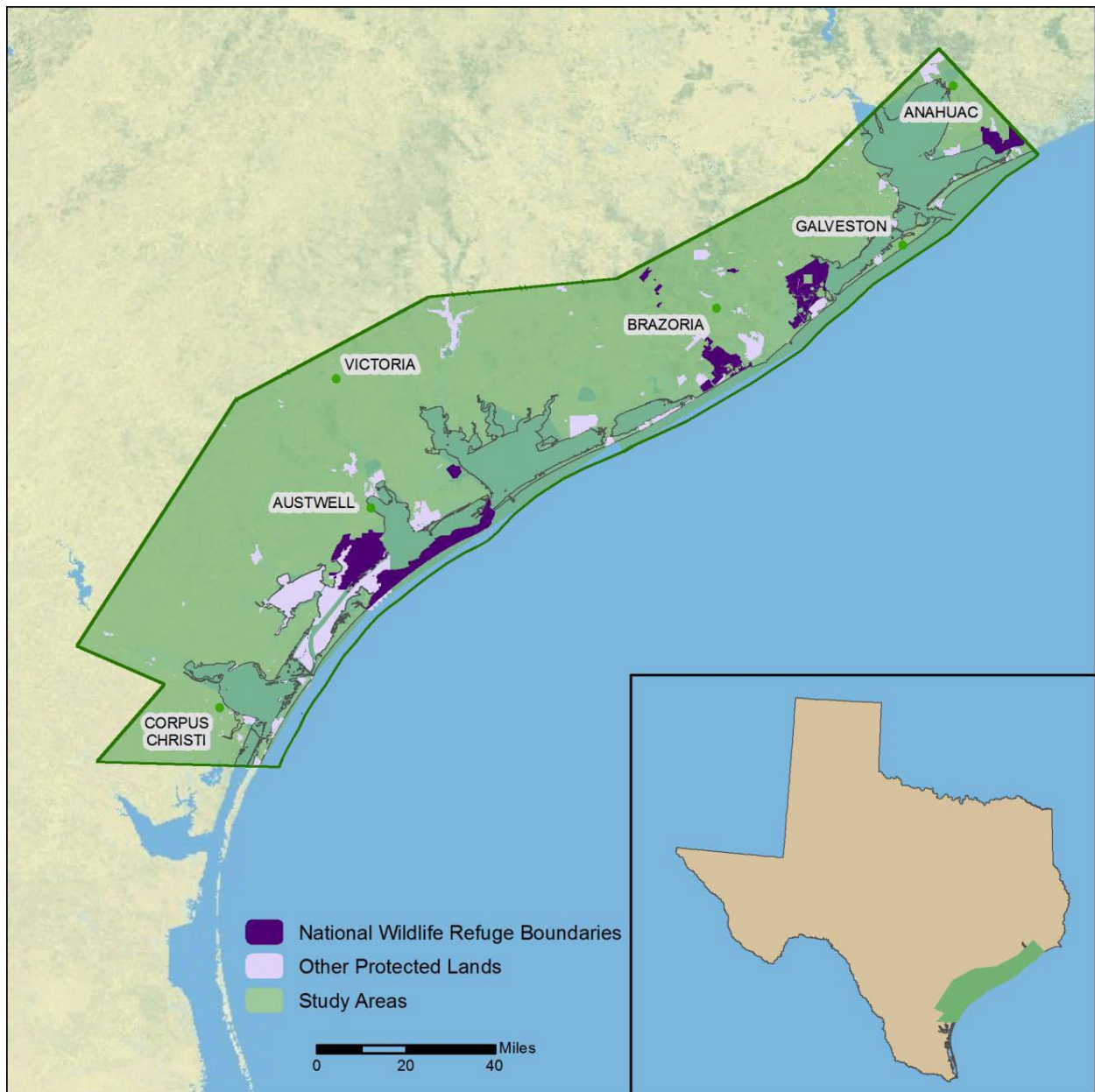


Figure 1. Boundary of Texas Coastal Bend Landscape Conservation Design.

Within this area, the Service may acquire up to 55,000 acres of lands in fee-title or less-than-fee-title (e.g., conservation easements) from willing sellers and donors. The Service would be limited to acquiring property within the CPA but would have the ability to adjust specific parcel acquisitions to respond to new scientific information as well as changing landowner interest, conditions, and opportunities.

Partners may complement the Service's work by acquiring other land or easements within the CPA. Additional acreage may be protected, restored or cooperatively managed through leases or cooperative agreements between the Service and other landowners, both public and private. The majority of land within the CPA will continue to be in private ownership as entire cities (e.g., Bay City and Palacios)

are within the CPA, as well as oilfields, residential subdivisions, wind and solar "farms," and other developed uses. Except in very unusual circumstances where a property's biological function could be restored, the Service does not anticipate the acquisition of developed properties.

PURPOSE AND NEED

In accordance with the fundamental purpose of the Service, the principal goal of the plan is to further protect habitat for fish and wildlife species, focusing on those that are considered threatened or

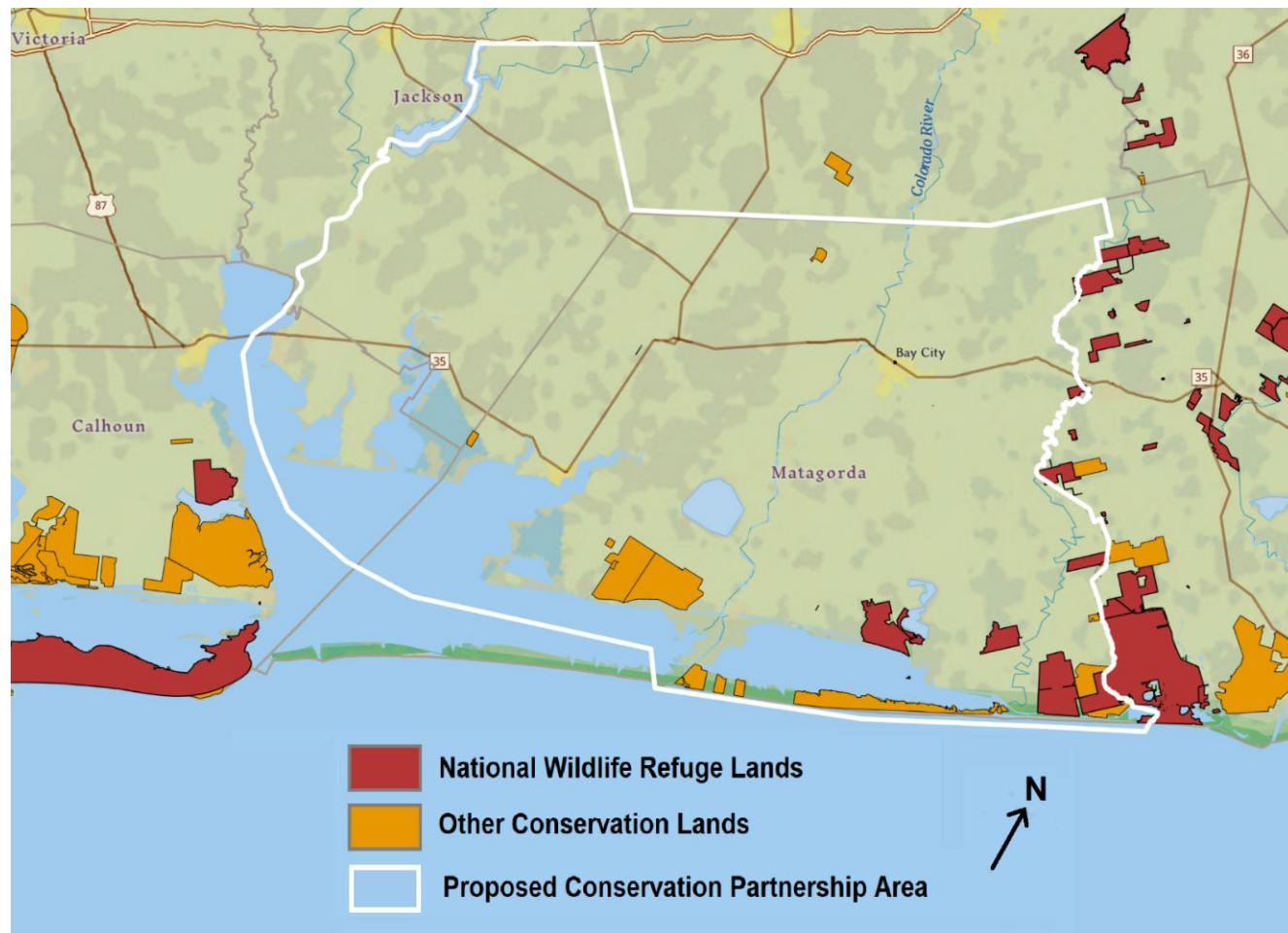


Figure 2. Existing conservation lands within the Conservation Partnership Area around Big Boggy NWR.

endangered, as well as those at risk of becoming so. In addition, acquisitions expanding the refuges footprint are anticipated to maintain or improve the biological integrity, diversity and environmental health (BIDEH) of the refuge, as required by the Refuge Administration Act, as amended. But the plan recognizes that there are many other values associated with the open lands and waters of this region, including agriculture, hunting and fishing, protection from flooding, mitigating storm risk, and wildlife viewing. The plan also recognizes the generations of responsible private stewardship within this landscape and seeks to work with willing landowners to secure a legacy of conservation lands for future generations to enjoy.

STRATEGIC GROWTH OF THE NATIONAL WILDLIFE REFUGE SYSTEM

The Service's Strategic Growth Policy directs that "*The Service will plan and direct the continued growth of the Refuge System in a manner that is best designed to accomplish its mission. To accomplish this goal, it becomes increasingly important for the Refuge System to add lands in a strategic and effective fashion...*" Further growth of the Refuge System must focus on acquiring interests in lands and waters that support the following:

- Recovery of threatened and endangered species, where land acquisition is prescribed in threatened or endangered species recovery plans or subsequent revisions;

- Implementing the North American Waterfowl Management Plan, where acquisition will contribute toward achieving the waterfowl population objectives identified in this plan; and
- Conserving migratory birds of conservation concern, where acquisition is identified as contributing toward achieving population objectives in plans such as the Partners in Flight North American Landbird Conservation Plan and associated step-down plans.

This LPP is intended as a Service contribution to help stem the decline of an entire suite of species, help accomplish recovery plan goals for federally listed endangered and threatened species, and contribute to goals for numerous declining priority migratory waterfowl, waterbirds and landbirds.

STRATEGIC HABITAT CONSERVATION FRAMEWORK

The Strategic Growth Policy further directs the Service to use a Strategic Habitat Conservation framework as a science-based approach for determining where and how to deliver conservation efficiently to achieve specific biological outcomes, in collaboration with partners, the public, and landowners. It requires the Service to provide for the following components in developing acquisition project proposals:

- Identify priority conservation species or the surrogate species that represent them;
- explain how a project or combination of projects contributes to achieving stated population objectives;
- identify priority conservation areas; and
- identify vulnerability and resiliency.

AUTHORITIES FOR EXPANDING THE REFUGE

The Service anticipates that it will continue to acquire lands under the same authorities that have been used to acquire lands in the past. Based on the refuge purposes, lands could be acquired under several statutory authorities, including, but not limited to:

- National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd(b))
- Endangered Species Act of 1973 (16 U.S.C. 1534)
- Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3921-3923)
- Migratory Bird Conservation Act of 1929 (16 U.S.C. 715)
- The Fish and Wildlife Act of 1956 (16 U.S.C. 742a)
- Refuge Recreation Act (16 U.S.C. 460k-1).

Establishing the CPA does not impose any new regulations on land within its boundary, nor does it authorize the use of eminent domain to acquire land. From a landowner's perspective, the only differences would be that the Service could:

- become a management partner by providing technical assistance or funding to maintain or improve habitat, or
- acquire land or a conservation easement over land if it has important habitat value, if partner organizations are unlikely to acquire a protective interest, and if the landowner is willing to sell or donate its interests.

A related LPP is also being developed for nearby Aransas NWR. It will complement conservation efforts for many of the same species found at Big Boggy. Expansion of both the Aransas and Big Boggy refuges will achieve landscape conservation objectives that benefit a wide range of fish and wildlife species.

The acquisition and management actions described in this plan are subject to compliance with the National Environmental Policy Act (NEPA). As such, an Environmental Assessment (EA) has been developed that describes two alternatives for potential expansion of the Big Boggy NWR. This LPP is based on the Service's "Proposed Action" (Alternative B in the EA).

Specific purposes of this plan include:

- announcing the Service's intent to expand the Refuge;
- identifying a limited acquisition boundary or CPA;
- informing landowners about the Service's long-standing policy of acquiring land or conservation easements only from willing sellers or donors; and
- providing landowners and the public with an outline of the Service's policies, priorities, and protection methods for property in the CPA.

The scope of this LPP is limited to identifying potential high-quality lands for acquisition, through fee-title or less-than-fee-title, within the CPA. The plan is not intended to cover the development and/or implementation of programs for the administration and management of those lands.

It is envisioned that the expanded refuge will improve the Service's ability to:

- protect and restore habitat for numerous species listed as federally threatened or endangered;
- benefit numerous other species, reducing the likelihood of their being listed;
- protect some of the last remaining large tracts of coastal prairie, including native prairie plant species endemic to the Texas coast;
- provide habitat for migratory birds, including waterfowl, neotropical migratory birds, and other species of conservation concern; and
- provide opportunities for a variety of wildlife-dependent recreation, potentially including hunting, fishing, wildlife observation, photography, environmental education, and interpretation.

In addition, conservation partners will protect or manage additional open-land and coastal resources off of the refuge to support refuge purposes and their own goals, such as to:

- preserve the agricultural and ranching heritage of the region, and associated livelihoods;
- support commercial fishing;
- protect water quality and quantity;
- reduce threats from tropical storms and other coastal flood hazards; and
- provide for a variety of recreational pursuits, including fishing, hunting, camping and boating.

REFUGE PURPOSES

The Service defines the purposes of a national wildlife refuge when the refuge is established or when new land is added to an existing refuge. In February 1980, representatives of 10 landowners of approximately 4,500 acres within Matagorda County approached the Service to inquire if there was interest in preserving waterfowl habitat through acquisition. The properties were within an area of interest to the Service known as Big Boggy Marsh, located approximately 20 miles south of Bay City, the county seat of Matagorda County. Big Boggy Marsh contained some of the finest remaining marshlands in Matagorda, and the Texas Parks and Wildlife Department had identified Big Boggy Marsh as an area of concern. The acquisition of these lands for the establishment of a wildlife refuge would enable the Service to continue to meet its mandate under the Migratory Bird Conservation Act of providing and maintaining adequate and vital migration and wintering habitat for migratory waterfowl. The Service evaluated the proposal and soon met with county commissioners who went on record as supporting the acquisition of lands within Big Boggy Marsh.

The Big Boggy NWR was approved by the Migratory Bird Conservation Commission on October 7, 1981. The refuge was established on July 8, 1983 with the initial acquisition of 1,271.15 acres. In the years that followed, additions to the refuge through a combination of fee-title land acquisitions and conservation easements increased the acreage to the current total of approximately 4,526 acres.

Big Boggy NWR was established ... "for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. § 715d (Migratory Bird Conservation Act) "... suitable for— (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. § 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. § 460k-2 (Refuge Recreation Act (16 U.S.C. § 460k-

460k-4), as amended).

PLAN VISION AND GOALS

This plan will serve to guide the future protection of important wildlife and habitats of the Texas coastal plain and associated freshwater wetlands, coastal marsh, beaches, dunes and coastal prairies that make up a unique ecosystem supporting a high diversity of aquatic and terrestrial habitats. Together with partners, including willing landowners, the Service will acquire, conserve, restore and manage these lands to promote the recovery of endangered species, support the prevention of other species being listed as threatened or endangered, provide essential habitat to numerous migratory and resident species, and improve protection of human communities and natural resources from coastal storms. As part of a system of public and private conservation lands, the refuge will also expand outdoor recreation opportunities, helping maintain a way of life and supporting local economies.

Four overarching goals were developed to justify the expansion of the refuge:

Goal 1. Functional Conservation Landscape

The proposed expansion of the Big Boggy NWR will contribute to a more connected and functional conservation landscape that will provide effective habitat connections between existing conservation areas, reducing fragmentation and protecting and restoring large tracts of coastal plain and wetlands.

Goal 2. Habitat for Fish and Wildlife

The expanded refuge will provide a wider range of quality habitats to support native wildlife and plant diversity, including migratory birds, federal- and state-listed species, and other species of concern.

Goal 3. Buffer from Coastal Storms and Sea-Level Rise

The expanded refuge will improve the preservation of barrier islands and tidal wetlands that protect inland areas from wind, waves, and storm surge associated with coastal storms, which will become increasingly important as the sea-levels rise in future years.

Goal 4. Wildlife-Dependent Recreation and Education

Refuge visitors of all abilities will enjoy greater opportunities for compatible hunting, fishing, wildlife observation and photography, and environmental education and interpretation, while increasing knowledge of and support for conservation of the important landscape of the Texas coastal plain and marshes.

PLAN PREPARERS AND CONSULTANTS

This plan was prepared with the assistance, input and cooperation of the following individuals:

Tim Anderson – Fish and Wildlife Biologist, USFWS, Ecological Services
Trey Barron – Wildlife Diversity Biologist, Texas Parks and Wildlife Department
David Certain – Chief, Division of Planning, USFWS, National Wildlife Refuge System
Ernest Cook – Owner, Land/Water Associates
James Dingee – Refuge Manager, USFWS, Brazoria National Wildlife Refuge
Sheena Griner – Fish and Wildlife Biologist, USFWS, Ecological Services
Grant Harris – Chief, Biological Sciences Division, USFWS, National Wildlife Refuge System
Steve Jester – Director, Partnerscapes
Bryar Johnson – Wildlife Biologist, USFWS, Texas Mid-Coast Refuge Complex
Curtis Jones – Refuge Manager, USFWS, San Bernard National Wildlife Refuge
Mike Lange – Owner, Texas Conservation Partners

Mary Lee (Sandra) – Fish and Wildlife Biologist, USFWS, Ecological Services
John Magera – former Refuge Manager, USFWS, Attwater Prairie Chicken National Wildlife Refuge
Jena Moon – Zone Biologist, USFWS, Upper Gulf Coast Zone
James Morel – Migratory Bird Specialist, Central Coast Wetland Ecosystem Project, Texas Parks and
Wildlife Department
Mike Morrow – retired Wildlife Biologist, USFWS, Attwater Prairie Chicken National Wildlife Refuge
Jim Mueller – Zone Biologist, USFWS, Central & East Texas Zone
Sonny Perez – South Texas Refuge Supervisor, USFWS, National Wildlife Refuge System
Joe Saenz – Refuge Manager, USFWS, Aransas National Wildlife Refuge
Colt Sanspree – Assistant Zone Biologist, USFWS, Upper Gulf Coast Zone
Barry Wilson – Gulf Coast Joint Venture Coordinator, USFWS, Wildlife and Sportfish Restoration, Migratory
Birds Program
Jennifer Wilson – Wildlife Biologist, USFWS, Texas Mid-Coast Refuge Complex
Bryan Winton – Refuge Complex Manager, USFWS, Texas Mid-Coast National Wildlife Refuge Complex
Woody Woodrow – Fish and Wildlife Biologist, USFWS, Ecological Services

Resources

RESOURCES TO BE PROTECTED

Habitat

The refuge lies in the Coastal Bend region of Texas. The region has a long history of ranching, agriculture, hunting and fishing, but it also includes urban communities and tracts that have been developed for oil and gas recovery as well as alternative energy production. The dominant habitat types in the CPA include coastal prairies, grasslands, riparian habitats, freshwater wetlands, coastal marshes, and beach and dune systems. A detailed description of the physical environment at the refuge and for the surrounding area can be found in the Texas Mid-coast National Wildlife Refuge Complex Comprehensive Conservation Plan (USFWS, 2013) and in the Environmental Assessment (EA) associated with this LPP (Appendix A).

Threatened and Endangered Species

As further described in the Texas Mid-coast CCP and in this plan's associated EA, the CPA provides habitat for a number of species listed as federally threatened or endangered, including the whooping crane (endangered), piping plover (threatened), Attwater's prairie-chicken (endangered), northern aplomado falcon (endangered), eastern black rail (threatened) and rufa red knot (threatened). State-threatened species within the area include the reddish egret and peregrine falcon. All of these species are anticipated to benefit from the expansion of the refuge as a result of greater habitat protections and restoration.

Other Wildlife

As further described in the Texas Mid-coast CCP and in this plan's associated EA, the area's variety of habitats supports a wide range of wildlife. Numerous species of birds, both resident and migratory, utilize the area's habitats for foraging, resting, and nesting, including species of concern such as seaside sparrow, Sprague's pipit, loggerhead shrike, black skimmer, Wilson's plover, American oystercatcher, long-billed curlew, king rail, mottled duck, northern pintail and redhead.

Generally, there are two categories of fish associated with the coastal marshes of this region: (1) species directly dependent on coastal marshes and (2) species making opportunistic use of coastal marshes. Certainly, there are many other species of fish and marine life in the surrounding waters.

THREATS

A variety of factors have been implicated in the decline of habitats and wildlife species in the CPA. Acquisition of additional lands with quality wildlife habitats can act to slow and mitigate these losses.

Residential Development and Urban Sprawl

Although still largely rural, over one-third of the Texas population is located along the Gulf Coast. The CPA is influenced by the Corpus Christi, San Antonio and Houston metropolitan areas, some of the fastest-growing regions of the country. With the surge of residential and commercial development along the Texas coast, marshes, wetlands, and beaches are increasingly threatened, and opportunities for protection continue to decline. The area, especially the coastline, draws visitors from all of these major urban areas and beyond. Some large ranches have been fragmented into "ranchettes" or residential subdivisions. The area is attractive for second homes.

Energy Development

Oil and gas exploration and recovery are common throughout the mainland portion of the CPA. Approximately half of the nation's petrochemical industry and more than a quarter of its refining capacity can be found along the Gulf Coast. There is also growing demand for tracts of land suitable for the installation of solar- and wind-power-generation facilities, as well as related electric transmission lines.

Invasive Species

The introduction and spread of invasive plant and animal species pose an ongoing and serious threat to native habitats. Some of the invasive species are non-native, such as alligatorweed, Chinese tallow and feral hogs. Others, such as mesquite, are native but can spread to dominate plant and animal communities without effective controls. Currently, the refuge is controlling invasive plants through prescribed fire and herbicide treatments.

Feral hogs negatively affect all habitat components such as oak woodlands, coastal prairie grassland, marshes and wetlands. They reproduce at a high rate and are difficult to control. Feral hog control is currently conducted by neighboring landowners, but not on the refuge. However, Big Boggy could be included in future control activities if additional acres are acquired to make them more cost effective.

Climate Change

Long-term climate change is anticipated to contribute to sea-level rise and long-term warming. These processes will lead to a change in and the outright loss of coastal habitats. Rising sea levels are expected to inundate vital habitat and increase the vulnerability of inland areas to flooding. In addition, climate change contributes to changes in the frequency and intensity of extreme climatic events such as drought, severe freeze events, king and neap tides, floods, etc. Severe droughts can lead to the loss of freshwater inflows that are essential to maintaining saline balance, and heavy bouts of precipitation can cause flooding and consequent erosion and excess nutrient runoff. Increasing frequency and severity of coastal storms imperil both human and natural communities.

RELATIONSHIP OF PROJECT TO OTHER LANDSCAPE CONSERVATION GOALS AND OBJECTIVES

The expanded Big Boggy NWR will contribute to a more connected and functional conservation landscape by reducing habitat fragmentation, preventing degradation of coastal zone habitats, and protecting large tracts of coastal marsh and prairie. Several government agencies, nongovernmental organizations and landowners are working in this landscape to protect and restore its resources through acquisition of land and easements, marsh and habitat restoration, and related research. Expanding the refuge will complement these landscape conservation goals and objectives. Related international, national and regional conservation plans and initiatives that have been consulted in preparing this plan include the following.

International and National Conservation Plans and Initiatives

North American Waterfowl Management Plan

The North American Waterfowl Management Plan (NAWMP) identifies goals to protect “*wetlands and related habitats sufficient to sustain waterfowl populations at desired levels...*”, while providing places to recreate and providing ecological services. The plan recommends that conservationists focus resources on important landscapes that have the greatest influence on waterfowl populations. In the NAWMP, the Gulf Coast Region—including the coastal marshes—is listed as an area “*of greatest continental significance to North American ducks, geese, and swans.*”

International Whooping Crane Recovery Plan (Third Revision, 2007)

The plan states that “*protection is ... needed for winter habitat required to accommodate an expanding crane population on public and private lands. The threat of increasing human population growth, activities, and development that may be detrimental to the cranes and their habitat should be lessened or alleviated in these areas. In most instances, protection would not significantly alter current uses. ... When necessary, purchase fee title or conservation easements from voluntary sellers [to protect] essential marshes used by whooping cranes during winter.*” The plan further states that enough winter habitat must be protected to support a population of at least 1,000 cranes.

Attwater’s Prairie-Chicken Recovery Plan (Second Revision, 2010)

The primary objective of this plan states the need to: “*Maintain and improve 300,000 ac (121,457 ha) of coastal prairie habitat for APC throughout the bird’s historical range on both private and public lands. APC recovery will require a network of large, high quality coastal prairie habitats containing multiple core areas distributed along at least 100 linear miles (160 km). A core area is defined as an area of habitat capable of supporting a population of 500 (250 displaying males), or approximately 25,000 ac (10,121 ha) (assuming a carrying capacity of 1 bird/50 ac (20 ha) (Lehmann1941).*”

Recovery Outline for the Eastern Black Rail (2020)

This preplan outlines states that: “*The initial plan is to continue our engagement with partners, landowners, and stakeholders to circumvent, manage, and alleviate threats to the eastern black rail.*” It also provides for the following relevant strategy: “*Strategically secure suitable habitat patches through conservation easements and/or land acquisition from coastal to inland areas to offset the effects of sea level rise and to facilitate marsh migration.*”

North American Waterbird Conservation Plan

The Habitat Goal of the North American Waterbird Conservation Plan (NAWCP) is “*to protect, restore, and manage sufficient high-quality habitat and key sites for waterbirds throughout the year to meet species and population goals,*” under which one strategy is to “*implement conservation and management actions that secure important habitats.*” Lands within the CPA provide nesting, foraging and roosting habitat for a wide variety of waterbird species, such as little blue heron, snowy egret and wood stork, all of which are ranked in the High Category of Concern in the NAWCP.

Regional Conservation Plans and Initiatives

Gulf Coast Joint Venture (GCJV) Texas Mid-Coast Initiative

The Gulf Coast Joint Venture’s Texas Mid-Coast Initiative area includes the entire CPA. The goal of the Texas Mid-Coast Initiative is to provide wintering and migration habitat for significant numbers of dabbling

ducks and redheads, as well as year-round habitat for mottled ducks. The report states, "*Habitat conservation is imperative for meeting the waterfowl population objectives of both the NAWMP and the GCJV.*" The report outlines several habitat conservation actions, one of which is "*acquiring vulnerable tracts through fee-title acquisition, conservation easement, or management agreement...*"

Southeast U.S. Regional Waterbird Conservation Plan (2006)

The coastal marshes in the CPA fall into the Southeast U.S. Planning Region of the North American Waterbird Conservation Plan. One of the overarching conservation goals in the Southeast U.S. Waterbird Conservation Plan (SUSRWCP) is "*restoration and protection of habitats essential for conservation,*" and one of the plan's recommendations is to "*protect and manage nesting and foraging habitat throughout the region...*" Lands within the CPA provide foraging habitat for many species of waterbirds, including black rail, reddish egrets, roseate spoonbills, little blue heron, great blue heron, snowy egret and green heron. The SUSRWCP designates little blue heron "*as a Continental and Regional Concern species requiring Immediate Action because of demonstrable declines over most of its range in the U.S.*"

Partners in Flight Bird Conservation Plan - Gulf Coastal Prairie - Bird Conservation Region 37 (2008)

In this plan, this region is described as a critical stopover area for Nearctic-Neotropical migrants. The plan designates the region stretching from the Colorado River mouth in Texas to approximately Point au Fer, Louisiana as "*Consistent Abundant*" (i.e., used by large numbers of migrants each year and season), and classifies this area as Priority 1 for habitat protection.

GCJV Mottled Duck Conservation Plan

The Mottled Duck Conservation Plan identifies opportunities to increase nest success and brood survival as a priority action to address concerns about declining populations in Texas. Conservation of land in the CPA will directly address that priority issue.

Southeast Conservation Adaptation Strategy

The Southeast Conservation Adaptation Strategy (SECAS) is a collaboration of public and private organizations dedicated to the support of healthy ecosystems in the Southeast and Caribbean by accelerating conservation action. The principal product of SECAS is the Southeast Conservation Blueprint, which illustrates areas of greatest conservation importance. Along the Texas coast, the Southeast Conservation Blueprint corresponds closely with the geography of the Big Boggy CPA.

Reddish Egret Conservation Action Plan

The plan identifies availability of suitable foraging habitat as the second most important factor limiting reddish egret population growth and cites the need to "*Identify mechanisms for conserving unprotected focal areas.*" The reddish egret is ranked as a species of moderate concern by the North American Waterbird Conservation Plan and as a Tier 1 species of concern by the SUSRWCP. Lands within the CPA provide important nesting and foraging habitat for the reddish egret.

Texas Conservation Action Plan (State Wildlife Action Plan)

Coastal wetlands and Matagorda Bay are specifically mentioned as a Priority Habitat in the Gulf Coast Prairies and Marshes Ecoregion Handbook of Texas Parks and Wildlife Department's Texas Conservation Action Plan.

Texas Coastal Resiliency Master Plan

The 2019 update to the Texas General Land Office Master Plan cites the need for “*multiple lines of defense solutions to restore, enhance and protect coastal habitats, infrastructure and communities*” and recognizes that “*conserving coastal lands can help prevent coastal flood impacts.*”

Coastal Bend Bays Plan

This plan was produced by the Coastal Bend Bays and Estuary Program in collaboration with the Mission-Aransas National Estuarine Research Reserve. It cites the need to “*collaborate with partners to identify and protect properties with high conservation value through donation, acquisition, or conservation easements.*”

Habitat Conservation and Coastal Public Access Plan for the San Antonio Bay System

This plan, produced by the Coastal Bend Bays and Estuary Program, identifies dozens of tracts that are priorities for conservation. All of them have been incorporated within the CPA boundaries of both Big Boggy and Aransas NWRs.

Partnership Efforts and Related Resources

Partnerships are integral to the conservation of this landscape. The protection and conservation of wildlife habitats and working landscapes are issues of concern in the region. During public scoping and conversations with landowners and other conservation partners for the project proposal, the Service recognized that working with all interested parties would provide an enhanced ability to protect and manage wildlife and habitats in the region. Partners often assist with activities including environmental education and interpretive programs, land acquisition, public relations, habitat evaluations, species inventories, nest site and wildlife monitoring, and habitat restoration. For these reasons, the Service recognizes the need to collaborate with other conservation and community organizations, along with local and state governments in the region.

Through this initiative of expanding the refuge, the Service will work to combine conservation efforts with those of many partners, including partners yet to be identified. Several federal and state agencies currently serving as key partners in this watershed include:

- Lower Colorado River Authority
- RESTORE Council
- Texas Commission on Environmental Quality
- Texas General Land Office
- Texas Parks and Wildlife Department
- USDA Natural Resources Conservation Service

In addition, several nongovernmental conservation partners with compatible goals are active in the CPA, including:

- Coastal Bend Bays and Estuary Program
- Coastal Prairie Conservancy
- Ducks Unlimited
- Gulf Coast Bird Observatory
- International Crane Foundation
- Matagorda Bay Foundation
- National Wildlife Federation
- National Wildlife Refuge Association

- PartnerScapes
- San Antonio Bay Partnership
- Texas Agricultural Land Trust
- The Conservation Fund
- The Nature Conservancy

Many of the Service's partners already own or have future plans to protect lands in the project area through fee ownership or conservation easements. In addition, several partners have completed habitat research and on-the-ground habitat restoration projects throughout the CPA.

The combined efforts of the Service and its partners would provide substantial and long-term protection of federally and state-listed threatened and endangered species, other federal trust species, migratory birds, rare habitats, agricultural lands, and recreational areas that are important to the long-term ecological health, economy and way of life of the region.

Land Protection Priorities

The Service's preferred action (Alternative B in the EA) could result in the protection of up to 55,000 acres of wildlife habitat with the expansion of Big Boggy NWR, through a combination of fee-title purchases (i.e., land acquisition) and less-than-fee-title purchases (primarily conservation easements) from willing sellers. The Service believes these are the minimum interests necessary to conserve and protect the fish and wildlife resources in the proposed area.

Given the large amount of land that may potentially be added to the refuge, it was necessary to both prescribe an acquisition area (CPA) and create a method whereby refuge staff and partners could identify areas that represent high-quality habitat for species of interest. The CPA must fall within the boundary identified in the LCD.

PRIORITY CONSERVATION SPECIES AND SURROGATES

The Service used a subset of priority conservation species, or surrogates, to represent larger suites of species. This is a common method for strategically identifying areas important for conserving large numbers of species and their habitats at landscape scales. In this case, the surrogate species used were whooping crane, mottled duck and wintering waterfowl (modeled using duck-energy-days or DEDs). In addition, two other priority species and their habitats were thought to not be well-captured by the surrogates, and were individually included in the prioritization process. Those species were Attwater's prairie-chicken and eastern black rail.

POPULATION AND HABITAT OBJECTIVES

The population and habitat protection objectives of the five bird species or groups guided the Service in shaping the extent of the proposed CPA boundary for Big Boggy NWR. Those objectives are further discussed here.

Whooping Crane

By 1941, the whooping crane population in the wild had collapsed to only 14 birds. Following a ban on hunting and establishment of the nearby Aransas NWR as a protected habitat, the crane population that migrates between the Texas coast and Canada's Wood Buffalo National Park has grown to over 500 birds. If no other wild self-sustaining population of the whooping crane can be established, then the Aransas-Wood Buffalo population must reach at least 1,000 individuals, including at least 250 productive pairs, for the whooping crane to be downlisted from endangered to threatened. That population objective is set forth in the whooping crane international recovery plan (USFWS, 2007). Lands currently protected by the Service and its partners can support a population of 1,094 cranes (USFWS, 2016). However, due to projected sea-level rise and resulting loss of marshland, currently protected lands are predicted to support only 465 cranes by 2100.

To achieve protection of habitat for 1,000 whooping cranes in 2100, between 84,000 and 323,000 additional acres need to be protected, with the former number based on good quality habitat, and the latter on poor quality (USFWS, 2016). The specific population objectives for the Big Boggy CPA cannot be precisely established, because the whooping crane population that can be supported by an additional 55,000 acres will vary depending on the quality of the habitat protected.

Mottled Duck

Mottled ducks are endemic to the Gulf Coast and present year-round in Texas. According to the Gulf Coast Joint Venture Mottled Duck Conservation Plan (Lancaster et al. 2023) the mottled duck population objective in Texas is to maintain spring mottled duck populations at an average (2011-2021 WGC Mottled Duck Breeding Population Survey; BPOP) of 64,324 and periodically exceed 82,104 (80th percentile of 2011-2021 BPOP) with increased frequency and magnitude until the population sustains 108,480 (69% greater than 2011-2021 BPOP average) within the survey range. The Texas spring mottled duck population in 2021 was 28,890 birds. For that reason, protecting current and potential future high-quality habitat for mottled ducks is a priority.

Wintering Waterfowl

The Texas Gulf Coast is the primary site for ducks wintering in the Central Flyway. For wintering waterfowl, food energy is commonly considered to be the most limiting factor during non-breeding seasons, which is why managers of waterfowl habitats in non-breeding areas strive for conditions that produce abundant and high-energy plant foods that are palatable to waterfowl.

The 2021 LCD states that the objective for supporting wintering waterfowl in the Texas Mid-Coast Initiative Area is to manage for a supply of 255.3 million duck-energy days. This was derived from the North American Waterfowl Management Plan continental population objectives, stepped down to mid-winter objectives for the Texas Mid-Coast Initiative Area. However, it should be noted that the land area within the Big Boggy and Aransas CPA's is not adequate to provide the recommended supply of DEDs, even under optimal management conditions. Privately held land and other public lands both inside and outside the CPA will need to be managed to provide the food supply for wintering waterfowl if population objectives are to be met.

Attwater's Prairie-chicken

The Attwater's prairie-chicken was declared an endangered species in 1967, and despite decades of efforts, the species has not recovered. Loss of coastal prairies is the ultimate factor responsible for the near extinction of this species (USFWS, 2010). This loss of habitat has been caused by conversion to cropland, urban and industrial expansion, and invasion of prairies by woody species that attract predators. Ideally, this species requires a large unbroken expanse of coastal prairie.

Although the prairie-chicken was eliminated from the Coastal Bend region decades ago, efforts are being made to reintroduce the species in cooperation with some ranchers in Goliad County and with the assistance of captive-breeding programs. Those efforts have had limited impact. The total population of birds in the wild has hovered around 100 for the past fifteen years – far short of population goals. According to the Attwater's Prairie-Chicken Recovery Plan, downlisting the bird from endangered to threatened would require a minimum of 3,000 breeding adults annually over a five-year period with sufficient habitat of coastal prairie grasslands (150,000 acres) to support this population distributed along a linear distance of no less than 50 miles. Delisting the species altogether would require double those amounts: at least 6,000 breeding adults occupying at least 300,000 acres over a linear distance of at least 100 miles.

In December 2020, the Service assessed woody vegetation encroachment throughout the historic range of Attwater's prairie-chicken using remotely-sensed data. The results of this assessment identified potential prairie-chicken habitat across the conservation landscape. A specific proportion of the population goal for the prairie-chicken has not been allocated to the Big Boggy NWR, but the Service's assessment did identify several areas within the Coastal Bend region that could be suitable for Attwater's prairie-chicken reintroduction, and the majority of these areas have been included in the CPA for Big Boggy NWR.

Eastern Black Rail

Effective November 9, 2020, the eastern black rail was listed by the Service as “threatened” under the Endangered Species Act. This bird is notoriously secretive, so its presence is difficult to document, but it is known to inhabit the marshes of the Texas coastal bend. The Southeast U.S. Regional Waterbird Conservation Plan cites a population objective of increasing eastern black rail pairs from 650 to 1,250 in Gulf Coast prairies. However, the CPA for Big Boggy NWR is only a portion of the entire recovery area for this species. No specific population goal has been identified for this species on this refuge.

PRIORITY CONSERVATION AREAS, THREATS AND RESILIENCY

Whooping Crane and Mottled Duck

During development of the LCD for this area, the Service, in collaboration with multiple partners and species experts, developed a GIS-based interactive spatial modeling tool to model projections of where habitat of varying quality for whooping cranes and mottled ducks might occur at 20-year time steps through the year 2100. The tool identified habitats at varying risk and resilience to regional processes including urbanization and loss or gain of habitats due to sea-level rise. The areas identified as habitat with some resilience to these threats served as the basis for identifying areas of potential conservation value within the CPA and establishing its boundary.

Details of the modelling efforts can be found in the 2021 LCD and in scientific publications cited there. Briefly, in considering the threat of urbanization (defined as ex-urban and suburban housing or expanded industrial lands and infrastructure), the model considered factors such as distance from recent urbanization, urban centers and roads, road density, slope, elevation and development trends. To evaluate the impact of sea-level rise, the model used a projection of a one-meter rise in sea level by the year 2100. The results of this model were then overlaid on habitat models for whooping crane (Figure 3) and mottled duck (Figure 4) to indicate those habitat areas likely to remain valuable in the future.

Examples of higher-quality habitats within the CPA that, if protected, could contribute to the conservation of mottled duck are essentially the same areas as those for whooping crane but extend somewhat further inland where freshwater wetlands exist.

Wintering Waterfowl

The LCD effort also modeled the quality of various habitats across the landscape for wintering waterfowl using DEDs as the metric for comparison. Migratory bird joint ventures and others responsible for large-scale conservation planning for non-breeding ducks commonly use DEDs as a metric to evaluate the capacity of a given landscape and its component tracts to support non-breeding duck populations. This effort used a combination of DEDs and (for seasonal habitats) frequency of flooding to assign relative duck foraging values to every pixel across the entire area, which can then be summed for any combination of user-defined polygons to compare relative carrying capacity for ducks (Figure 5).

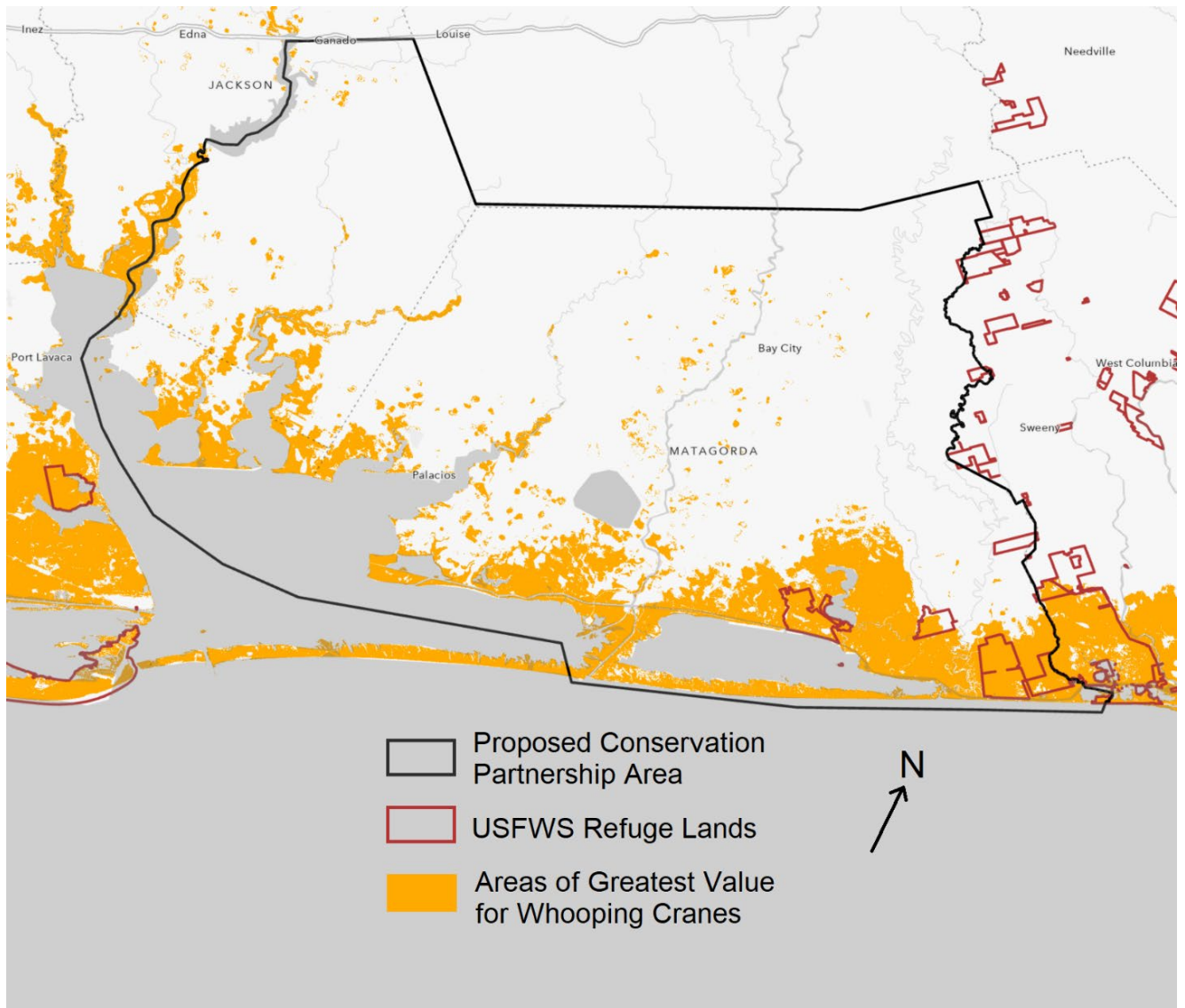


Figure 3. Areas of greatest value for whooping cranes assuming a 1-meter sea-level rise by 2100.

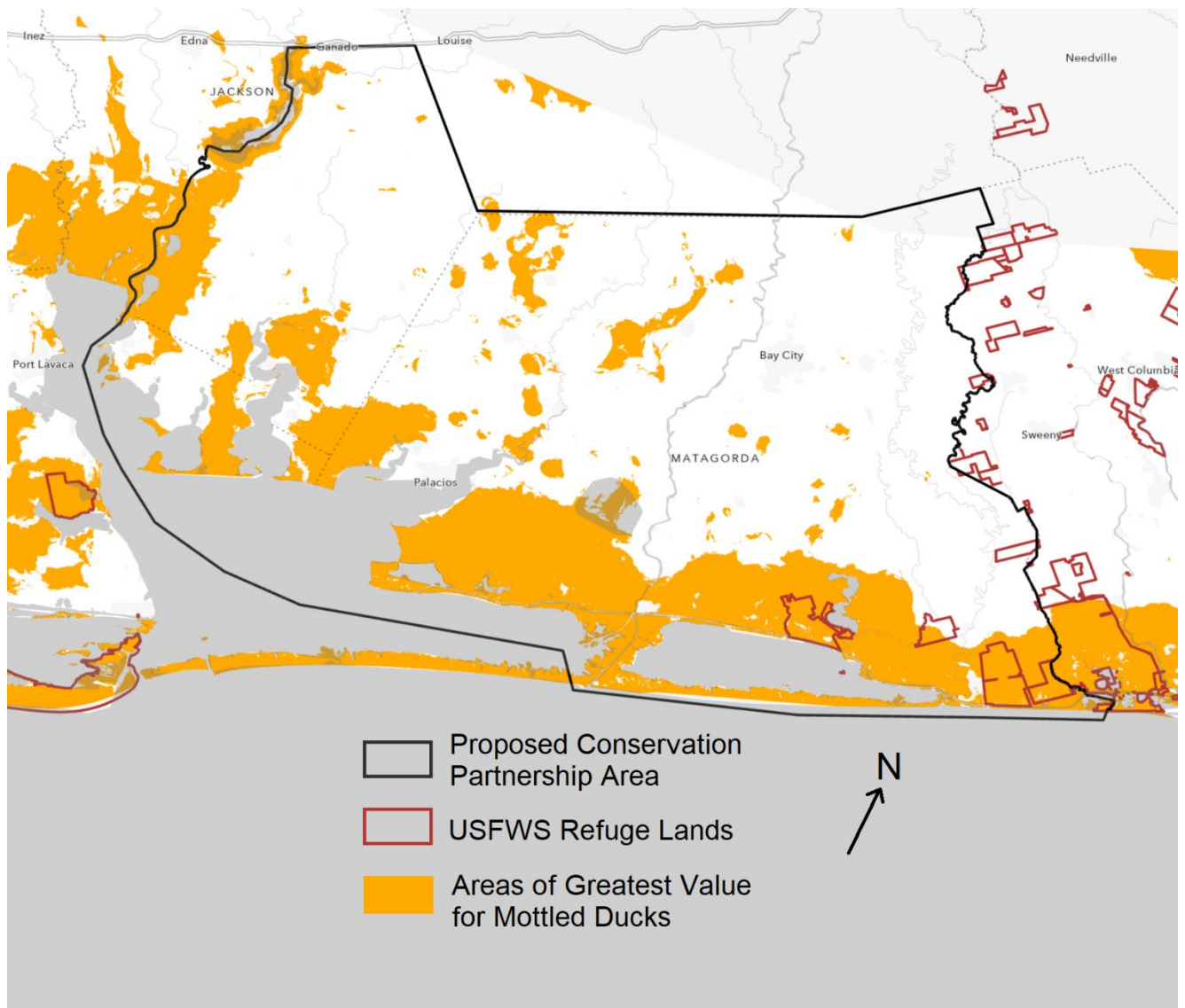


Figure 4. Areas of greatest value for mottled ducks assuming a 1-meter sea-level rise by 2100.

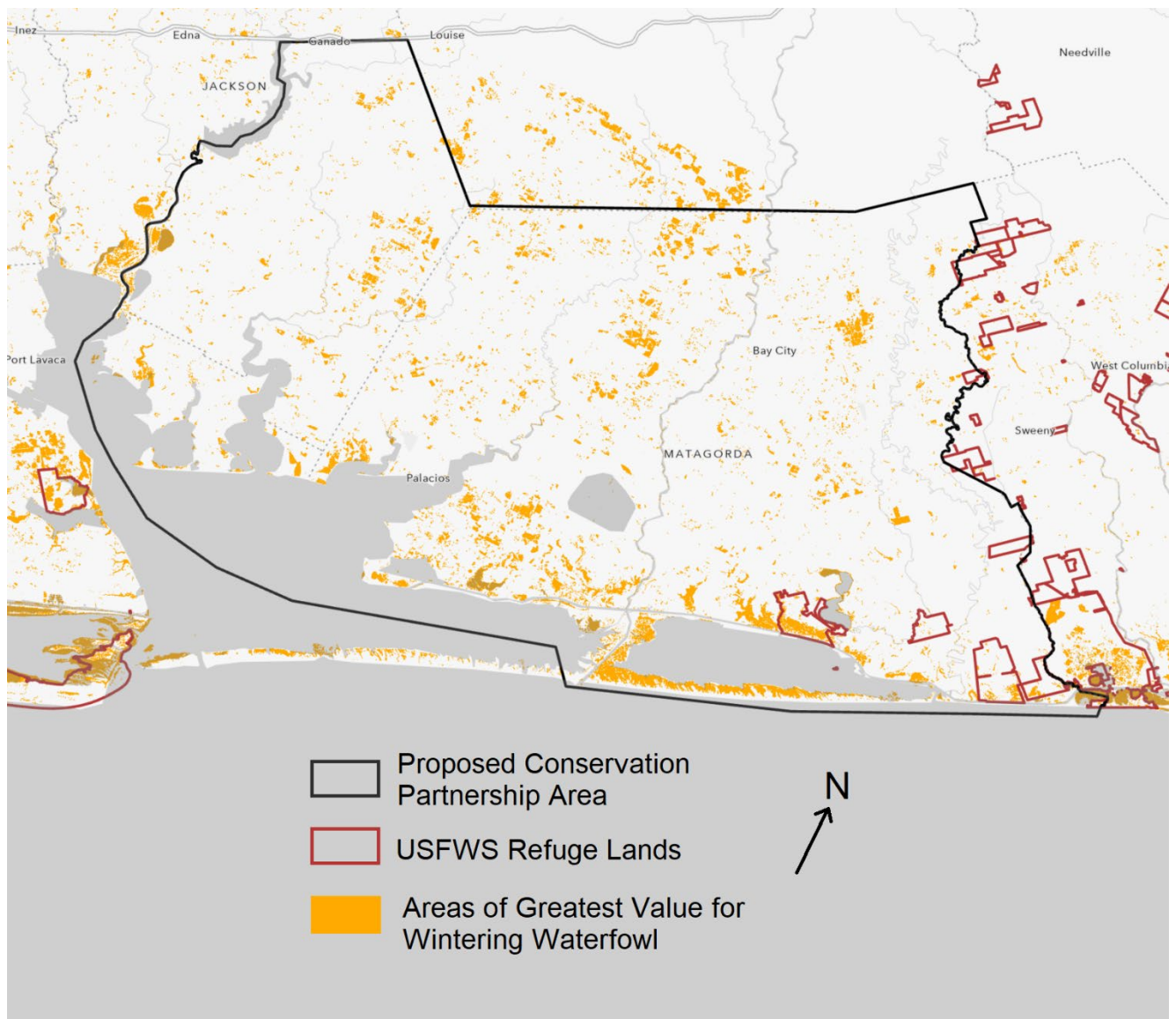


Figure 5. Areas of greatest value for wintering waterfowl based on Duck-Energy-Days and assuming a 1-meter sea-level rise by 2100.

Areas of high value for DEDs are widely distributed throughout the Texas coast. The CPA boundary has been designed to incorporate a high proportion of lands of greatest significance to wintering waterfowl. Incentives that encourage private landowners to manage their land to benefit wintering waterfowl will continue to be an important strategy in maintaining and restoring these sources of waterfowl nutrition.

Attwater's Prairie-chicken

In addition to the modeling effort, the LCD describes the basic habitat needs of Attwater's prairie-chicken and presents the results of an analysis of potential prairie-chicken habitat (Figure 6). High-value habitat for Attwater's prairie-chicken occurs in only a few locations in this area of the Texas coast. This species needs large, unbroken tracts of coastal prairie with little or no brush or trees. The Big Boggy CPA includes several areas that would be suited to the needs of this species if sufficient protected acreage can be stitched together. As illustrated in the map, the CPA boundary is being established to include most of these locations.

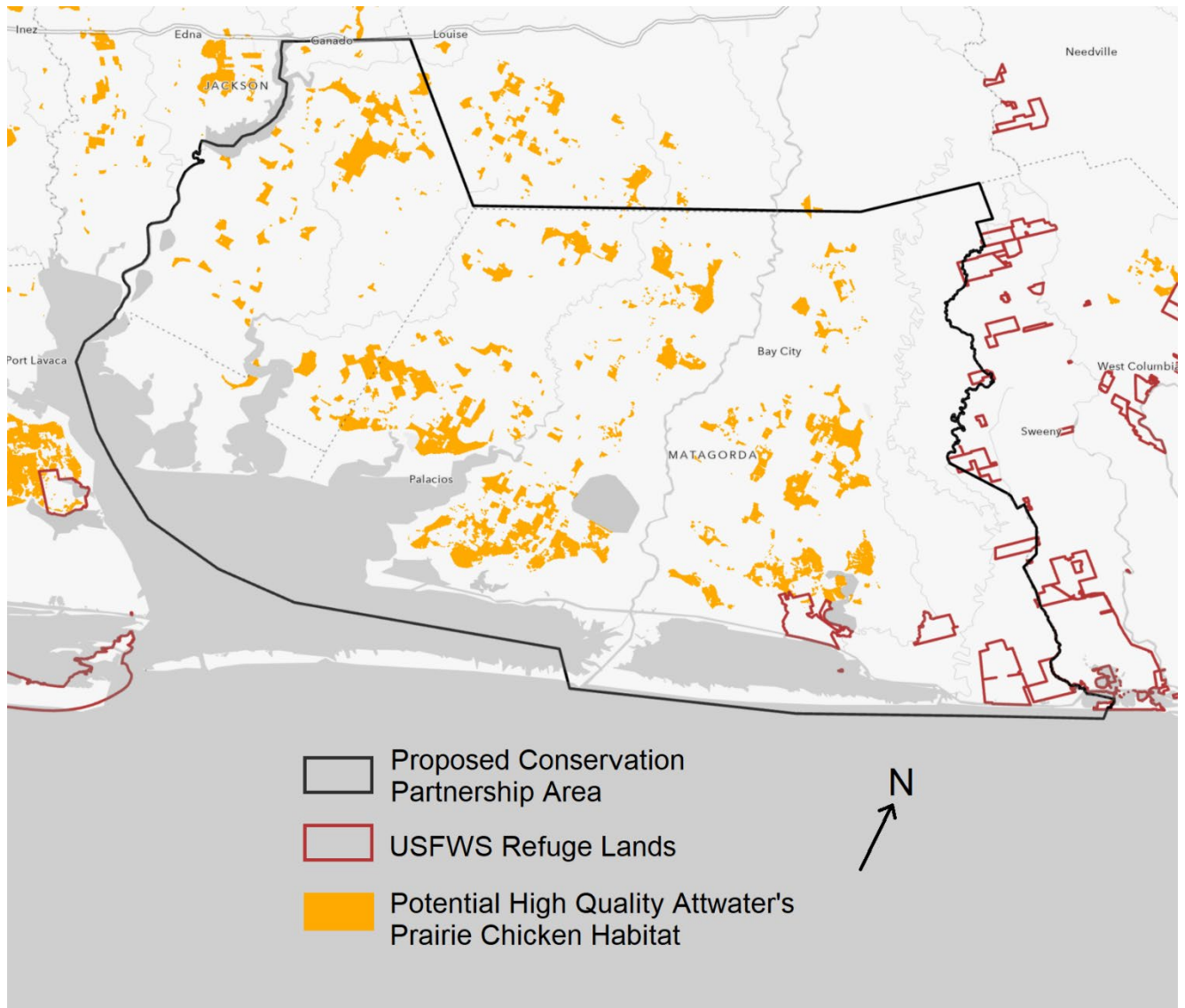


Figure 6. Potential high-quality habitat for Attwater's prairie-chicken.

Eastern Black Rail

Finally, a more recent analysis, independent of the LCD, provided information on potential priority areas for eastern black rail. Little is known about the actual locations inhabited by this species due to its furtive nature. But the bird is known to inhabit some types of marshlands. Black rails require dense vegetative cover that allows movement underneath the canopy. Because these birds are found in a variety of salt, brackish and freshwater wetland habitats, plant structure is considered more important than plant species composition in predicting habitat suitability. Based on recent irregularly flooded wetland analysis, the areas likely to support eastern black rail are illustrated in Figure 7. Because a variety of wetland habitats can support the eastern black rail, suitable habitat has considerable overlap with both whooping cranes and mottled ducks.

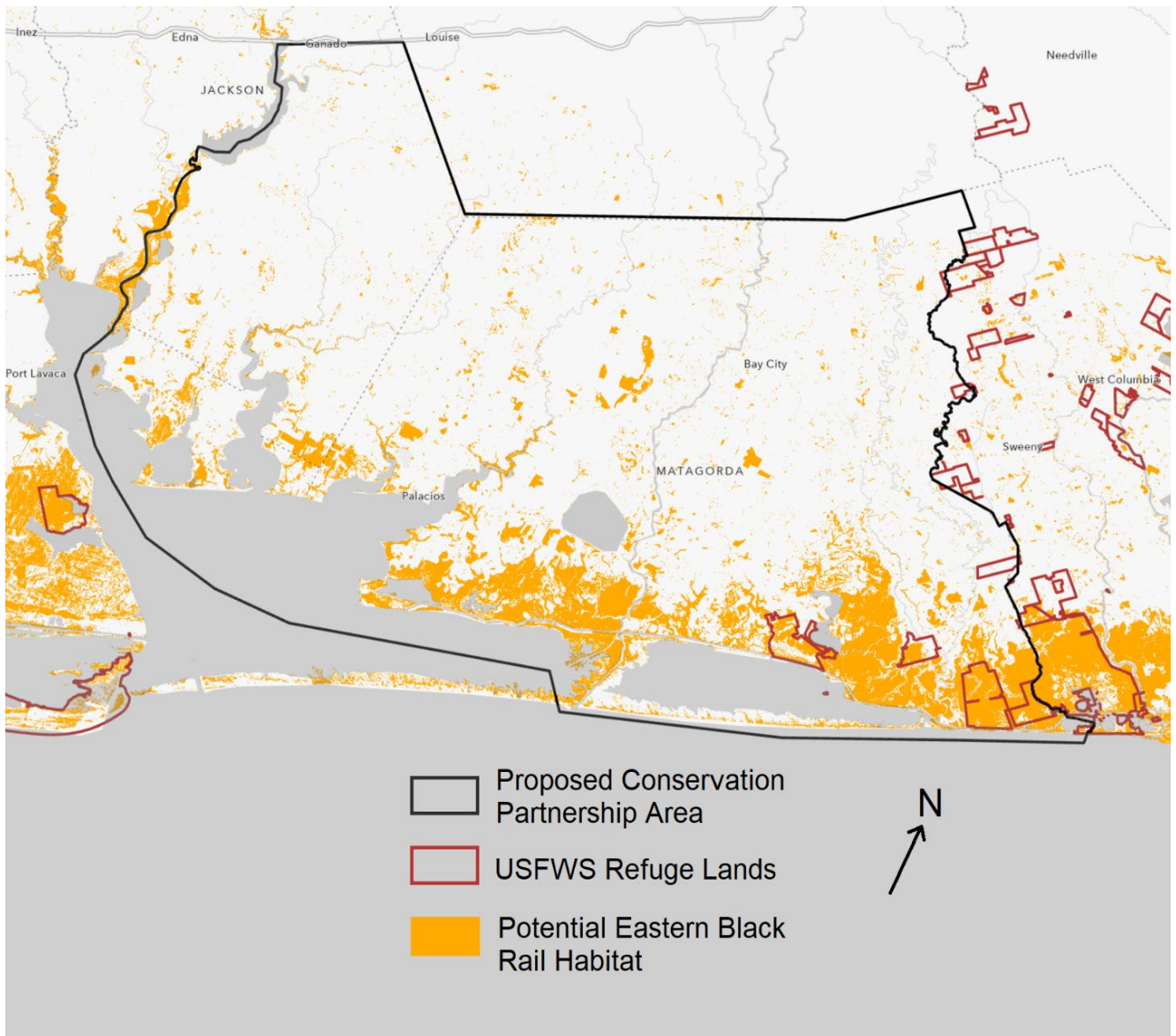


Figure 7. Potential habitat for eastern black rail.

PARCEL PRIORITIES

Within areas identified as high priorities for one of the focal species discussed above, choices will need to be made between alternative opportunities for expending limited financial and management resources on habitat protection and restoration. To assist in making those choices, Service biologists developed the following general decision criteria:

Species Conservation Value

Tier 1 – High conservation importance in rank order

1. Wintering waterfowl
2. Mottled duck
3. Eastern black rail

Tier 2 – Medium conservation importance

1. Whooping crane

2. Attwater prairie-chicken
3. Columbia bottomlands

Tier 3 – Lowest conservation importance in rank order

1. Sea turtles (Beach habitat susceptible to sea-level rise)
2. Piping plover (Beach habitat susceptible to sea-level rise)
3. Red knot (Beach habitat susceptible to sea-level rise)

Diversity value - Higher score for parcels with more species vs fewer species.

Population size – Higher score for larger population size of focal species

Current and future habitat condition – Higher score for parcels with quality habitat that is anticipated to be maintained into the future (e.g. no/low risk of inundation due to sea-level rise)

Distance from existing staffed locations - Lower score for more distant locations from Aransas HQ due to management capacity.

The above decision criteria may reflect an ideal scenario. In reality, land protection opportunities will be influenced by when parcels become available on the market, whether the landowner is willing to work with the Service, and the requirements associated with funding sources. (For example, funds available through the Migratory Bird Conservation Act must benefit migratory birds.) Furthermore, the analyses of habitat needs for the focal species were conducted with the goal of designing an appropriate CPA boundary. The CPA also includes habitat that benefits numerous other priority species, and if a parcel becomes available that is well suited to the needs of one or more of these other species, it may take precedence.

Plan Implementation

LAND PROTECTION GOALS AND OPTIONS

As described in the Service's Strategic Growth Policy (602 FW 5), the "*Service will plan and direct the continued growth of the Refuge System in a manner that is best designed to accomplish its mission. To accomplish this goal, it becomes increasingly important for the Refuge System to add lands in a strategic and effective fashion as we face:*

- (1) Unparalleled challenges related to climate change and non-climate change stressors,*
- (2) Pressures from new development and increased land prices across the Nation, and*
- (3) More opportunities to collaborate with others for land conservation."*

The Service currently owns and manages 4,526 acres within Big Boggy NWR. Another 12,879 acres are managed as the San Bernard NWR. Conservation partners hold fee title or conservation easements protecting an additional 30,055 acres within the CPA as of March 2022. In the future, the Service aims to protect as much as 55,000 additional acres by fee title or conservation easement acquisition. Those acres will serve to help offset acres and habitats lost as a result of anticipated sea level rise. Additional acreage may be protected, restored or cooperatively managed through leases and cooperative agreements between the Service and landowners, both public and private, as well as by the efforts of conservation partners.

The Service acquires lands or partial interests in lands, such as conservation easements, and management rights in lands, such as leases or cooperative agreements, consistent with legislation or other congressional guidelines and executive orders, for the conservation of fish and wildlife, and in many cases, to provide wildlife-dependent public use for recreational and educational purposes.

The Service can achieve its conservation objectives through a wide variety of different combinations of tracts being protected. The CPA boundary has been established in a way that includes many more tracts than the Service or its partners need. This allows for great flexibility in working only with landowners who would like to enter into a protection agreement with the Service or its partners. Additionally, it allows for adaptation to a changing environment where currently marginal habitats may become primary habitats as a result of climate change and other dynamic factors.

For lands identified for potential acquisition, the Service may use any of the following options:

- Option 1: Land protection by conservation partners
- Option 2: Less-than-fee-title acquisition by the Service
- Option 3: Fee-title acquisition by the Service.

When land is needed to achieve fish and wildlife conservation objectives, the Service seeks to acquire the minimum interest necessary to meet those objectives and acquire it only from willing sellers. This LPP envisions the use of a combination of Options 1, 2, and 3, above. The Service believes this approach offers a cost-effective way of providing the minimal level of protection needed to accomplish refuge objectives while also attempting to meet the needs of local landowners, stakeholders and communities.

OPTION 1: MANAGEMENT OR LAND PROTECTION BY OTHERS

Several high-quality landscapes within the CPA and in the vicinity are either already owned by conservation partners or have been previously identified by a partner for protection for the benefit of wildlife. This fact further emphasizes that the protection of priority lands by conservation partners within an acquisition boundary or CPA is both consistent with and critical to the success of a landscape-scale strategic habitat conservation framework.

The following conservation partners own lands or similarly protect (e.g., through easements) tracts in the CPA:

- Texas Parks and Wildlife Department
- The Nature Conservancy
- Matagorda Bay Foundation
- Natural Resources Conservation Service
- Colorado River Land Trust

Several other conservation partners are known to be seeking to acquire land or conservation easements, including:

- Coastal Prairie Conservancy
- Texas Agricultural Land Trust
- Ducks Unlimited

OPTION 2: LESS-THAN-FEE-TITLE ACQUISITION BY THE SERVICE

Under Option 2, the Service will protect and manage land by purchasing only a partial interest from willing sellers, typically in the form of a conservation easement, but may also utilize leases or cooperative management. This option leaves the parcel in private ownership, while allowing the Service some management authority over the land use in a cooperative way. This enables the Service to meet its goals for the parcel and provides adequate protection for important adjoining parcels and habitats. The structure of conservation easements will provide permanent protection of existing wildlife habitats while also allowing cooperative habitat management and improvements to important habitats for threatened or endangered species, migratory birds and other vulnerable species. Typically, conservation easements do not allow for public access.

The Service will determine, on a case-by-case basis, and negotiate with each landowner willing to sell, the extent of the rights to acquire. Those will vary depending on the configuration and location of the parcel, the current extent of development, the nature of wildlife activities in the immediate vicinity, the needs of the landowner and other considerations.

In general, any less-than-fee-title acquisition will maintain the land in its current configuration with no further subdivision. Easements are a property right and are typically perpetual. If a landowner later sells the property, the easement remains in effect under the new ownership. Properties subject to easements generally remain on the tax rolls, so the Service does not subsidize the local tax base on easement rights. Where the Service identifies conservation easements, it would be interested primarily in purchasing development and some wildlife management rights. Easements are best when:

- only minimal management of the resource is needed, but there is a desire to ensure the continuation of current undeveloped uses and to prevent fragmentation over the long-term;
- a landowner is interested in maintaining ownership of the land, does not want it to be further developed, and would like to realize the benefits of selling development rights;
- the protection strategy calls for the creation and maintenance of a watershed protection area that can be accomplished with passive management; and/or

- only a portion of the parcel contains lands of interest to the Service.

The determination of value for purchasing a conservation easement involves an appraisal of the rights to be purchased, based on recent market conditions in the area. The Land Protection Methods section further describes the conditions and structure of easements.

OPTION 3: FEE-TITLE ACQUISITION BY THE SERVICE

Under Option 3, the Service will acquire parcels in fee title from willing sellers, thereby obtaining surface rights of ownership. This option provides the Service with the most flexibility in managing priority lands and ensuring the protection of nationally significant resources in perpetuity.

Generally, lands purchased in fee title by the Service require active management (e.g., controlling invasive species, mowing or prescribed burning, planting, or managing for public uses). The Service only proposes fee-title acquisition when adequate land protection is not assured under other ownership options, active land management is required, or the Service determines the current landowner would be unwilling to sell a partial interest such as a conservation easement.

In some cases, it may become appropriate to convert a previously acquired conservation easement to fee-title acquisition (for example, when an owner is interested in conveying the remainder of their interest in the land on which the Service has acquired an easement). The Service would evaluate this on a case-by-case basis.

LAND PROTECTION METHODS

Purchase

The Service's primary approach to protection of land within the CPA will be through the acquisition of land in fee title or purchase of a conservation easement.

Fee-Title Purchase

A fee-title interest is normally acquired when (1) the area's fish and wildlife resources require permanent protection not otherwise assured; (2) land is needed for recreational public-use development; (3) a pending land use could adversely impact the area's resources; or (4) it is the most practical and economical way to assemble small tracts into a manageable unit.

Fee-title purchase conveys all surface ownership rights to the federal government and provides the best assurance of permanent resource protection. Fee-title purchase is also the most expensive land protection option, and the Service's ability to acquire land from willing sellers is constrained by limited funding.

When the Service acquires land in fee-title, it will no longer be on the property tax rolls. To offset the loss to local taxing authorities, Congress provides counties additional funding through annual federal budget appropriations. This is known as Refuge Revenue Sharing. The amount received annually typically is close to the amount that would have been received in taxes if the property had remained in private ownership. Although the actual amount varies from year to year.

Conservation Easement Purchase

Conservation easement purchase refers to the purchase of limited rights (less-than-fee-title) from an interested, willing landowner. The landowner would retain ownership of the land but would sell certain rights identified and agreed upon by both parties. Land uses that are normally restricted under the terms of a conservation easement include:

- subdivision and development rights (e.g., residential, alternative energy),
- alteration of the area's natural topography,
- uses adversely affecting the area's floral and faunal communities,
- intensive agriculture practices, and
- alteration of the natural water regime.

Leases and Cooperative Agreements

Potentially, partnerships between the Service and public or private landowners could provide temporary protections and improved management of resources on these lands via long-term renewable leases or cooperative agreements with landowners. Short-term leases could be used to protect or manage habitat until more secure land protection could be negotiated.

Donations

The Service encourages donations of land in fee title or of conservation easements in the approved areas of interest. The Service is not currently aware of any formal opportunities to accept donations of parcels within the CPA boundary.

MINERAL AND OTHER RIGHTS

Mineral rights may be held by the owner of the surface rights, or they may be held by third parties. The Service typically will not seek to acquire those rights. Under Texas and federal laws, the Service works with mineral interest holders to make sure they can access their minerals for exploration and production, and at the same time cooperatively works to minimize surface and habitat damage. This honors the mineral holder's interests, which under state law are paramount, and also protects the surface interests and wildlife habitat purchased by the United States.

An emerging challenge to land protection and conservation in this region is the development and implementation of carbon capture and storage technology (CCS). CCS is the process of capturing carbon dioxide (CO₂) from industrial activity that would otherwise be released into the atmosphere and injecting it into deep underground geologic formations for safe, secure, and permanent storage. The CCS project proponents lease large areas, in some cases exceeding 100,000 acres, in advance of development of a project area. Large rural areas, near an industrial source of CO₂, are preferred to minimize the number of owners needed to develop a CCS project. Other agencies and non-profits have accepted acquisition of conservation lands that have a carbon lease or other pore space commitment. The Service is looking into the potential impact of reservations of pore space rights and CCS on our ability to strategically grow the Refuge System in these areas. This use is becoming much more widespread in the face of climate change and related sea-level rise. Until the Service develops a position on this, it should be added to the other challenges that currently delay or eliminate the Service's ability to secure habitats with prior pore space reservations for this growing land use.

LAND ACQUISITION PROCEDURES

Working Only with Willing Sellers

When the Service or its partners believe that funding may become available to protect a tract within the CPA, they will contact one or more owners of eligible lands to determine whether any would consider selling. If a landowner is open to the idea, the parties must discuss what interest – fee or easement – the landowner is willing to convey, and what rights, if any, the landowner wishes to retain. To qualify for some sources of conservation funding, a landowner may need to formally indicate their intent to enter into a conservation agreement.

If the Service is directly negotiating with a willing landowner, the Department of the Interior (DOI) will contract with a real estate appraiser to determine the property's market value. Once an appraisal has been approved, the Service can present an offer for the landowner's consideration. Appraisals must meet federal as well as professional appraisal standards. In all fee-title acquisition cases, the Service is required by federal law to offer 100 percent of the property's appraised market value, which is typically based on comparable sales of similar types of properties.

The Service has created the CPA boundary based on the biological importance of key habitats for a variety of species. The establishment and approval of this boundary gives the Service the authority to negotiate with landowners within the CPA who may be interested or may become interested in selling their land. With this internal approval in place, the Service can react more quickly as important lands become available. The Service's long-established policy is to work with willing sellers only and as funds become available, and the Service will continue to operate under this policy. Lands within this CPA boundary would not become part of the refuge unless their owners willingly sell or donate them to the Service.

Funding

For land acquisition by the Service on the Texas coast, the principal source of funding is the Migratory Bird Conservation Fund, which derives most of its revenue from the sale of Migratory Bird Hunting and Conservation Stamps – commonly known as Duck Stamps. The Service is also authorized to draw on the federal Land and Water Conservation Fund, which receives income from oil and gas operations on offshore federal holdings.

There are many other funding sources for land conservation that may be used by the Service's conservation partners to protect lands within the CPA. Examples include:

- The USDA Natural Resources Conservation Service draws funding from the Farm Bill to purchase conservation easements or to make grants to other entities for the purchase of conservation easements.
- Natural Resource Damage Assessment funds can be used to replace or acquire the equivalent of a damaged natural resource.
- Following the Deepwater Horizon oil spill in 2011, the parties responsible for the spill were required to contribute billions of dollars for the restoration and protection of natural resources in the Gulf of Mexico.
- The North American Wetlands Conservation Act authorizes grants to protect and manage wetland habitats for migratory birds and other wetland wildlife in the United States, Mexico and Canada.
- Wetland conservation banks can create opportunities for restoration and permanent protection of wetlands.
- Private foundations and other donors often contribute to land conservation projects.

Sometimes conservation partners that acquire land using sources such as these will subsequently donate a fee-title or easement interest to the Service.

Land Acquisition Costs

Donations, mitigation banks, transfers of land from partners, and land value fluctuations over time are some of the factors that will likely influence the costs associated with the expansion of Big Boggy NWR. Over time, with inflation and potential increases in development pressure, land values can also be expected to rise, and it is very difficult to estimate the total amount that might be spent over the next 20 or 30 years for this expansion.

Conservation easements are less expensive than acquiring land in fee title. Since Service policy is to acquire only the minimum interest necessary to achieve resource protection objectives, conservation easements may commonly be the preferred acquisition method. However, experience shows that many landowners are not willing to sell an easement and are only willing to sell their land in fee title. Furthermore, some land requires active management that is only possible through fee-title acquisition. Under the preferred Alternative B in the EA, the Service would acquire whichever interest in land is needed to accomplish its management objectives, and whichever interest the landowner is willing to sell.

OPERATIONS AND MAINTENANCE

Fee-title and easement lands will be managed consistent with the CCP and natural resource management plans (step-down plans, hereby incorporated by reference) for the Texas Mid-coast NWR Complex. The refuge conducts active habitat management to benefit migratory birds including prescribed burning, mechanical (mowing/discing), and chemical control, which is mostly used to control invasive species like Chinese tallow. As appropriate, natural resources plans will be updated to ensure refuge staff are meeting conservation goals of the CCP on new lands.

Where the Service obtains easements, the landowner may retain certain rights to access or manage the land for a purpose that is compatible with the Service's conservation goals. Refuge staff will ensure that land management activities are coordinated with the landowner.

Once acquired, there will be costs associated with various short-term and ongoing projects and maintenance associated with operating and managing additional refuge lands, as further detailed below.

- The Service does not expect to acquire buildings or other structures. Acquisition will focus on open lands. If a structure is acquired incidentally to the acquisition of open land, the Service will evaluate whether the building could be used for refuge quarters, equipment storage or visitor services. If not, the structure would need to be moved off of refuge land or demolished. This determination will be made on a case-by-case basis. There may be costs associated with demolition. Given the numerous opportunities to acquire land that does not contain structures, very little if any need for dealing with structures is anticipated.
- There will be costs associated with posting signs for boundaries and repairing/maintaining refuge roads and other infrastructure.
- Acquiring new lands for a refuge will result in additional public use opportunities and costs incurred by the Service. These could include building trails, fences and observation areas, opening lands for hunting and/or fishing, and additional staff time (e.g. law enforcement). The exact number and location of these public use improvements and opportunities are unknown. These details would be further defined and announced to the public as new lands are acquired.
- Funds may also be needed for habitat restoration and water quality protection, including repairing or re-vegetating unpaved roads, reforestation, stream restoration, prescribed burning, removal of exotic plants, etc.

Initial costs associated with the acquisition of 55,000 acres may include facilities upgrades or

installation (e.g., fencing). Acquisition of interests in all land is expected to take at least 20 years (USFWS, 2017).

Staffing

Most of the work described above will be conducted by temporary or permanent Service staff, although the Service actively recruits volunteers and works with partners, where possible, to reduce costs. Furthermore, the Service often shares staff between refuges for specific projects (e.g., prescribed burning) as a means of reducing long-term costs. However, once significant numbers of tracts are acquired, additional funding under the normal budget allocation process (possibly starting within 5-10 years of project approval and implementation) would be needed to successfully manage and monitor the added lands to meet habitat restoration goals, endangered species recovery actions, and public use needs. A fully realized refuge of approximately 60,000 acres would require the addition of two to four additional full-time employees for land management activities.

Public Use

National Wildlife Refuges are managed specifically for wildlife and wildlife habitat. While wildlife comes first with regard to management of these lands, public uses may be allowed when they are found to be both appropriate and compatible. An appropriate use finding is the initial decision-making process a refuge manager follows when considering whether to allow a proposed use on a refuge. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility.

In the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57; 111 Stat. 1235) (Improvement Act), Congress directed the Service to give special consideration to allowing wildlife-dependent recreational activities on national wildlife refuges. The six wildlife-dependent public uses that were identified in the Improvement Act are hunting, fishing, wildlife observation, wildlife photography, environmental interpretation and environmental education. A refuge manager must still determine if these uses are appropriate and compatible with the purposes of the refuge before permitting them.

Currently, Big Boggy NWR offers waterfowl hunting but is closed to other visitor opportunities. This is primarily due to its small size and remoteness. The public has indicated it would like to see more opportunities for wildlife-dependent recreation and education and/or expansion of existing public use opportunities on the refuge, and the Service assumes that the same would be true of newly acquired lands. Public use on lands with conservation easements would be limited or altogether prohibited, as most private landowners are not amenable to allowing open public access. Access agreements would be considered if landowners expressed interest and were willing.

Regarding lands the Service acquires that do not have pre-existing wildlife-dependent recreational public uses, the Service will review and analyze each parcel that is acquired for appropriate and compatible public uses following the Service's rulemaking procedures. Approved public uses will be managed in accordance with Service policies.

With specific regard to hunting, the Service generally opens new lands for hunting when it has acquired manageable units and when those units can biologically, ecologically and safely accommodate hunting within state and federal guidelines. The following facts demonstrate the Service's commitment to providing access for hunting and other wildlife dependent activities on refuge lands:

- Hunting is one of six priority public uses of the Refuge System, as directed by the Improvement Act.

- Executive Order 13443, Facilitation of Hunting Heritage and Wildlife Conservation, directs the Department of the Interior and its component agencies, bureaus, and offices “to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.”

By law, all refuge lands are closed to public use until opened. The process for opening any newly acquired refuge lands to a public use, including hunting, requires compliance with National Wildlife Refuge System policies 602 FW1 and 2 regarding the appropriateness and compatibility of each use.

It is important to note that easement acquisition generally does not give the Service rights to manage hunting. Typically hunting rights and the ability to control public access are reserved by the landowner.

Planning Outreach and Coordination

STATE AND LOCAL GOVERNMENTS

In the spring of 2022, the Service consulted with three state agencies about its intention to begin the LPP process: the Texas Parks and Wildlife Department, Texas General Land Office, and Texas Commission on Environmental Quality.

To announce the Service's intention to create a Land Protection Plan for the Big Boggy NWR, the Service developed a brochure explaining the process. The brochure included an early draft map of the CPA boundary. Beginning June 8, 2022, the Service initiated the scoping process for the LPP by widely distributing the brochure and providing an email address and phone numbers for people to offer comments. Among the recipients of the brochure was Matagorda County Judge Nate McDonald.

Based on new data and analysis regarding Attwater's prairie-chicken and eastern black rail habitat suitability, the Service decided to enlarge the area proposed for the CPA to include portions of Jackson County as well as additional area in Matagorda County. In November 2022, an updated brochure with a map illustrating the enlarged CPA boundary was sent to Matagorda County Judge Nate McDonald and Jackson County Judge Jill S. Sklar.

Beginning June 8, 2022, and in days immediately following, and again at the end of October, the Service either provided the brochure or delivered notice of the availability of the brochure to the offices of the following state elected officials:

Governor Greg Abbott
Lieutenant Governor Dan Patrick
Speaker of the House Dade Phelan
HD 30 Geanie Morrison
HD 25 Cody Vasut
HD 85 Phil Stephenson
HD 43 J.M. Lozano
HD 32 Todd Hunter
SD 17 Joan Huffman
SD 18 Lois Kolkhorst
SD 20 Juan Hinojosa
SD 21 Judith Zaffirini
SD 27 Eddie Lucio

CONGRESSIONAL CONTACTS

On or shortly after June 8, 2022, and again at the end of October 2022, notice was provided to congressional staffs of U.S. Representatives Mike Cloud and Vin Weber and U.S. Senators John Cornyn and Ted Cruz.

TRIBAL COMMUNICATION

In compliance with the DOI Director's Order 227, in June of 2022 the Service sent letters to tribal governments that were listed in the results of a search done using the U.S. Department of Housing and Urban Development's Tribal Directory Assessment Tool. Those tribes were notified of this planning effort and provided an opportunity to express concerns, submit comments or request consultation. No responses were received.

Tribal coordination letters were again sent out in November 2022 to notify Tribal representatives of the changes in the extent of the CPA boundary and to again ask for comments or coordination. No responses were received with comments regarding the change.

PUBLIC OUTREACH

On June 8, 2022, and days following, the brochure announcing the LPP process – or an internet link to the brochure – was delivered to numerous government agencies and nonprofit organizations representing a broad constituency of environmental interests, hunting and fishing enthusiasts, landowners, agricultural interests, scientists and others. An updated brochure was delivered in October 2022 to the same contacts, with minor adjustments for personnel changes. The recipients included:

Lower Colorado River Authority	Phil Wilson, Clara Tuma
Guadalupe Blanco River Authority	Kevin Patteson, Nathan Pence
Mission-Aransas National Estuarine Research Reserve	Jace Tunnell
National Park Service	Eric Brunnemann
Texas Council on Environmental Quality	Diane Mazuca
Texas Forest Service	Mac Martin
Texas General Land Office	Joshua Oyer, Jason Pinchback
Texas Parks and Wildlife Department	Carter Smith, Allison Winney, Ted Hollingsworth, Jeff Raasch, Clayton Wolf, Len Polasek
US Army Corps of Engineers	Col. Timothy Vail
US Coast Guard	Captain Hans Govertsen
USDA Natural Resources Conservation Service	Rob Ziehr, Kim Burr
American Bird Conservancy	Aimee Roberson, Todd Fearer
Aransas First Land Trust	Earl Matthew, Janae Evans
Audubon Texas	Alexis Baldera, Scott Moorhead, Romey Swanson
Coastal Bend Bays and Estuary Program	Jake Herring
Coastal Prairie Conservancy	Mary Anne Piacentini, Elisa Donovan
Colorado River Land Trust	Jeff Crosby
Conservation Fund	Julie Shackelford, Andy Jones
Malcolm C. Damuth Foundation	Robert Warneke
Ducks Unlimited	Stephen Rockwood, Todd Merendino
Friends of Aransas and Matagorda Island	Rebecca Stapleton
Friends of Brazoria Wildlife Refuges	Lisa Myers
Galveston Bay Foundation	Bob Stokes, Matt Singer
Guadalupe Blanco River Trust	Tyler Sanderson
Gulf Coast Bird Observatory	Martin Hagne
Harte Charitable Foundation	Don Perkins
Harte Research Institute	David Yoskowitz
Jacob and Terese Hershey Foundation	Elizabeth Love
Horizon Foundation	Anne Brown
International Crane Foundation	Liz Smith, Carter Crouch (November only)
Knobloch Family Foundation	Nicole Korfanta, Carla Knobloch, Iliana Peña (November only)
Matagorda Bay Foundation	Bill Balboa, Jim Blackburn
Matagorda Bay Mitigation Trust	Steve Raabe
Meadows Center for Water and the Environment	Nick Dornak, Andy Sansom
Cynthia and George Mitchell Foundation	Emily Warren, Farnaz Seddighzadeh

	(June only), Ria Agarwal (November only)
National Fish and Wildlife Foundation	Tom Kelsch, Jay Jensen
National Wildlife Refuge Association	Geoff Haskett, Marco Aguilar, Mark Musaus
National Wildlife Federation	Amanda Fuller, Arsum Pathak
Native Prairie Association of Texas	Pat Merkord
PartnerScapes	Steve Jester
Partnership for Gulf Coast Land Conservation	Vance Crain
Peregrine Fund	Chris Parish, Brian Mutch
San Antonio Bay Partnership	Allan Berger
San Antonio River Authority	Derek Boese, Shaun Donovan
Texas Agricultural Land Trust	Chad Ellis, Darren Clark
Texas Grazing Land Coalition	Jenny Pluhar, Stephen Diebel
Texas Land Conservancy	Mark Steinbach
Texas Land Trust Council	Lori Olson
Texas Master Naturalists	Bob Cunningham
Texas Parks and Wildlife Foundation	Merrill Gregg, Zach Spector
Texas Wildlife Association	Iliana Peña (June only), Justin Dreibelbis and TJ Goodpasture (November only)
The Nature Conservancy	Jeff Francell, Kirk Feuerbacher, David Bezanson, Jeff Weigel, Sonia Najera
Trull Foundation	Nellie Lee

References

Brasher, M.G., B.C. Wilson, M.W. Parr, B.M. Allston, N.M. Enwright, S.J. DeMaso, W.G. Vermillion, and the Gulf Coast Joint Venture Waterfowl Working Group. 2018. Contemporary refinements to Gulf Coast Joint Venture population and habitat objectives and landscape assessments for wintering waterfowl: September 2018. Gulf Coast Joint Venture, Lafayette, Louisiana, USA. 94pp., +Appendices.

Canadian Wildlife Service and U.S. Fish and Wildlife Service. 2007. International recovery plan for the whooping crane. Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 162pp.

Coastal Bend Bays & Estuaries Program. 2020. Implementation Strategy for the Coastal Bend Bays Plan. Coastal Bend Bays & Estuaries Program Publication, CBBEP-142. Corpus Christi, Texas, USA. 248pp.

Edwards, T., D. Fuqua, D. James, T. Kreher, P. Link, L. Naylor, F. Nelson, E. Penny, G. Pogue, S. Reagan, K. Reinecke, and J. Tirpak. 2012. Allocation of Waterfowl Habitat Objectives within the Mississippi Alluvial Valley: An Analytical Framework and Results. Report by the Lower Mississippi Valley Joint Venture Waterfowl Working Group Technical Subcommittee. 49pp.

Kushlan, James A., M.J. Steinkamp, K.C. Parsons, J. Capp, M. Acosta Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, R.M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J.E. Saliva, B. Sydeman, J. Trapp, J. Wheeler, and K. Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1. Waterbird Conservation for the Americas, Washington, DC, USA, 78pp.

Soulliere, G.J., M.A. Al-Saffar, J.M. Coluccy, R.J. Gates, H.M. Hagy, J.W. Simpson, J.N. Straub, R.L. Pierce, M.W. Eichholz, and D.R. Luukkonen. 2017. Upper Mississippi River and Great Lakes Region Joint Venture Waterfowl Habitat Conservation Strategy- 2017 Revision. U.S. Fish and Wildlife Service, Bloomington, Minnesota, USA, 163pp.

Stanzel, K.M., J.A. Dodson, A.R. Berger. 2014. Habitat Conservation and Public Access Plan for the San Antonio Bay System. Coastal Bend Bays and Estuaries Program Publication CBBEP-90. Corpus Christ, TX, USA. 171pp.

Texas General Land Office. 2019. Texas Coastal Resiliency Master Plan. Austin, Texas, USA. 222pp. Available at <https://glo.texas.gov/coast/coastal-management/coastal-resiliency/index.html>

Texas Parks and Wildlife Department. 2012. Texas Conservation Action Plan 2012-2016: Gulf Coast Prairies and Marshes Handbook. Editor, Wendy Connally, Texas Conservation Action Plan Coordinator. Austin, Texas, USA. 51pp. Available at <https://tpwd.texas.gov/landwater/land/tcap/>

U.S. Fish and Wildlife Service and North Carolina Audubon Society. 2006. Southeast U.S. Regional Waterbird Conservation Plan. Compiled by William C. Hunter, Walker Golder, Stefani Melvin and Jennifer Wheeler. Atlanta, Georgia, USA. 131pp. + appendices.

U.S. Fish and Wildlife Service. 2010. Attwater's Prairie-Chicken Recovery Plan, Second Revision. Albuquerque, New Mexico, USA. 82pp.

U.S. Fish and Wildlife Service. 2013. Texas Mid-coast National Wildlife Refuge Complex Comprehensive Conservation Plan and Environmental Assessment. Albuquerque, New Mexico, USA.

563pp. + appendices.

U.S. Fish and Wildlife Service. 2016. Texas Coastal Bend Land Conservation Design. Albuquerque, New Mexico, USA. 27pp + appendices.

U.S. Fish and Wildlife Service. 2017. Land Protection Strategy for Expansion of Big Boggy National Wildlife Refuge: Matagorda County, Texas. Albuquerque, New Mexico, USA. 9pp.

U.S. Fish and Wildlife Service. 2021. Texas Coastal Bend Land Conservation Design. First Revision. Albuquerque, New Mexico, USA. 28pp.

Vermillion, William, J. W. Eley, B. Wilson, S. Heath and M. Parr. 2008. Partners in Flight Bird Conservation Plan: Gulf Coast Prairie Bird Conservation Region 37. Gulf Coast Bird Observatory. Lake Jackson, Texas, USA. 66pp. + appendices.

Wilson, B.C. 2007. North American Waterfowl Management Plan, Gulf Coast Joint Venture: Mottled Duck Conservation Plan. North American Waterfowl Management Plan, Albuquerque, New Mexico, USA. 27pp. + appendices.

Wilson, B.C., and C.G. Esslinger. 2002. North American Waterfowl Management Plan, Gulf Coast Joint Venture: Texas Mid-Coast Initiative. North American Waterfowl Management Plan, Albuquerque, New Mexico, USA. 28 pp. + appendix.

Wilson, T. E., J. Wheeler, M. C. Green, and E. Palacios. (eds.). 2012. Reddish Egret Conservation Action Plan. Reddish Egret Conservation Planning Workshop, October 2012. Corpus Christi, Texas, USA. 39pp + appendices.

***Appendix A – Draft Environmental Assessment and
Intra-Service Section 7***

Draft Environmental Assessment

Aransas and Big Boggy National Wildlife Refuge Land Protection Plans

June 2023

Prepared by
Division of Planning
R2 RO, Albuquerque, NM

This draft Environmental Assessment (EA) is being prepared to evaluate the effects associated with the proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment.

PURPOSE AND NEED FOR PROPOSED ACTION

Introduction

The United States Fish and Wildlife Service (Service), proposes expansion of the Aransas and Big Boggy National Wildlife Refuges (NWR). The proposed expansions would contribute to survival and recovery of numerous listed or candidate species enabling the Service to potentially protect additional designated critical habitat for the endangered whooping crane and the threatened piping plover, as well as important habitat for several listed sea turtle species, endangered plants, and other listed or important bird species and waterfowl, including Eastern black rail and mottled duck. This Environmental Assessment (EA) is being prepared to evaluate the effects associated with this proposal and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (516 DM 8) and Service (550 FW 3) policies (see Section 1.7 for a list of additional regulations that this EA complies with). NEPA requires examination of the effects of proposed actions on the natural and human environment. In the following chapters, two alternatives are described and the environmental consequences of each alternative are analyzed and determined.

Action Area

The action area for this EA falls within the limited acquisition boundary or Conservation Partnership Area (CPA) identified in the Land Protection Plans for Aransas and Big Boggy National Wildlife Refuges in the Coastal Bend area of Texas, Gulf Coast Prairies and Marshes ecoregion (Figure 1). Texas counties in the action area include Aransas, Calhoun, Refugio, Goliad, Jackson, Matagorda, San Patricio and Victoria.

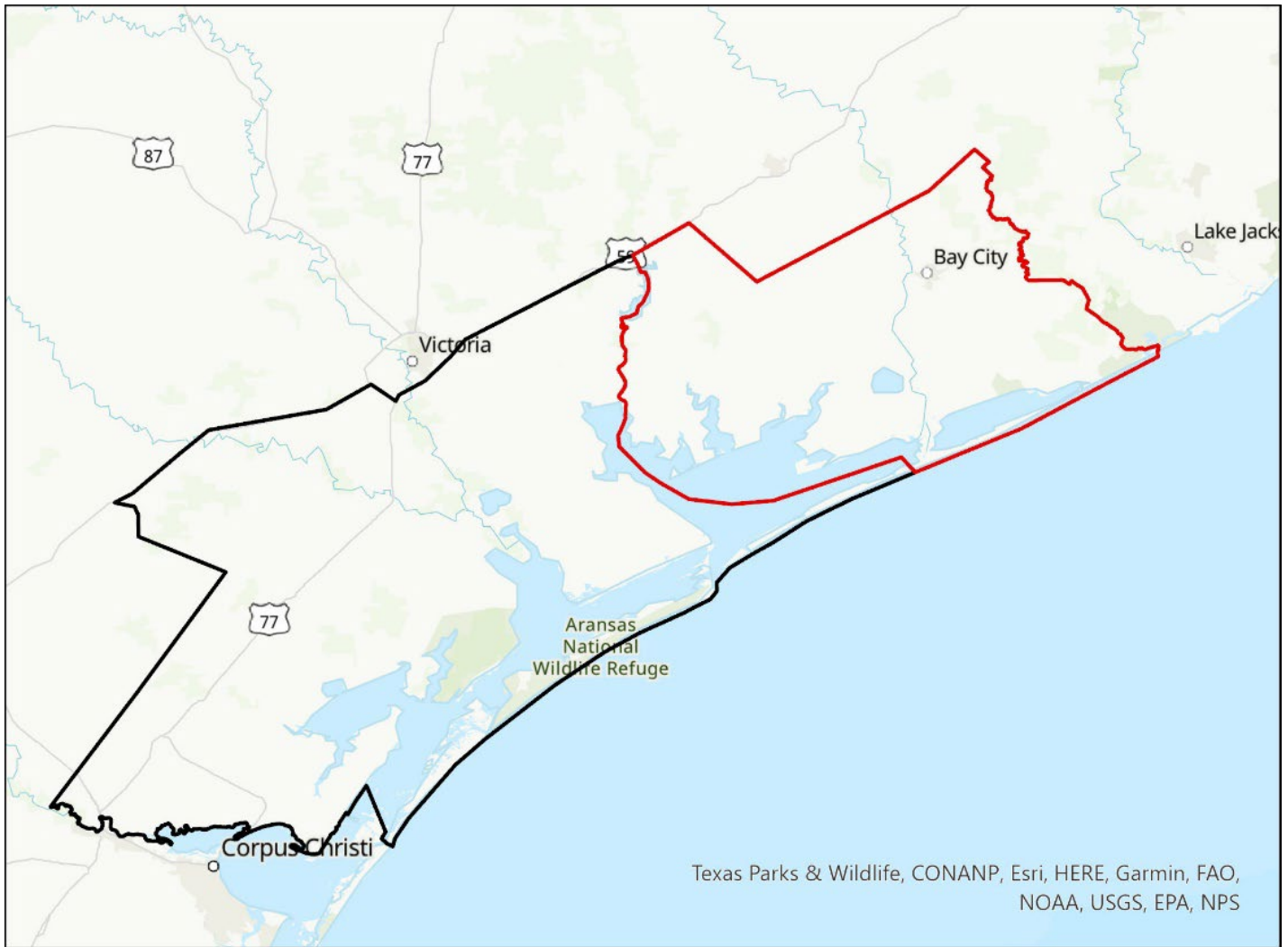


Figure 1. Map of limited acquisition boundaries.

Background

The Aransas National Wildlife Refuge (NWR) was established on December 31, 1937, by Executive Order 7784, “...as a refuge and breeding ground for migratory birds and other wildlife...” This acquisition was implemented under the authority of the Migratory Bird Conservation Act of 1929, which also established that the Refuge is “...for use as an inviolate sanctuary...for any other management purposes...for migratory birds...”. Additionally, this unit, comprised of the Blackjack Peninsula, has a designated proclamation boundary or buffer zone, adding an additional 12,934 acres of jurisdiction over open waters surrounding the peninsula for the protection of waterfowl. Since that original establishment, four additional units have been added to the refuge to further protect fish and wildlife resources, especially resident and migratory birds.

Big Boggy NWR was established on July 8, 1983, with the initial acquisition of 1,271.15 acres. In the years that followed, additions to the refuge through a combination of fee-title land acquisitions and conservation easements increased the acreage to the current total of approximately 4,526 acres.

The refuge was established ... “for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.”

Purpose and Need

The purpose of the Proposed Action is to identify broad areas across the Texas Coastal Bend landscape that, if acquired, will result in improved protections and conservation of the suite of species identified in the purposes for the refuges, along with all associated species and their habitats. The Aransas and Big Boggy refuges were primarily developed to provide for the management of habitat for migrating and resident waterfowl, including ducks, geese, shorebirds and wading birds. Three of the high-priority species in this group include whooping crane, mottled duck and eastern black rail. In addition, units of Aransas were originally protected to preserve a remnant of low upland (dark soil) coastal prairie and its associated wildlife, including Attwater's prairie-chicken.

Decision to be Made

This EA is an evaluation of the environmental impacts of the action alternatives and provides information to help the Service fully consider these impacts and any proposed mitigation. Using the analysis in this EA, the Service will decide whether there would be any significant effects associated with the alternatives that would require the preparation of an environmental impact statement or whether the Proposed Action can proceed.

Regulatory Compliance

This EA was prepared by the Service and represents compliance with applicable Federal statutes, regulations, Executive Orders, and other compliance documents, including the following:

- Administrative Procedures Act (5 U.S.C. 551-559, 701-706, and 801-808) as amended
- American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)
- Antiquities Act of 1906 (16 U.S.C. 431-433)
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470)
- Bald Eagle Protection Act (16 U.S.C. 668-668d) as amended
- Clean Air Act of 1972, as amended (42 U.S.C. 7401 *et seq.*)
- Clean Water Act of 1972, as amended (33 U.S.C. 1251 *et seq.*)
- Endangered Species Act of 1973, (ESA) as amended (16 U.S.C. 1531 *et seq.*)
- Executive Order 12898, Federal Action Alternatives to Address Environmental Justice in Minority Populations and Low Income Populations, 1994.
- Executive Order 13112, Invasive Species (issued in February 1999)
- Fish and Wildlife Coordination Act of 1958, as amended (16 U.S.C. 661 *et seq.*)
- Fish and Wildlife Improvement Act of 1978 (16 U.S.C. 7421)
- Floodplain Management (Executive Order 11988)
- Migratory Bird Treaty Act (16 U.S.C. 703-712 as amended)
- National Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee) as amended
- National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 *et seq.*)
- Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 *et seq.*)
- National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 *et seq.*)
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001 *et seq.*)
- Protection and Enhancement of the Cultural Environment (Executive Order 11593)
- Protection of Wetlands (Executive Order 11990)
- National Pollutant Discharge Elimination System, as amended (33 U.S.C. 1251 *et seq.*)
- Soil and Water Conservation Act of 1977 (16 U.S.C. 2001-2009) as amended

Further, this EA reflects compliance with applicable State of Texas and local regulations, statutes, policies, and standards for conserving the environment and environmental resources such as water and air quality, endangered plants and animals, and cultural resources, including the following:

- Texas Historical Commission, Texas Government Code 442
- Texas Historical Commission, Texas Administrative Code, Title 13, Part 2
- Antiquities Code of Texas, Texas Natural Resource Code, Title 9, Chapter 191
- Archaeological Survey Standards for Texas
- Council of Texas Archeologists: Guidelines for Cultural Resource Management Reports

SCOPING: PUBLIC INVOLVEMENT AND ISSUES IDENTIFIED

In June of 2022, the Service distributed informal scoping pamphlets for each refuge by mail and electronically, inviting input, questions, and feedback on the development of these LPPs. In addition, a team of partners and stakeholders met regularly during the planning process to discuss planning procedures and to make decisions and solicit feedback. While no feedback was received as a result of the pamphlets, partners and stakeholders involved in the planning meetings provided recommendations primarily related to the extent of the acquisition landscape along with seeking clarification on how the process works.

In June of 2022, the Service also sent letters to tribal governments that were identified as having an interest in Federal actions in this area, notifying them of this planning effort and providing an opportunity to express concerns, submit comments or participate in the process. No responses with relevant comments were received.

In November of 2022, the Service began intra-service consultation under Section 7 of the Endangered Species Act (ESA) with the Corpus Christi, Texas Ecological Services office. This consultation is summarized in Chapter 3 of this plan with additional details in Appendix A.

Finally, in August and September of 2023, the Service distributed the final draft of both LPP's along with compliance and supporting documents. Draft plans and supporting documents were also directly sent to tribal governments for their review and comment.

ALTERNATIVE ACTIONS

Alternative A - No Action Alternative

Under the No Action alternative, the Service would continue under current management practices and not expand the acquisition boundaries of Aransas or Big Boggy NWR, limiting the Services ability to add any acreage to those refuges. Increasing the number of protected acres of habitat, wildlife, and natural resources is the Service's objective in preparing these plans, therefore, under the No-Action Alternative the Service would not acquire new lands that address habitat needs for whooping crane, mottled duck, Attwater's prairie-chicken, eastern black rail and many other species in response to climate change, sea-level rise, urban sprawl, habitat fragmentation, energy development, or other threats. Conservation values served by the refuges may be compromised as these threats diminish resources available for wildlife across the region and opportunities for wildlife-based outdoor recreation and other benefits would be limited.

The boundaries of both refuges would remain unchanged and the existing habitats within each refuge would remain protected. In addition, some enhanced conservation may be provided by other conservation partners, but those initiatives alone would likely not meet the Service's purpose and need because of limits in capacity and resources. The Service is a key conservation partner in this landscape.

Alternative B - Implement Land Protection Plan (Proposed Action)

The Proposed Action (PA) alternative is to establish limited acquisition boundaries through the Land Protection

planning process for Aransas and Big Boggy National Wildlife Refuges and to implement an acquisition process to expand both refuges. The combined acquisition boundary covers roughly 3,503,850 acres, within which the Service would strategically acquire lands in fee-title or conservation easements, totaling up to 150,000 acres. The PA for this EA is only for the LPPs themselves, the associated acquisition boundaries and the potential acquisition of land or easements. At this time, no specific land parcels have been identified for acquisition into the refuge system. Once the LPPs are approved, land acquisition and implementation of management practices will require a separate NEPA compliance process.

The purpose of the LPPs is to delineate an acquisition boundary and create a process for identifying land and waters across the Coastal Bend landscape that, if acquired, would result in improved protections and conservation of the suite of species identified in the purposes for the refuges, along with all associated species and their habitats. This process is likely to take 10 years or more to fully implement. The Aransas and Big Boggy refuges were primarily developed to provide for the management of habitat for migrating and resident waterfowl, including ducks, geese, shorebirds and wading birds. Three of the high-priority species in this group include whooping crane, mottled duck and eastern black rail. In addition, units of Aransas were originally protected to preserve a remnant of low upland (dark soil) coastal prairie and its associated wildlife, including Attwater's prairie-chicken.

The Service would acquire the minimum interest in land from willing sellers to achieve habitat acquisition goals. This land acquisition project would be authorized under U.S. Fish and Wildlife Act of 1956 (16 U.S.C. 742 a-742j). The main sources of federal funding to acquire land and conservation easements include the Land and Water Conservation Fund, Migratory Bird Conservation Commission, and North American Wetlands Conservation Act. There could be additional funds to acquire lands, waters, or interest therein through sources such as congressional appropriations and donations. The Service would also use land exchanges, withdrawals, donations, and transfers to acquire lands.

The action of implementing the LPP and acquiring land or easements would directly contribute to the opportunity to protect a greater area of land and water in support of an increasing population of whooping crane and improving opportunities for other species to maintain or increase their population status and distribution across the landscape.

Alternatives Considered but Eliminated from Detailed Analysis

Analysis completed for the Landscape Conservation Design resulted in an estimate that between 84,000 and 323,000 additional acres of habitat are needed to meet the downlisting criteria for the whooping crane of 1,000 birds wintering along the Texas Gulf Coast (CWS & USFWS, 2005). A potential alternative of acquiring up to 323,000 acres of habitat within the acquisition boundary was considered but eliminated from detailed analysis due to the lack of sufficient quality habitat within the more limited LPP-derived acquisition area and because of the costs associated with land acquisition, restoration, maintenance, and operation of those acres within the refuge system.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The area included in the limited acquisition boundary includes at least part of four of the seven major estuary systems of the Texas Gulf Coast stretching from Corpus Christi to East Matagorda Bay. Matagorda, Aransas, and Corpus Christi bays are shallow and biologically productive estuaries. Although connected, the estuaries are biogeographically distinct and increase in salinity from north to south. The area is bounded on its eastern (gulf-side) boundary by a series of barrier islands. The area included in the LPP includes all or parts of eight counties: Aransas, Calhoun, Goliad, Jackson, Matagorda, Refugio, San Patricio and Victoria.

This area is part of the Gulf Coast and South Texas Plain, which are characterized by gently sloping plains. There are four major rivers (Colorado, Guadalupe, San Antonio and Nueces), few natural lakes, and two major reservoirs (Lake Corpus Christi and Choke Canyon Reservoir) in the region. The natural vegetation is a mixture of coastal prairie and mesquite chaparral savanna. Land use is largely devoted to rangeland, with cropland, pastureland and other mixed uses.

The region is semi-arid with a subtropical climate (average annual rainfall varies from 25 to 38 inches and is highly variable from year to year). Summers are hot and humid, while winters are generally mild with occasional freezes. Hurricanes and tropical storms periodically affect the region.

Although less likely to be acquired, predominant estuarine and island habitats within the area include: Open Bay, Hard Substrates (jetties, groins, etc.), Oyster Reefs, Seagrass Meadows, Coastal Marshes, Tidal Flats, Barrier Islands, and Gulf Beaches. The Open Bay and Seagrass Meadow habitats have the largest number of species. Oyster Reefs also have many associated species.

The area is at the crossroads of species from east and west, as well as from north and south. Rappole and Blacklock (1985) note this area of Texas is the richest bird country in North America north of the tropics. The great diversity of species encountered in the area is also due to the wide array of land and aquatic habitat types: arid chaparral, lush riparian forests, oak savannas, oxbow lakes and swales, river deltas, coastal marshes and ponds, oyster reefs, open bay bottoms, barrier islands, jetties and other hard substrates, and sandy beaches.

Analysis under the National Environmental Policy Act (NEPA) requires a “hard look” at a range of issues. The environment of the Coastal Bend landscape encompasses a wide range of resources and environmental issues, of which not all are appropriate to analyze in detail for this plan. The decision not to analyze specific resources is dependent on whether or not implementation of the alternative would be expected to affect the resource. As the current proposed action alternative is limited to the potential acquisition of lands and waters and not their subsequent management, certain physical and biological resources were not analyzed. This EA includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an “affected resource.” Any resources that will not be more than negligibly impacted by the action have been dismissed from further analyses. As new lands are added to Aransas and/or Big Boggy NWR’s, additional plans and further in-depth analysis may be needed for actions including vegetation and wildlife management, and various public uses including hunting/fishing and wildlife observation.

Biological Environment

Habitat

Land use within the acquisition boundary is largely devoted to rangeland, with cropland and pastureland and other mixed uses. However, there are a number of diverse vegetation communities that are of significant conservation value, including Oak-Bay Forest, Ridge and Swale, Barrier Flats, Upland Grassland, Mesquite/Prickly Pear, Gulf Beach and Dune, Shell Ridge/Chaparral, Marshhay Cordgrass, Gulf Cordgrass and a large number of wetland types. There are also a suite of freshwater wetland plant communities as well as tidal flats with their unique collection of species adapted to tidal flows and wind (USFWS, 2010).

Alternative A--No Action Alternative:

No direct impacts to habitat are expected from continuation of current management on either refuge. However, habitat loss and change is anticipated as a result of climate change and sea-level rise over the short- and long-term. The amount, quality and types of habitats on the refuges will change and, without the approval of this LPP allowing for future acquisition of land, there will be a reduced opportunity to offset or mitigate those losses and changes to the existing environment.

Alternative B--Proposed Action:

Under this alternative it is anticipated that each new acquisition would advance conservation in a specific way by directly protecting various habitat types. By adding these lands to the Refuge System, the habitats become more resilient to change being driven by both climatic and land-use changes by having a greater area and diversity to absorb the consequences of these threats on the landscape.

Wildlife

Each of the plant communities listed above maintains its own unique suite of species and associated interactions:

Oak-Bay Forest Community

Common fauna include raccoon, opossum, armadillo, striped skunk, deer, javelina (collared peccary), feral hog, hognose snake, eastern mole, fox squirrel, cardinal, and white-eye vireo. Rare and uncommon fauna include short-tailed shrew, buff-bellied hummingbird, whippoorwill, and yellow-billed cuckoo.

Ridge and Swale

Common fauna include the white-tailed deer, cotton rat, feral hog, cardinal, bobcat, gray fox, mountain lion, mockingbird, white-footed mouse, rough green snake, rat snake, javelina, meadowlark, savannah and vesper sparrow, slender glass lizard, and northern harrier. Rare and uncommon fauna include the Texas scarlet snake, long-tailed weasel, white-tailed hawk, and aplomado falcon.

Barrier Flat

Common fauna include white-tailed deer, cotton rat, harvest mice, feral hog, eastern meadowlark, marsh wren, dickcissel, slender glass lizard, Gulf Coast ribbon snake, ground skink, ornate box turtle, speckled kingsnake, massasauga rattlesnake, western diamondback rattlesnake, coachwhip, mockingbird, loggerhead shrike, and scissor-tailed flycatcher. Rare and uncommon flora and fauna include ladies tresses, white-tailed hawk, aplomado falcon, American badger, white-tailed kite, Le Conte's sparrow, short-eared owl, and burrowing owl.

Upland Grassland

This is home to a variety of grassland birds, raptors, and prairie-dependent species.

Mesquite/Prickly Pear

Birds and mammals more typical of the south Texas brushlands can be found in this community, including cactus wren, Bell's vireo, Bewick's wren, Cassin's sparrow, roadrunner, and wood rat.

Gulf Beach and Dune

The beach swash zone fauna includes primarily detritivores (mole crab, surf crab, coquina clam, ghost shrimp, sand digger amphipods and palp worms) and predators (Atlantic moon, lettered olive, Salle's auger, blue and speckled crab, sanderling, and ruddy turnstone). The forebeach consists of transient feeders (juvenile ghost crab, tiger beetle, dragonflies, and robberflies) and loafers (gulls, terns, and brown pelicans). The berm/strandline is utilized by scavengers (beach flea, shore fly, ghost crab, seaweed fly, carrion fly, most shorebirds, crested caracara, turkey vulture, feral hog,

and coyote). On the backbeach, ghost crabs, horned larks, jackrabbits, badgers, and coyotes can be found. The primary dunes are home to prairie-lined racerunner, horned lizard, cotton rat, jackrabbit, badger, and coyote. Secondary dune fauna are similar to that of the surrounding grassland. Rare and uncommon fauna include the red land crab, sea turtles, white-tailed tropicbird, Northern gannet, magnificent frigatebird, and sooty tern.

Shell Ridge/Chaparral

This habitat provides some of the best shelter, cover, and feeding areas for Neotropical migrant fallouts. The soil type is the Galveston-Adamsville association with shell and high calcium content. Common island fauna include ghost crab, sand fiddler crab, imported fire ant, walking stick, wood-boring beetle, cotton rat, raccoon, coyote, diamondback rattlesnake, prairie-lined racerunner, horned lizard, white-tailed kite, white-tailed hawk, and horned owl. On the mainland, one can add the white-footed mouse, fence lizard, green anole, rough green snake, white-eyed vireo, armadillo, opossum, and skunk.

Marshhay and Gulf Cordgrass

The open aspect and heavy rodent population of this community appeals to a variety of raptors, including the white-tailed hawk, white-tailed kite, northern harrier, and loggerhead shrike. Also found here are a variety of sparrows, sedge wren, hispid cotton rat, pygmy mouse, racers, and coachwhip snake.

Freshwater Wetlands

The unifying characteristic of the many wetland habitats is that almost all wildlife on these refuges depends on the fresh water. Even those species strongly associated with salt water (e.g., gulls and terns) need to drink fresh water daily. Frogs and toads breed only in fresh water, and the mottled duck and black-bellied whistling duck nesting and brood rearing cycle revolves around these freshwater areas. Common fauna of freshwater communities include the water flea, ostracods, larval midge, mosquitoes, dragonflies, whirligig, water boatmen, aquatic snails, mole cricket, staphylinid beetle, earthworm, leopard frog, Gulf Coast toad, narrow-mouthed toad, yellow mud turtle, red-eared slider, Gulf Coast ribbon snake, 20 or so species of fish, ducks, grebes, gallinules and coots, belted kingfisher, marsh and sedge wrens, killdeer, raccoon, feral hog, and white-tailed deer. Rare and uncommon fauna include nutria, blue-winged teal (occasionally nests), yellow and black rails, wood stork, yellow-crowned night-heron, and broad-banded water snake. The most spectacular resident of the refuge freshwater biotic community is the American alligator.

Tidal Flat/Pool Community (Salt Marsh Community)

Common fauna include detritivores—marine worm, clam, ghost shrimp, and many tiny crustaceans; grass shrimp, juvenile brown shrimp, pistol shrimp, blue crab, marsh crab, mud crab, stone crab, hermit crab, marine snails, striped mullet, and killifish; shore flies, shorebugs, beach flea, fiddler crab, shorebirds, waders, herons and egrets, gulls, terns, black skimmer, clapper rail, seaside sparrow, Gulf saltmarsh snake, saltmarsh grasshopper, marsh rice rat, western pygmy blue and great white southern butterflies, tiger beetles, wolf spider, rice rat, raccoon, feral hog; and white-tailed deer. Rare and uncommon flora and fauna include black mangrove, wood stork, diamondback terrapin turtle, white mullet, blue crab, and, of course, the federally endangered whooping crane.

Alternative A--No Action Alternative:

Under the No Action Alternative, the existing habitat conditions would initially be maintained, but with the expectation that habitat loss and change will occur as a result of sea-level rise and climate change. This will result in direct negative impacts to wildlife on the refuges and in certain parts of the landscape, especially along the coastline. There are likely to be observable reductions in wildlife diversity and abundance of wildlife in those areas.

Alternative B--Proposed Action:

Under this alternative it is anticipated that each new acquisition would advance conservation in a specific way by directly protecting various habitat types and their associated wildlife. Future restoration or management activities on acquired lands may have other effects that will be analyzed in a separate NEPA process.

Threatened and Endangered Species and Other Special Status Species

Threatened and endangered species along with other species given special federal conservation status were analyzed in compliance with the Endangered Species Act in an Intra-Service Section 7 consultation process. The results of those analyses and consultation can be found later in this appendix. Overall, it was determined by the Service, and concurred with by the USFWS Ecological Services program, that the Proposed Action of acquiring lands for the purposes of conserving those lands and waters and their associated habitats and wildlife “may affect, but is not likely to affect” the protected species found there. While in some cases there could be short-term negative effects, the longer-term beneficial impacts are thought to be much more significant.

Human Environment

Cultural Resources

Aransas National Wildlife Refuge

Between 1828 and 1871 limited settlement had occurred on lands outside of and adjacent to the current refuge boundaries, but little to no development had taken place within refuge lands. By 1851, maps identified one land grant at the southern end of Blackjack Peninsula (now refuge land) acquired by T.A. Sully. By 1871, maps indicated that Blackjack Peninsula had been subdivided, and many interior tracts were designated as Aransas County School Land. On an 1896 map a community called Carlos City was identified but was no longer evident by the late 1920s.

Much of the refuge was within the St. Charles Ranch, which was repossessed by the San Antonio Loan and Trust Company in 1919. Management of the ranch was taken over by the Loan and Trust Company chairman Leroy G. Denman, Sr. in 1923. Denman sold the 55,000-acre ranch to the federal government in 1937 for the establishment of a wildlife preserve. Oil and gas production has taken place on refuge lands since the mid-1930s.

The recorded sites on Matagorda Island are associated with Civil War-era trenches and fortifications; nautical features including a light house and coast guard stations; sites related to Euro-American settlements including historic dumps and a grave site; and sites from the mid-twentieth century. Many shipwrecks have also been documented in the waters surrounding the island; particularly at Pass Cavallo.

The Powderhorn Lake area is understudied regarding archeological resources. There are four shipwrecks designated by the Texas Historical Commission in Powderhorn Lake near the new refuge boundaries associated with 1875 and 1886 hurricanes; however, no sites are recorded within that refuge parcel. Conversely, the land surrounding St. Charles Bay has been surveyed extensively. Significant sites include several in the vicinity of St. Charles, Aransas, and Copano Bays; sites west of Mustang Lake; the Oak Mott Site featuring an intact Rockport Phase hunting camp on a knoll overlooking St. Charles Bay; the St. Charles Bay Salt Works with remnants of a nineteenth-century salt works destroyed by Union forces in the Civil War; and a prehistoric site on St. Charles Bay, among others.

Big Boggy National Wildlife Refuge

Land within the present-day refuge was permanently settled in the early 1820s by “Old Three Hundred” colonists led by Stephen F. Austin, and the town of Matagorda was established in 1829. Before the Civil War, cotton and sugarcane plantations were developed, but cattle ranching and rice farming became more common after the abolition of slavery. Three prominent settlers that played key roles on land within and adjacent to the current refuge include Victor Lawrence LeTulle, Gottlieb Baer, and James Boyd Hawkins.

Much of the refuge lands were acquired from the Le Tulle estate. Victor Lawrence LeTulle (1864– 1944) established a cattle ranch in 1890, acquiring numerous tracts of land in both Matagorda and Brazoria counties. By 1930, he had also developed a large irrigation canal company that facilitated rice farming in the region. Victor’s brother J.J. LeTulle, owned the land where the community of Chinquapin, immediately east of the refuge, was formed in the 1940s.

Refuge land on East Matagorda Bay and Dressing Point Island was part of the Baer Estate. Gottlieb Baer (1834–1893) arrived in Matagorda County by 1870 and established a cattle ranch. In 1907, his son Arthur Baer took over

management of the ranch, known as the Baer Cattle Company. As of 2016, the Baer Cattle Company had been continuously operated by family members for over 140 years. In close proximity to today's refuge was the Hawkins Plantation. James Boyd Hawkins (1813– 1896) settled along Caney Creek in 1845 where he built a two-story home and established a sugar plantation. The plantation was headquarters to what became the 40,000-acre J.B. Hawkins Ranch, and the surrounding area became known as Hawkinsville. The family's second home, constructed in the 1850s, remains standing today along Lake Austin and is a Recorded Texas Historic Landmark.

Although two surveys have been conducted, no archeological sites have been recorded within Big Boggy NWR.

Alternative A--No Action Alternative:

Under this alternative, there are no anticipated direct or indirect impacts to the cultural environment, as current conditions would be maintained, and no ground disturbance would occur. However, habitat loss and change is anticipated as a result of sea-level rise and climate change over the short- and long-term. Habitat and ground loss at both refuges could reasonably be anticipated to occur as a result of ground-disturbing events (e.g. wind and wave action) that could also impact existing cultural resources.

Alternative B--Proposed Action:

Under this alternative it is anticipated that each new acquisition would advance conservation in a specific way by directly protecting various habitats and any cultural resources found therein. Those resources will be documented and assessed under Section 106 of the National Historic Preservation Act in a separate process at the time of acquisition.

Socioeconomic Resources

Although still largely rural, the CPA is influenced by the Corpus Christi, San Antonio and Houston metropolitan areas, some of the fastest-growing regions of the country. However, none of the cities lie within the acquisition boundary. Communities within the boundary include Refugio, Bay City and Rockport. The area, especially the coastline, draws visitors from all of the major urban areas and beyond. Some large ranches have been fragmented into "ranchettes" or residential subdivisions. The area is attractive for second homes.

Agriculture (e.g. livestock, rice farming), energy production (oil and gas, solar, wind), and tourism are currently the top economic drivers in this area. Commercial hunting operations also generate revenue on many of the large ranches. However, the market for geologic carbon sequestration is growing rapidly and could match or exceed the economic value of current economic drivers. More details regarding the economic profile of this area can be found in the CCP's and associated EA's for Aransas NWR (USFWS 2010) and the Texas Mid-coast NWR Complex (USFWS 2013).

Aransas and Big Boggy NWR's offer a variety of recreational activities, including hunting (waterfowl, deer, feral hog), fishing, and wildlife watching, especially birding. As the winter home to the only wild, self-sustaining population of whooping cranes in the world and lying on a major migration route for waterfowl, shorebirds and songbirds, Aransas NWR is a very popular destination for birders and wildlife enthusiasts from across the globe. The refuge attracts visitors from nearby communities, but most visitors come from outside the local area. Local community businesses, including restaurants, grocery stores, motels, service stations, and sporting goods stores, profit significantly from these resources.

Both refuges contribute significantly to the local economy through purchases from local suppliers and service contracts. Refuge staff also live and spend salaries in the area. While land owned by the U.S.

Government is not taxable by state or local authorities, the Service compensates local governments for foregone tax revenues. The Refuge Revenue Sharing Act of June 15, 1935, as amended (16 U.S.C. 715s) requires the Service to make payments to local taxing authorities, typically counties, to at least partially offset the loss of local tax revenues as a result of federal acquisition of private property. The Service makes annual payments to local taxing authorities, based on the estimated values of lands that the Service owns located in those jurisdictions. The actual Refuge Revenue Sharing payment does vary from year to year because Congress may or may not appropriate sufficient funds to make

full payment. Properties subject to conservation easements remain on the tax rolls and taxes are still paid by the landowner. The Service does not pay refuge revenue sharing on easement rights.

Alternative A--No Action Alternative:

The economic and social condition of the area would likely remain stable over the short-term. The refuges will continue to be one of the area's main attractions. However, threats such as climate change and sea-level rise could result in the degradation of existing habitats and their associated wildlife communities, including the charismatic species, like whooping crane, that visitors come to see. This, in turn, could lead to reduced economic and other social benefits of the refuges.

Alternative B--Proposed Action:

The proposed action would have a positive impact on an expanded range of local community economies through the expansion of refuge lands available for public uses, potentially increasing visitation and the associated economic benefits of visitors in the local communities. Expanding the refuges may also result in increased project development with its associated funding, along with potential staff increases.

Visitor Services/Activities

As mentioned above, Aransas and Big Boggy NWR's offer a variety of recreational activities and Aransas is internationally known by birders not only as a critical wintering area for one of the most recognized endangered species, the whooping crane, but also for the fact that the Refuge is a birding hotspot, attracting over 400 avian species from all over. Approximately 60,000 visitors are welcomed annually, most of them keenly focused on viewing whooping cranes and other interesting wildlife. Customer service is an integral part of the Visitor Services Program.

In addition to wildlife observation and photography, both refuges offer hunting and fishing. Aransas NWR also has a strong environmental education and interpretation program.

Alternative A--No Action Alternative:

Under this action, visitor services would remain the same on existing refuge lands. There would be no expansion of those services to other lands in the region.

Alternative B--Proposed Action:

The proposed action would provide a potential expansion of visitor services into new parts of the Coastal Bend region. Per Service policy, appropriateness and compatibility determinations would need to be completed for all proposed public uses on new lands prior to implementation. All approved services are likely to be very popular with refuge visitors and will provide additional opportunities for visitors to learn about and interact with the environmental resources.

Environmental Justice

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority and Low-Income Populations; February 11, 1994) was designed to focus the attention of Federal Agencies on the environmental and human health conditions of minority and low-income populations, with the goal of achieving environmental protection for all communities. The order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health and environmental effects of their programs, policies, and activities on minority and low-income populations. The order is intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income communities with access to public information and opportunities for participation in matters related to human health and the environment.

The project area is home to a diversity of demographics but is particularly well-represented by people over the age of 65, those with low incomes, and people of color. These communities, especially the low-income population, are more vulnerable to the potential impacts of the No-Action Alternative as this could lead to a degraded environment on the refuge, resulting in reduced visitation and associated economic benefits to the surrounding communities. Alternatively, implementation of the Proposed Action is anticipated to benefit all surrounding communities through its potential effects on environmental, economic, social, and health criteria as a result of protecting and ensuring access to a larger area of public land.

Indian Trust Assets

An Indian Trust Asset is something the Federal government holds in trust for the benefit of a Native American individual or Tribe. In the case of trust lands, this means that an individual or Tribe earns money when companies lease rights to that land and earn income. No Indian Trust Assets have been identified within the entirety of the CPA. Because resources are not believed to be present, no impacts are anticipated to result from implementation of either alternative described in this EA.

Assessment of Cumulative Impacts

A cumulative impact is defined as an impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future action regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Cumulative impacts are the overall, net effects on a resource that arise from multiple actions. Impacts can “accumulate” spatially, when different actions affect different areas of the same resource. They can also accumulate over the course of time, from actions in the past, the present, and the future. Occasionally, different actions counterbalance one another, partially cancelling out each other’s effects on a resource. But more typically, multiple effects add up, with each additional action contributing an incremental impact on the resource.

The Service anticipates that all future land acquisitions by other state, federal or private entities for the purposes of habitat and wildlife conservation will provide for a cumulative benefit to those environments and that there are no known past, present or reasonably foreseeable actions that could result in a negative cumulative impact on refuge resources.

Irreversible and Irretrievable Commitment of Resources

Neither of the alternatives would result in a large commitment of nonrenewable resources. Project implementation would require the irretrievable commitment of fossil fuels (diesel and gasoline), oils, and lubricants used by motorized equipment and vehicles that would be used to access new lands and perform routine operational activities, including patrolling.

CONSULTATION, COORDINATION AND DOCUMENT PREPARATION

Preparers

U.S. Fish and Wildlife Service, Planning Division, Albuquerque, NM.
Ernest Cook, Land/Water Associates
Mike Lange, Texas Conservation Partners

Consultations and Contributions

Agencies and individuals consulted in the preparation of this document include:
Sonny Perez – South Texas Refuge Supervisor, USFWS, National Wildlife Refuge System
Joe Saenz – Refuge Manager, USFWS, Aransas National Wildlife Refuge
Bryan Winton – Refuge Manager, USFWS, Texas Mid-Coast National Wildlife Refuge Complex
Curtis Jones – Refuge Manager, USFWS, San Bernard National Wildlife Refuge
Jena Moon – Zone Biologist, USFWS, National Wildlife Refuge System

REFERENCES

- Canadian Wildlife Service and U.S. Fish and Wildlife Service. 2005. International recovery plan for the whooping crane. Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 162 pp.
- Emmett, R.T. 1989. An evaluation of the soil seed reserve of the black lace cactus (*Echinocereus reichenbachii* v. *albertii*). Master of Arts Thesis, University of Texas at Austin. 78 pp.
- Lehmann, V.W. 1941. Attwater's prairie chicken, its life history and management. United States Fish and Wildlife Service, North American Fauna Series 57. United States Government Printing Office, Washington, D. C., USA.
- Rappole, J. H. and G. W. Blacklock. 1985. Birds of Texas Coastal Bend: Abundance and Distribution. Texas A&M University Press. College Station, Texas.
- U.S. Fish and Wildlife Service. 2009. Black lace cactus (*Echinocereus reichenbachii* var *albertii*) 5-year review: Summary and evaluation. U.S. Fish and Wildlife Service, Corpus Christi Ecological Services Field Office, Corpus Christi, Texas. 32 pp.
- U.S. Fish and Wildlife Service. 2010. Aransas National Wildlife Refuge Complex Comprehensive Conservation Plan and Environmental Assessment. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 446 pp.
- U.S. Fish and Wildlife Service. 2013. Texas Mid-coast National Wildlife Refuge Complex Comprehensive Conservation Plan and Environmental Assessment. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 656 pp.

Intra-Service Section 7 Biological Evaluation Form

Originating person: David Certain

Consultation Number: 2023-0009463

Telephone Number: 505-206-4643

Date: 11/28/2022

Service Program and Geographic Area or Station Name:
Division of Refuges, Region 2, Aransas and Big Boggy National Wildlife Refuges

Service Activity (Program):

The proposed action around Aransas and Big Boggy National Wildlife Refuges requires consultation under Section 7 of the Endangered Species Act (ESA). This document includes an evaluation of potential effects to federally listed species resulting from the proposed action.

Listed/Pertinent Species and Habitat

Endangered

Attwater's Greater prairie-chicken (*Tympanuchus cupido attwateri*)
Whooping crane (*Grus americana*) and critical habitat
Northern Aplomado falcon (*Falco femoralis septentrionalis*)
Hawksbill sea turtle (*Eretmochelys imbricata*)
Kemp's Ridley sea turtle (*Lepidochelys kempii*)
Leatherback sea turtle (*Dermochelys coriacea*)
Black lace cactus (*Echinocereus reichenbachii* var. *albertii*)
Slender rush-pea (*Hoffmannseggia tenella*)
South Texas ambrosia (*Ambrosia cheiranthifolia*)

Threatened

West Indian manatee (*Trichechus manatus*)
Eastern black rail (*Laterallus jamaicensis* spp. *jamaicensis*)
Piping plover (*Charadrius melodus*) and critical habitat
Rufa red knot (*Calidris canutus rufa*) and proposed critical habitat
Green sea turtle (*Chelonia mydas*)
Loggerhead sea turtle (*Caretta caretta*)

Candidate

Monarch Butterfly (*Danaus plexippus*)

Proposed Endangered

False spike (*Fusconaia mitchelli*)
Guadalupe orb (*Cyclonaias necki*)
Texas pimpleback (*Cyclonaias petrina*)

Proposed Threatened

Texas fawnsfoot (*Truncilla macrodon*) and proposed critical habitat

Location

The action area falls within the limited acquisition boundary identified in the Land Protection Plans for Aransas and Big Boggy National Wildlife Refuges in the Coastal Bend area of Texas, Gulf Coast Prairies and Marshes ecoregion (Figure 1). Texas counties in the action area include Aransas, Calhoun, Refugio, Goliad, Jackson, Matagorda, San Patricio and Victoria.

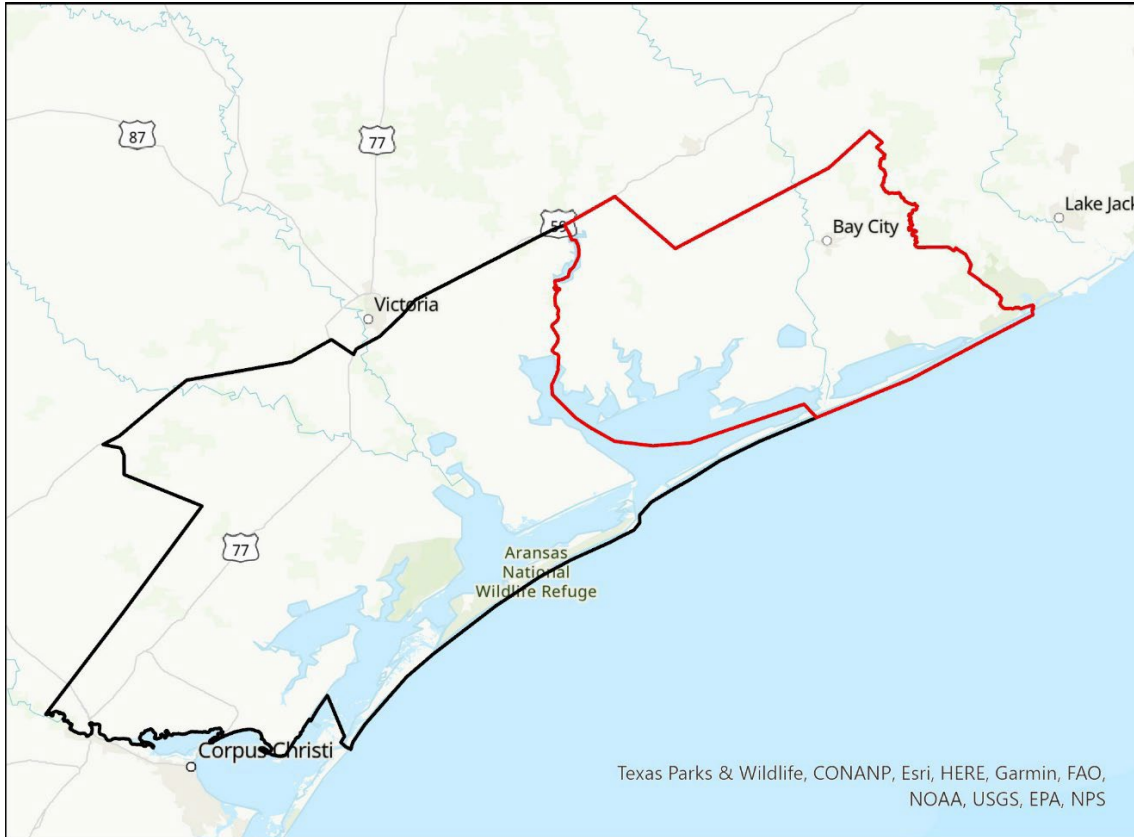


Figure 1. Location of Aransas and Big Boggy limited acquisition boundaries

Project Description

The U.S. Fish and Wildlife Service (Service) is proposing limited acquisition boundaries for the Land Protection Plans (LPP) for Aransas and Big Boggy National Wildlife Refuges in the Coastal Bend area of Texas. The combined boundary covers roughly 3,503,850 acres, within which the Service would strategically acquire lands in fee-title or conservation easements, totaling up to 150,000 acres. The proposed action for this Biological Evaluation is only for the LPPs, which would be the potential effects of future land acquisition and easements on listed, proposed listed, or candidate species. At this time, no potential parcels have been acquired or identified for acquisition into the refuge system. Once the LPPs are approved, land acquisition for incorporation into the refuge system would require a separate consultation under Section 7 of the Endangered Species Act for each selected parcel.

The purpose of the LPPs is to identify areas across the Coastal Bend landscape that, if acquired, will result in improved protections and conservation of the suite of species identified in the purposes for the refuges, along with all associated species and their habitats. The Aransas and Big Boggy refuges were primarily developed to provide for the management of habitat for migrating and resident waterfowl, including ducks, geese, shorebirds and wading birds. Three of the high-priority species in this group include whooping crane, mottled duck and Eastern black rail. In addition, units of Aransas were originally protected to preserve a remnant of low upland (dark soil) coastal prairie and its associated wildlife, including Attwater's Greater prairie-chicken.

Four focal species were selected in the planning process to represent broad habitat types that will be the focus of land acquisition in the future. Whooping cranes, Mottled duck and Eastern black rail were selected to represent a spectrum of wetland types. Attwater's Greater prairie-chicken was selected to identify lands important for its' conservation and for associated upland species.

Determination of Effects

The proposed LPP's are anticipated to have an overall beneficial effect for listed species within the area, due to the stated goal *"to protect designated critical habitat for the endangered whooping crane, critical wintering habitat for the threatened piping plover, important habitat for several listed sea turtle species, and habitat for a number of high priority birds including mottled duck and reddish egret."* Additionally, the purpose of developing this plan was to protect high-quality conservation lands from the threats of residential and commercial development that result in habitat loss, fragmentation and many other negative impacts to biodiversity in the region. However, because acquisition of properties is expected to occur in the future on areas not yet identified, the specific biological resources that may be present are not known. In addition, the management prescribed to future acquisitions may also have temporary adverse effects to listed or proposed listed species, depending on resources present and management needs. Therefore, this effects analysis is directed at the acquisition plan and expected effects to species within the acquisition boundary. It does not include the effects of management actions that may be implemented in the future. Subsequent consultation will occur for each parcel that is identified for potential acquisition; this would include a more specific effects evaluation, which may draw upon the expected effects listed here, as well as other direct/indirect effects relevant to the action at the time of the consultation.

Northern Aplomado falcon

Historically, this sub-species occurred throughout coastal prairie habitat along the southern Gulf coast of Texas, in the trans-Pecos region of Texas in Chihuahuan Desert grasslands, and in savanna and grassland habitat along both sides of the Texas-Mexico border, southern New Mexico, and southeastern Arizona. Acquisition of property through easement or fee-title containing habitat for the Northern Aplomado falcon would have no adverse effects on the species but is expected to result in future beneficial effects through preservation and protection of suitable habitat. Therefore, the proposed action of acquiring land for protection is not likely to adversely affect the Northern Aplomado falcon.

Attwater's Greater prairie-chicken

This sub-species was listed as endangered with extinction in 1967. This listing was "grandfathered" into the Endangered Species Act (ESA) of 1973. Attwater's represents the southern-most subspecies of *T. cupido*, and currently occurs in the wild at only three locations - the Attwater Prairie Chicken National Wildlife Refuge (Colorado County, Texas), the Texas City Prairie Preserve (Galveston County, Texas), and a private ranch in Goliad County, Texas. "Optimum prairie chicken range apparently consists of well-drained grassland supporting some weeds or shrubs as well as grasses, the cover varying in density from light to heavy; and with supplies of surface water available in summer. In short, diversification within the grassland type is essential." (Lehmann 1941).

[Lehmann, V.W. 1941. Attwater's prairie chicken, its life history and management. United States Fish and Wildlife Service, North American Fauna Series 57. United States Government Printing Office, Washington, D. C., USA.](#)

Acquisition of property through easement or fee-title containing habitat for Attwater's Greater prairie chicken would have no adverse effects on the species but is expected to result in future beneficial effects through restoration, preservation and protection of suitable habitat. Therefore, the proposed action of acquiring land for protection is not likely to adversely affect the Attwater's Greater prairie chicken.

Sea turtles (Hawksbill, Kemp's Ridley, Leatherback, Green, Loggerhead)

All five of these species occur in the bays, offshore, and shoreline environments within the combined acquisition boundary of this plan. Leatherback turtles have been observed nesting and beaching more frequently across the bay system over the last year. However, almost all suitable nesting habitat is already under protection, primarily by the State of Texas. Only a very limited area of nesting beach is known to be privately owned and not covered under the Texas Open Beaches Act. While the Service does and will continue to expand our role in managing for these species through management agreements, little to no acquisition of these lands is anticipated. For this reason, the proposed action of acquiring land for protection is not likely to adversely affect these species.

Black lace cactus

The 5-year review (USFWS 2009) indicates that six populations of black lace cactus had been found from east-central Jim Wells County to north-east Kleberg County to Refugio County (pp. 11–13). By 2009, only two extant populations were known, in Kleberg and Refugio counties, and still within the proposed acquisition boundary. Emmett (1989) investigated the soil seed reserve of the nearby Kleberg County black lace cactus population. The known populations occur in saline fine sandy loam within several hundred meters of watercourses, in the coastal grassland—Rio Grande plain scrub ecotone, and are occasionally flooded. Emmett observed black lace cactus flowering from March through June, with a peak in mid-April to May. The populations in Kleberg and Refugio Counties appear to have declined over the last 30 years but remain extant. The acquisition of property is expected to result in a beneficial effect for the species and its habitat. Therefore, the proposed action of acquiring land for protection through conservation easements and fee-title sales is not likely to adversely affect the Black lace cactus.

Emmett, R.T. 1989. An evaluation of the soil seed reserve of the black lace cactus (*Echinocereus reichenbachii* v. *albertii*). Master of Arts Thesis, University of Texas at Austin. 78 pp.

U.S. Fish and Wildlife Service. 2009. Black lace cactus (*Echinocereus reichenbachii* var *albertii*) 5- year review: Summary and evaluation. U.S. Fish and Wildlife Service, Corpus Christi Ecological Services Field Office, Corpus Christi, Texas. 32 pp.

U.S. Fish and Wildlife Service. 2019. Recovery Plan for *Echinocereus reichenbachii* var. *albertii* Benson (Black Lace Cactus), Amendment 1. U.S. Fish and Wildlife Service, Region 2, Albuquerque, NM.

Slender rush-pea and South Texas ambrosia

Both of these species are known from the Texas Coastal Bend within Nueces and Kleberg counties, Texas, within the Gulf Coast Prairies and Marshes Ecoregion. Native habitat includes a mix of grasses and forbs atop clay, silt, and sandy soils of the Pleistocene Delta. Both species are tied to specific drainage systems. Land conversion and habitat loss, and the alterations or abatement in beneficial vegetation management strategies (fire, herbicide, mowing) have caused encroachment of nonnative grasses to the few remaining shortgrass prairies within this region. The ranges of these species overlap with the far southwest boundary of the acquisition area on the north margins of Corpus Christi Bay. Any acquisition of property in this area is expected to result in a beneficial effect for these species and their habitat. Therefore, the proposed action of acquiring land for protection through conservation easements and fee-title sales is not likely to adversely affect Slender rush-pea and South Texas ambrosia.

West Indian manatee

The West Indian manatee is uncommon in Texas waters but can be expected to occasionally visit areas with sea grass and nearshore environments as it migrates across its range. It is near the northwestern limits of its range within the acquisition boundaries defined for this action. Any land acquisitions near the shoreline where manatees might visit would be expected to provide increased protections and, therefore, would be not likely to adversely affect the West Indian manatee.

Eastern black rail

Wintering and breeding areas of this species include coastal areas of Texas, particularly in marshes and wet prairies containing dense perennial herbaceous wetland vegetation. Any acquisition of property in this area is expected to result in a beneficial effect for this species and its habitat. Therefore, the proposed action of acquiring land for protection through conservation easements and fee-title sales is not likely to adversely affect Eastern black rail.

Piping plover

This species' historical range included Alabama, Colorado, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, South Dakota, Texas, Virginia, Virgin Islands, Wisconsin, and Wyoming. Critical Habitat for the wintering population of this species does exist within the acquisition boundary for the Texas Coastal Bend. The acquisition of property is expected to result in a beneficial effect for the species and its habitat. Therefore, the proposed action of acquiring land for protection through conservation easements and fee-title sales is not likely to adversely affect the piping plover or its critical habitat.

Rufa red knot

The breeding and non-breeding range of the threatened Rufa red knot covers the entire length of the Texas Gulf coast as well as inland areas for non-breeding and migrating birds. This range encompasses all of the proposed land acquisition boundary. Proposed Critical Habitat exists on Mustang Island and on the barrier island adjacent to East Matagorda Bay. Although acquisition of lands on barrier islands is unlikely due to the paucity of private property, any acquisitions of Rufa red knot habitat within the boundary is expected to have future benefits through land preservation and protection. Therefore, the proposed action of acquiring land for protection through conservation easements and fee-title sales is not likely to adversely affect the red knot or its proposed critical habitat.

Monarch butterfly

The monarch butterfly is a candidate species and not yet listed or proposed for listing. However, for the purpose of this consultation, the Service treats candidate species as proposed species. Monarch butterflies migrate throughout Canada, the United States, and Mexico. In many regions where monarchs are present, they breed year-round. Individual monarchs in temperate climates, such as eastern and western North America, undergo long-distance migration, and live for an extended period. In the fall, monarchs begin migrating to their respective overwintering sites in both eastern and western North America. This migration can take monarchs distances of over 3,000 km and last for over two months. Acquiring land for the purposes of habitat protection would benefit the monarch. Therefore, the proposed action is not likely to jeopardize the continued existence of the monarch butterfly.

River mussels (False spike, Guadalupe orb, Texas pimpleback, Texas fawnsfoot) This group of four species proposed for listing occur in the Guadalupe River basin (False spike, Guadalupe orb) and the Lower Colorado River basin (Texas pimpleback, Texas fawnsfoot) that both intersect the combined acquisition boundary of this plan. The acquisition of land that borders these rivers is expected to have future benefits to these species through land preservation and protection. Therefore, the proposed action of acquiring land for protection through conservation easements and fee-title sales is not likely to adversely affect any of these species.

Effects Determination and Response Requested

Listed Species

Determination

No effect/ no adverse modification [None]

May affect, not likely to adversely affect species/ adversely modify critical habitat:

- Northern Aplomado falcon
- Whooping crane
- Attwater's Greater prairie-chicken
- Piping plover
- Rufa red knot
- Hawksbill sea turtle
- Kemp's Ridley sea turtle
- Leatherback sea turtle
- Black lace cactus
- Slender rush-pea
- South Texas ambrosia
- West Indian manatee
- Eastern black rail
- Green sea turtle
- Loggerhead sea turtle

May affect, is likely to adversely affect species/ critical habitat: [None]

Proposed Species

Determination

No effect on proposed species/ critical habitat: [None]

Is not likely to jeopardize proposed species/adversely modify proposed critical habitat.

- False spike
- Guadalupe orb
- Texas pimpleback
- Texas fawnsfoot

May affect, is likely to adversely affect species/ critical habitat: [None]

Candidate Species

Determination

No effect on candidate species: [None]

May affect, is not likely to adversely affect: [None]

Is not likely to jeopardize candidate species:

- Monarch butterfly

Is likely to jeopardize candidate species: [None]

Signature Jose Saenz - Aransas NWR Manager
Signature Curtis Jones - Big Boggy NWR Manager

Reviewing ESO Evaluation:

Concurrence: Granted for Listed Species, Proposed Species, and Candidate Species

Formal consultation required: Not Applicable

Conference required: Not Applicable

Informal conference required: Not Applicable

Remarks: The Service has also determined that no listed Critical Habitat will be adversely modified

Signature Charles Ardizzone - Ecological Services, Corpus Christi Field Office Supervisor

References

- Canadian Wildlife Service and U.S. Fish and Wildlife Service. 2005. International recovery plan for the whooping crane. Ottawa: Recovery of Nationally Endangered Wildlife (RENEW), and U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 162 pp.
- Emmett, R.T. 1989. An evaluation of the soil seed reserve of the black lace cactus (*Echinocereus reichenbachii* v. *albertii*). Master of Arts Thesis, University of Texas at Austin. 78 pp.
- Lehmann, V.W. 1941. Attwater's prairie chicken, its life history and management. United States Fish and Wildlife Service, North American Fauna Series 57. United States Government Printing Office, Washington, D. C., USA.
- Rappole, J. H. and G. W. Blacklock. 1985. Birds of Texas Coastal Bend: Abundance and Distribution. Texas A&M University Press. College Station, Texas.
- U.S. Fish and Wildlife Service. 2009. Black lace cactus (*Echinocereus reichenbachii* var *albertii*) 5-year review: Summary and evaluation. U.S. Fish and Wildlife Service, Corpus Christi Ecological Services Field Office, Corpus Christi, Texas. 32 pp.
- U.S. Fish and Wildlife Service. 2010. Aransas National Wildlife Refuge Complex Comprehensive Conservation Plan and Environmental Assessment. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 446 pp.
- U.S. Fish and Wildlife Service. 2013. Texas Mid-coast National Wildlife Refuge Complex Comprehensive Conservation Plan and Environmental Assessment. U.S. Fish and Wildlife Service, Albuquerque, New Mexico. 656 pp.