Booming Attwater's prairie-chicken male. CREDIT: Noppadol Paothong

Vision Statement

Attwater Prairie Chicken National Wildlife Refuge will protect and ensure the survival of the Attwater's prairie-chicken, allowing the population to reach a measurable level of ecological and genetic stability so that it can be downlisted to threatened status and ultimately removed from the endangered species list. The Refuge will preserve and protect one of the last remnant coastal prairies within the Gulf Coast Prairies and Marshes Ecoregion. The Refuge will also serve as a resilient source of evolving habitats and ecosystem processes even as structure and composition are altered due to climate change.

Through compatible wildlife-dependent recreation, the refuge will promote a strong conservation ethic and foster a greater understanding and appreciation of the coastal prairie ecosystem, Attwater's prairie-chicken recovery efforts, and the mission of the National Wildlife Refuge System. The Refuge will work closely with State and Federal agencies, regional organizations, local landowners, and municipalities to achieve mutual conservation goals for the benefit of present and future generations.

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Sunset at APCNWR. CREDIT: USFWS

1.0 INTRODUCTION

Established in 1972, Attwater Prairie Chicken National Wildlife Refuge (Refuge or APCNWR*)* is home to one of the last populations of the critically endangered Attwater's prairie-chicken (APC) (*Tympanuchus cupido attwateri)*, a ground-dwelling grouse of the coastal prairie ecosystem. The Refuge is one of the largest remnants of coastal prairie habitat remaining in southeast Texas.

This document is a Comprehensive Conservation Plan (CCP) designed to guide management of the Refuge for the next 15 years. The CCP provides a description of the desired future conditions and long-range guidance to accomplish the purposes for which the Refuge was established. The CCP and accompanying Environmental Assessment (EA) address U.S. Fish and Wildlife Service (Service) legal mandates, policies, goals, and National Environmental Policy Act (NEPA) compliance. The final decision for the EA is a Finding of No Significant Impact (FONSI) and documented in Appendix B.

The CCP is divided into five chapters. Chapter 1, Introduction, provides information about why the Service is developing this plan; a brief overview of the Refuge, including its establishment, authorizing legislation, and description of its purposes; information on the National Wildlife Refuge System (Refuge System or System); and the laws, policies, and guidance that sets the stage for management direction. Chapter 2, The Planning Process, explains the process used to develop the CCP consistent with planning requirements. Chapter 3, Refuge Resources and Current Management, explains the landscape

setting; physical, biological, and socio-economic environment; and the current management programs on the Refuge. Chapter 4, Management Direction, describes the goals, objectives, and strategies for the Service's preferred alternative (Alternative B). Finally, Chapter 5, Plan Implementation and Monitoring, describes the various tools the Refuge will use to implement the management direction presented in this plan.

1.1 Purpose and Need for the CCP

The purpose of comprehensive conservation planning is to provide long-range guidance for the management of national wildlife refuges, as mandated by the National Wildlife Refuge Improvement Act of 1997 (Improvement Act).

The CCP will enhance the management of the Refuge by:

- providing a clear statement of direction for the future management of the Refuge;
- providing long-term continuity in Refuge management;
- communicating the Service's management priorities for the Refuge to its partners, neighbors, visitors, and the general public;
- providing an opportunity for the public to help shape the future management of the Refuge;
- ensuring that management programs on the Refuge are consistent with the mandates of the Refuge System and the purposes for which the Refuge was established;
- ensuring that the management of the Refuge is consistent with Federal, State, and local plans; and
- providing a basis for budget requests to support the Refuge's needs for staffing, operations, maintenance, and capital improvements.

The CCP is needed to provide guidance and rationale for management actions and will be used by the Refuge manager and staff as a reference document when developing work plans, step-down plans, and making management decisions. The CCP is also needed to ensure that the Refuge continues to conserve and restore the coastal prairie ecosystem in the face of climate change and related stressors. Through the development of goals, objectives, and strategies, this CCP describes how the Refuge contributes to the overall mission of the National Wildlife Refuge System, fulfills the purposes designated for the Refuge, and uses the best available science for adaptive management.

The goals established for the Refuge include the following:

- Provide quality grassland habitat to support Attwater's prairie-chickens and other grassland dependent species native to the Gulf coastal prairie ecosystem;
- Maintain and enhance healthy populations of wildlife, with the recovery of Attwater's prairie-chicken being the priority;
- Provide opportunities for visitors to enjoy and appreciate the Refuge, its wildlife, and its management activities through compatible wildlife-dependent recreation programs, and
- Provide high-quality, safe, environmentally responsible facilities to support Refuge operations and enhance visitor experiences.

By preparing this CCP, documenting our goals and objectives, and involving our partners and the public in the process, we can gain a better understanding of the issues—from all sides. Sustaining the nation's fish and wildlife resources is a task that can be accomplished only through the combined efforts of governments, businesses, and private citizens. This CCP will help explain how Attwater Prairie Chicken NWR fits into the larger landscape and our role in protecting our natural resources for present and future generations.

1.2 Refuge Overview: History of Refuge Establishment and Acquisition

Attwater Prairie Chicken National Wildlife Refuge, located approximately 60 miles west of Houston, Texas, is one of the largest remnants of coastal prairie habitat remaining in southeast Texas and home to one of the last populations of the critically endangered Attwater's prairie-chicken, a ground-dwelling grouse of the coastal prairie ecosystem (Map 1-1. Refuge Location Map). Formerly occupying some six million acres of coastal prairie habitat, the Attwater's prairie-chicken was once one of the most abundant resident birds of the Texas and Louisiana tall grass prairie ecosystem (Lehmann 1941). Presently, less than 200,000 fragmented acres of coastal prairie habitat remain, leaving the birds scattered among three Texas counties (USFWS 2010).

The Refuge is one of a handful of national wildlife refuges managed specifically for an endangered species; however, many recovery activities (i.e., captive breeding and release program) for this imperiled bird and management of its declining ecosystem (Coastal Prairie Conservation Initiative) go beyond the Refuge's boundaries.

Once numbering near one million birds, the decline of the Attwater's prairie-chicken population coincided with the period of rapid European settlement of the Texas coastal prairies and their conversion to agricultural use during the late 1800s. The state offered protection as early as 1897 by shortening the length of the hunting season to avoid the breeding season, and hunting seasons for the bird were further shortened and then eventually closed in 1937. A dramatic decline of the Attwater's prairie-chicken population in the 1960s, combined with increasing national interest in the listing and protection of endangered species, brought about the focused attention of many conservationists and conservation agencies.

Refuge boundary sign, 1973 (Historic photo). CREDIT: USFWS

Since the 1930s, biologist Valgene Lehmann had chronicled the decline in a series of reports, including a Journal of Wildlife Management article in 1963 in which he wrote "Attwater's prairie-chicken is very definitely beyond the point of no return." In 1965, Lehmann was approached by I.V. Duncan and his son Gardner Duncan with an offer to sell 2,580 acres of their land in Colorado County, and Mr. and Mrs. David Wintermann agreed to sell an adjoining 840 acres. Under the guidance of former Fish and Wildlife Service Director Dr. Ira Gabrielson, the World Wildlife Fund (WWF) secured funding to acquire both properties at approximately half their market value to establish a preserve for the Attwater's prairie-chicken. Both families donated the balance of the value of these initial 3,500 acres. Mr. Howard Dogden, former Texas Parks and Wildlife Department Director in charge of all WWF lands in Texas, hired local retired State game warden Thomas T. Waddell as a part-time caretaker of the original preserve. Mr. Waddell had worked to protect the prairie-chickens in the area of the refuge since the hunting seasons were closed in 1937.

In 1967, the Service contracted Lehmann to update his initial 1937 report on the status of the Attwater's prairie-chicken. The new report showed alarming trends in the population, from 8,700 birds in 1937 to only 1,070 birds 30 years later. In 1967, the prairie-chicken was designated as endangered when the first list of native fish and wildlife threatened with extinction was published in the *Federal Register*. The Refuge

was proposed for establishment by the Director of the Bureau of Sport Fisheries and Wildlife (precursor to the Service) on July 16, 1968, when he formally approved a memorandum from his Land Acquisition Advisory Committee, which recommended the new refuge. In that year, the National Park Service designated the WWF lands as the Attwater Prairie-Chicken Preserve National Natural Landmark, part of their National Natural Landmarks Program.

Although these early acquisitions served as the first core sanctuary, the Attwater Prairie Chicken National Wildlife Refuge was not officially established until July 1, 1972, when 687 acres were purchased by the Service from the Verhuel Estate at the site of the present refuge headquarters. The WWF managed their 3,467-acre preserve until 1973 when it was leased with an option to purchase by the Service. The original Wintermann lands were finally sold to the Service in 1976, and the former Duncan Tract was donated to the Service in 1977. Several other important tracts were acquired in the 1970s, and by January 1980, a core area of 7,984 acres had been acquired for the refuge. The Attwater Prairie Chicken NWR is a permanent "non development" fee title refuge located within the Gulf Coast Ecosystem of Austin and Colorado counties, Texas. The Attwater's Prairie-Chicken Recovery Plan (1993) included a recovery action to protect an additional 20,000 acres of native coastal prairie grasslands as one of its primary actions needed to meet the recovery objective and resultant delisting of the APC. The 1998 Final Land Protection Compliance Documents and Conceptual Management Plan for Proposed Additions to Attwater Prairie Chicken National Wildlife Refuge approved an acquisition boundary for an additional 22,000 acres as shown in the Acquisition Project Area Map (Map 1-2). The acquisition of specific lands within the approved acquisition area from willing sellers and donors would establish or reconnect corridors between remnants of coastal prairie in Austin County and the main refuge tract in Colorado County, in hopes of sustaining a healthy APC population. Approximately 2,500 acres of coastal prairie habitat have since been purchased in Austin and Colorado counties. In 2010, a three-acre inholding was purchased in Austin County bringing the total refuge management area to approximately 10,541 acres. The Refuge is specifically managed to maintain or improve native coastal prairie communities for APC reintroduction and survival, as well as for the benefit of other important fish and wildlife resources.

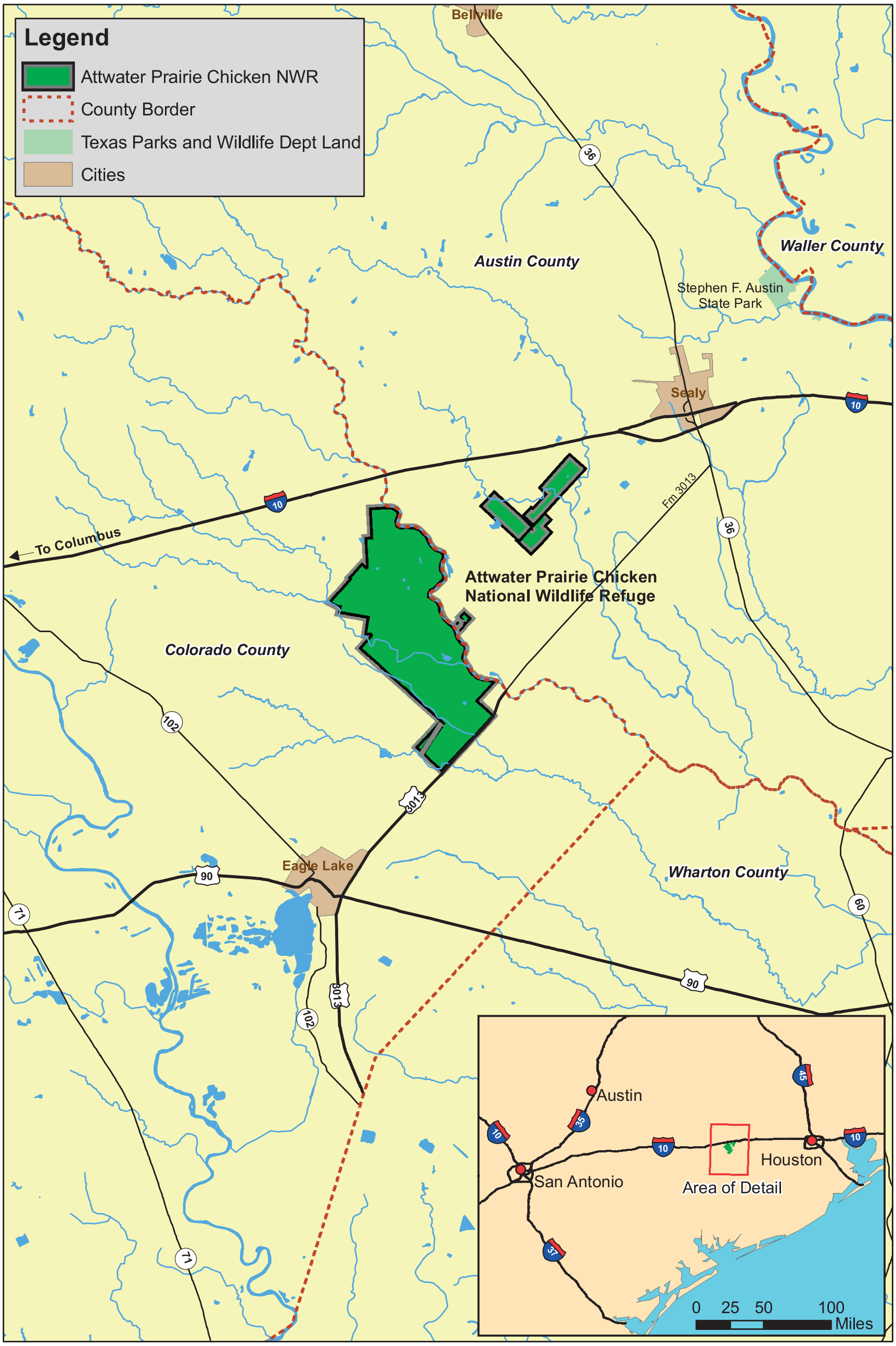
San Bernard River, 1967 (Historic Photo). CREDIT: USFWS

U.S. Fish & Wildlife Service

Attwater Prairie Chicken National Wildlife Refuge

Austin/Colorado County, Texas

Map 1-1. Refuge Location



PRODUCED IN THE DIVISION OF REFUGE PLANNING
ALBUQUERQUE, NEW MEXICO
LAND STATUS CURRENT TO: 5/31/09
MAP DATE: May, 2011
BASEMAP: N/A
MERIDIAN: N/A
FILE: atw_context_5.3.11_shl

0 2.5 5 10 Miles

0 2.5 5 10 Kilometers

UTM ZONE 14
NAD 83

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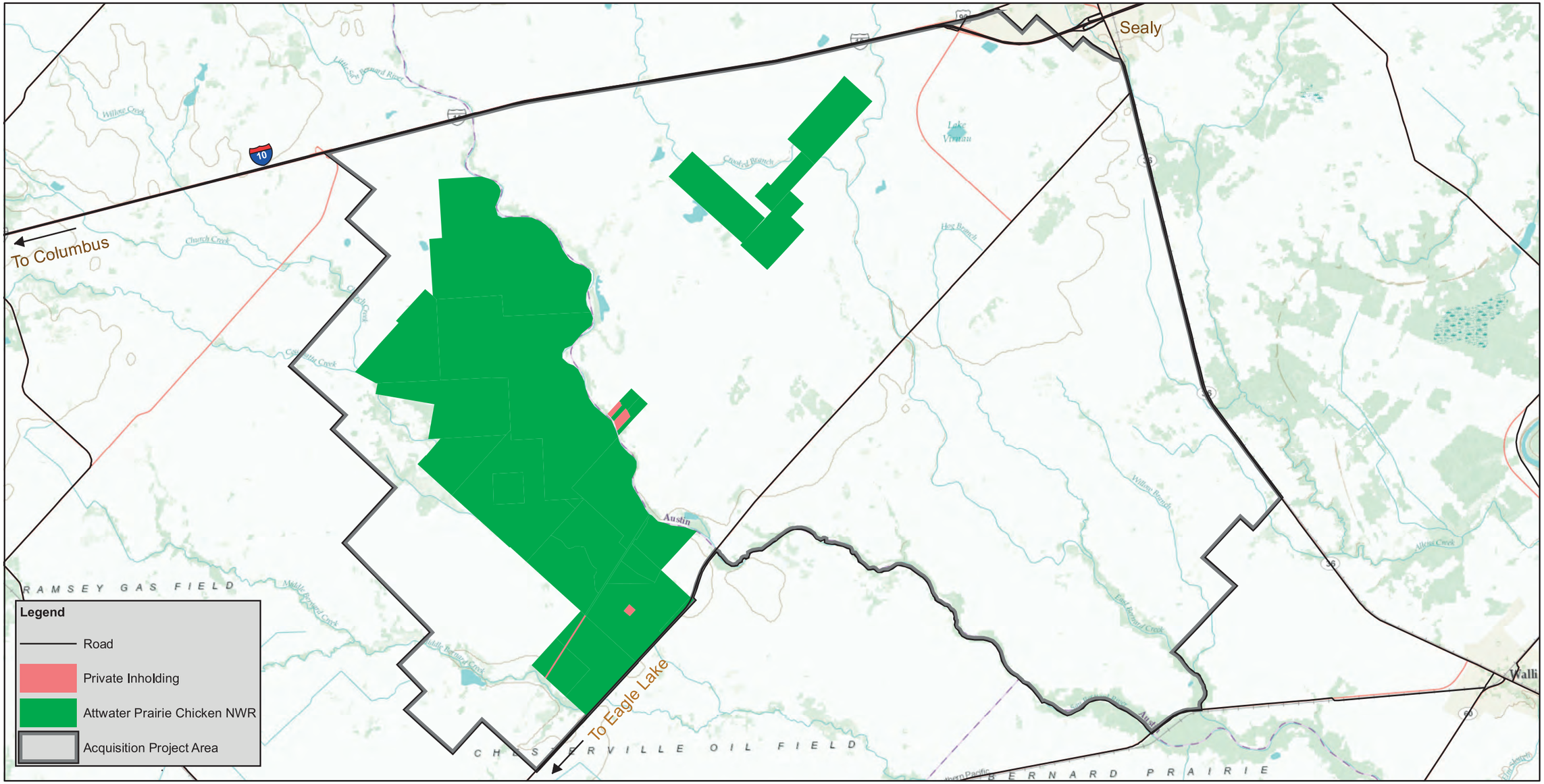
Attwater Prairie Chicken National Wildlife Refuge

Austin/Colorado County, Texas

Map 1-2. Acquisition Project Area



PRODUCED IN THE DIVISION OF REFUGE PLANNING
ALBUQUERQUE, NEW MEXICO
LAND STATUS CURRENT TO: 5/31/09
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BASEMAP: N/A
MERIDIAN: N/A
FILE: atw_acquisition_1.25.12sk

0 1 2 4 Miles

0 1 2 4 Kilometers

UTM ZONE 14
NAD 83

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1.2.1 Refuge Purpose

National wildlife refuges are established under a variety of legislative acts and administrative orders and authorities. These orders and authorities include one or more specific purposes for which the refuge lands are acquired. The purposes are of key importance in refuge planning and are the foundation for management decisions. The purposes of a refuge are specified in or derived from the law, proclamation, Executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit.

By law, refuges are to be managed to achieve their purposes and, unless otherwise indicated by the establishing document, the following rules apply:

- Purposes dealing with the conservation, management, and restoration of fish, wildlife, and plants, and their habitats take precedence over other management and administration purposes.
- When in conflict, the purpose of an individual refuge may supersede the Refuge System mission.
- Where a refuge has multiple purposes related to fish, wildlife, and plant conservation, the more specific purpose will take precedence in instances of conflict.
- When an additional unit is acquired under a different authority then that used to establish the original unit, the addition takes on the purpose(s) of the original unit, but the original unit does not take on the purpose(s) of the addition.

The establishing authorities and related purposes for the Refuge include:

- *"... to conserve (A) fish or wildlife which are listed as endangered species or threatened species....or (B) plants ...*" 16 U.S.C. §1534 (Endangered Species Act of 1973) and;
- *"...for the development, advancement, management, conservation and protection of fish and wildlife resources..."* Fish and Wildlife Act of 1956 (16 U.S.C. 742f(a)(4), as amended, *and "...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..."* Fish and Wildlife Act of 1956 (16 U.S.C. 742f(b)(1), as amended.

1.3 Planning Context

The Attwater Prairie Chicken NWR is part of a national system of more than 550 refuges. The U.S. Fish and Wildlife Service places an emphasis on managing individual refuges in a manner that reflects the National Wildlife Refuge System mission. As a result, the CCP must also contribute to meeting the overall system mission and goals.

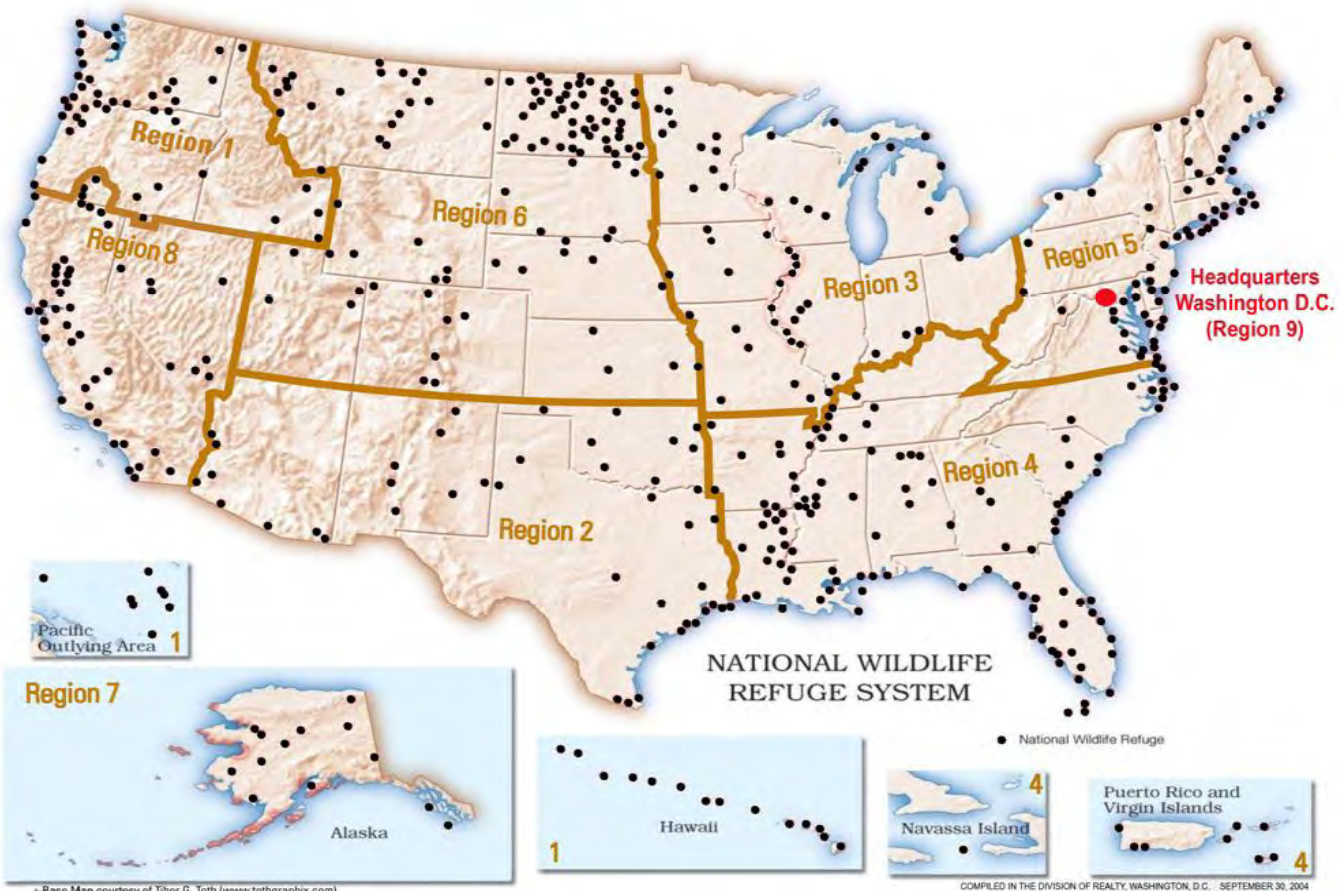
1.3.1 The U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service is the principal Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service has a primary responsibility to manage and protect Federal trust species, which includes migratory birds, threatened species, endangered species, inter-jurisdictional fish, marine mammals, and other species of concern. In addition to the National Wildlife Refuge System, the Service also operates national fish hatcheries, fishery resource offices, and Ecological Services field stations. The Service enforces Federal wildlife laws, manages migratory bird populations, restores nationally significant fisheries, administers the Endangered Species Act, conserves and restores wildlife habitat such as wetlands, and helps Native American tribal governments and foreign governments with their conservation efforts. It also oversees the Federal Assistance Program,

which distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

The mission of the U.S. Fish and Wildlife Service is:

"working with others to conserve, protect and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."



1.3.2 The National Wildlife Refuge System

The National Wildlife Refuge System is the only existing system of federally owned lands managed chiefly for the conservation of wildlife. Founded in 1903 by President Theodore Roosevelt with the designation of Pelican Island as a refuge for brown pelicans (*Pelecanus occidentalis*), the Refuge System consists of over 150 million acres with over 551 refuges and 37 wetland management districts in all 50 states and U.S. territories. National wildlife refuges host a tremendous variety of plants and animals supported by a variety of habitats from arctic tundra and prairie grasslands to subtropical estuaries. Most national wildlife refuges are strategically located along major bird migration corridors, ensuring that ducks, geese, and songbirds have rest stops on their annual migrations. Many refuges are integral to the protection and survival of plant and animal species listed as endangered. The Refuge System is the world's largest collection of lands and waters set aside specifically for the conservation of wildlife and ecosystem protection.

The goals of the Refuge System are to:

- conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered;
- develop and maintain a network of habitats for migratory birds, anadromous and inter-jurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges;
- conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts;
- provide and enhance opportunities to participate in compatible wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); and
- foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

The mission of the Refuge System is:

> *"... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans"* (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57).

1.3.2.1 Legal and Policy Guidance

Refuge management and administrative activities are dictated, in large part, by the legislation that created the unit and its purposes and goals. However, other laws, regulations, and policies also guide management. The Refuge is guided by the mission and goals of the Refuge System, Service policy, Federal laws and Executive orders, and international treaties. The list of all laws, treaties, and Executive orders pertaining to the conservation and protection of natural and cultural resources is provided in Appendix A. Key laws and policies directly related to comprehensive conservation planning are further discussed in the following text.

National Wildlife Refuge System Improvement Act

The National Wildlife Refuge System Administration Act, as amended, states that each refuge shall be managed to fulfill both the

mission of the Refuge System and the purposes for which the individual refuge was established. It also requires that any use of a refuge be a compatible use—a use that will not materially interfere with nor detract from, in the sound professional judgment of the refuge manager, fulfillment of the mission of the System or the purposes of the refuge.

The 1997 amendments to the National Wildlife Refuge System Administration Act of 1966 identified a number of principles to guide management of the Refuge System. They include the following:

- Conserve fish, wildlife, and plants, and their habitats within the Refuge System
- Maintain the biological integrity, diversity, and environmental health of the Refuge System
- Coordinate, interact, and cooperate with adjacent landowners and State fish and wildlife agencies
- Maintain adequate water quantity and quality to meet refuge and Refuge System purposes and acquire necessary water rights
- Maintain hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education as the priority general public uses of the Refuge System
- Provide opportunities for compatible priority wildlife-dependent public uses with the Refuge System
- Provide enhanced consideration for priority wildlife-dependent public uses over the other general public uses in planning and management
- Provide increased opportunities for families to experience priority general public uses, especially traditional outdoor activities such as fishing and hunting
- Monitor the status and trends of fish, wildlife, and plants in each refuge

The Improvement Act establishes the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; requires a CCP for each refuge by the year 2012; and provides guidelines and directives for the administration and management of all areas in the Refuge System, including wildlife refuges, areas for the protection and conservation of fish and wildlife threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas.

To maintain the health of individual refuges and the National Wildlife Refuge System as a whole, managers must anticipate future conditions. Managers must endeavor to avoid adverse impacts and take positive actions to conserve and protect refuge resources. Effective management also depends on acknowledging resource relationships and acknowledging that refuges are parts of larger ecosystems. Refuge managers work together with partners—including other refuges, Federal and State agencies, tribal and other governments and nongovernmental organizations (NGOs) and groups, and private landowners—to protect, conserve, enhance, or restore native fish, wildlife (including invertebrates), plants, and their habitats.

Appropriate Use Policy

This policy describes the initial decision process the refuge manager follows when first considering whether to allow a proposed use on a refuge. The refuge manager must find a use appropriate before undertaking a compatibility review of the use. An appropriate use as defined by the Appropriate Use Policy (603 FW 1 of the Service Manual) is a proposed or existing use on a refuge that meets at least one of the following four conditions:

- The use is a wildlife-dependent recreational use as identified in the Improvement Act.
- The use contributes to the fulfilling of the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved

after October 9, 1997, the date the Improvement Act was signed into law.
- The use involves the take of fish and wildlife under State regulations.
- The use has been found to be appropriate as specified in Section 1.11 (603 FW 1 of the Service Manual).

Chapter 5 of this CCP includes additional information on appropriateness of refuge uses.

Compatibility Policy

Lands within the Refuge System are different from other multiple use public lands in that they are closed to all public uses unless specifically and legally opened. The Improvement Act states, "... the Secretary shall not initiate or permit a new use of a refuge or expand, renew, or extend an existing use of a refuge, unless the Secretary has determined that the use is a compatible use and that the use is not inconsistent with public safety."

In accordance with the Improvement Act, the Service has adopted a Compatibility Policy (603 FW 2 of the Service Manual) that includes guidelines for determining if a use proposed on a national wildlife refuge is compatible with the purposes for which the refuge was established. A compatible use is defined in the policy as a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of the refuge. Sound professional judgment is defined as a finding, determination, or decision that is consistent with the principles of sound fish and wildlife management and administration, available science and resources (funding, personnel, facilities, and other infrastructure), and applicable laws.

The Service strives to provide priority public uses when they are compatible. If financial resources are not available to design, operate, and maintain a priority use, the refuge manager will take reasonable steps to obtain outside assistance from the State and other conservation interests.

Additional information regarding compatibility determinations (CDs) is provided in Chapter 5, and the CDs prepared in association with this CCP are provided in Appendix D.

Biological Integrity, Diversity, and Environmental Health Policy

The Improvement Act directs the Service to "ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans..." To implement this directive, the Service has issued the Biological Integrity, Diversity, and Environmental Health Policy (601 FW 3 of the Service Manual), which provides policy for maintaining and restoring, where appropriate, the biological integrity, diversity, and environmental health of the Refuge System. The policy is an additional directive for refuge managers to follow while achieving the refuge purpose(s) and Refuge System mission. It provides for the

consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on refuge and associated ecosystems. Further, it provides refuge managers with an evaluation process to analyze their refuges and recommend the best management direction to prevent further degradation of environmental conditions and restore lost or severely degraded components where appropriate and in concert with refuge purposes and the Refuge System mission. When evaluating the appropriate management direction for refuges, refuge managers will use sound professional judgment to determine their refuges' contribution to biological integrity, diversity, and environmental health at multiple landscape scales.

1.3.3 Setting the Stage for Planning: Identifying the Landscape Context

1.3.3.1 Climate Change

Department of the Interior Secretarial Order 3226, signed January 19, 2001, and reinstated on September 14, 2009 by Secretarial Order 3289, states that "there is a consensus in the international community that global climate change is occurring and that it should be addressed in governmental decision making… This Order ensures that climate change impacts are taken into account in connection with Departmental planning decision making". Additionally, it calls for the consideration of anticipated impacts of climate change into long-term planning documents such as this CCP.

The U.N. Intergovernmental Panel on Climate Change (IPCC) reports that direct temperature measurements at weather stations worldwide suggest that the surface of Earth has warmed, on average, 1.0 °C (1.8 °F) in the last 100 years . Data for the Southwest show an increase in temperature between 1.1°C (2 °F) to 1.7°C (3.1 °F) during the past century and project an increase in temperature of 4.5°C (8.1 °F) to 6.1°C (11 °F) in the future (Sprigg and Hinkey 2000). The last 10 years have been the warmest decade on record, during which global sea level has risen about 20 centimeters (cm). The increase of carbon dioxide (CO_2) within the earth's atmosphere has been linked to the gradual rise in surface temperature commonly referred to as global warming. The IPCC also concludes that substantial increases in global average temperatures will cause major changes in ecosystem structure and function, species' ecological interactions, and species' geographical ranges. These projected changes have enormous implications for management of fish, wildlife, and their habitats around the world.

The U.S. Department of Energy's *"Carbon Sequestration Research and Development"* defines carbon sequestration as "...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere." Conserving natural habitat for wildlife is the heart of any long-range plan for national wildlife refuges. The actions proposed in the CCP would conserve or restore land and habitat, and would thus retain existing carbon sequestration on the Refuge. This, in turn, contributes positively to efforts to mitigate human-induced global climate change. Vegetated land is a tremendous factor in carbon sequestration. Terrestrial biomes of all sorts (grasslands, forests, wetlands, tundra, and desert) are effective both in preventing carbon emission and acting as a biological "scrubber" of atmospheric CO_2. The Department of Energy report concludes that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere. One Service activity in particular—prescribed burning—releases CO_2 directly into the atmosphere from the biomass consumed during combustion. However, there is actually no net loss of carbon, since new vegetation quickly germinates and sprouts to replace the burned-up biomass and sequesters or assimilates an approximately equal amount of carbon as was lost to the air (Boutton *et al.* 2006).

In September 2010, the Service released a strategic approach to climate change, *Rising to the Urgent Challenge: Strategic Plan for*

Responding to Accelerating Climate Change, found in Chapter 1, Section 1.3.3.2, National Plans and Initiatives.

Possible effects were considered in the development of the objectives and strategies in this CCP. Implementation of all the strategies for monitoring and surveys will emphasize identification and analysis of the effects of climate change on the various habitats and species. In addition, implementation of all strategies will emphasize energy conservation and/or use of alternative energy sources when feasible. Additional information on possible climate change impacts to the Refuge are discussed in Chapter 3, Section 3.3.1.5.

1.3.3.2 National Plans and Initiatives

USFWS Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change (2010)

The U.S. Fish and Wildlife Service climate change strategy establishes a basic framework within which the Service will work as part of the larger conservation community to help ensure the sustainability of fish, wildlife, plants and habitats in the face of accelerating climate change. The plan is implemented through a dynamic action plan that details specific steps the Service will take during the next five years to implement the Strategic Plan. The plan focuses on three key strategies to addressing climate change: Adaptation, Mitigation, and Engagement. For the Service, adaptations are planned, science-based management actions, including regulatory and policy changes, that we take to help reduce the impacts of climate change on fish, wildlife, and their habitats. Adaptation forms the core of the Service's response to climate change and is the centerpiece of our Strategic Plan (USFWS 2010). Mitigation involves reducing our "carbon footprint" by using less energy, consuming fewer materials, and appropriately altering our land management practices, such as wildlife food production. Mitigation is also achieved through biological carbon sequestration, the process in which CO_2 from the atmosphere is taken up by plants through photosynthesis and stored as carbon in tree trunks, branches, and roots. Engagement involves reaching out to Service employees; local, national, and international partners in the public and private sectors; key constituencies and stakeholders; and everyday citizens to join forces and seek solutions to the challenges to fish and wildlife conservation posed by climate change.

Our goal is to achieve carbon neutrality as an organization by 2020 (USFWS 2010). By building knowledge and sharing information in a comprehensive and integrated way, the Service, its partners, and stakeholders will increase our understanding of global climate change impacts and use our combined expertise and creativity to help wildlife resources adapt in a climate-changed world.

Partners in Flight North American Landbird Conservation Plan (2004)

The Partners in Flight (PIF) North American Landbird Conservation Plan provides a continental synthesis of priorities and objectives that guide landbird conservation actions at the national and international scales. When combined with plans written for shorebirds, waterbirds, waterfowl, and other game birds, it can serve as a blueprint for continental habitat conservation under the North American Bird conservation Initiative (NABCI). The PIF North American Landbird Conservation Plan summarizes broad patterns based on comprehensive, biologically-based species assessment. The plan identifies 100 landbird species that warrant inclusion on the PIF Watch List due to a combination of threats to their habitats, declining populations, small population sizes, or limited distributions. Of these, 28 species require immediate action to protect small remaining populations, and 44 are in need of management to reverse long-term declines. On APCNWR, 21 "Watch List" species have been documented.

The Refuge occurs within PIF Physiographic Area #06, the Coastal Prairies, which ranges from the Atchafalaya Basin, Louisiana, to Baffin Bay, Texas.

The inland boundary of this area ranges from 24 to 240 miles from the coast, capturing a complex of marshes, upland grassland, coastal woodlands, and a small amount of forested habitat. Nearly all grassland habitats have been converted to agricultural use, primarily pasture lands and rice farms. Forested areas include bottomland hardwood forests, which are found along the major river systems that drain the Coastal Prairies range. The Refuge has a mix of these habitats, particularly Gulf coastal prairie. These habitat types that occur on the Refuge will be protected and maintained for the benefit of PIF species where compatible with this Refuge's mission. Birds adapted to grassland habitats are especially expected to benefit from management occurring on APCNWR. Priority bird species for this physiographic area that occur on the Refuge include: Grasslands-Attwater's prairie-chicken, Henslow's sparrow, Sprague's pipit, short-eared owl, sedge wren; Bottomland hardwood forest- swallow-tailed kite, Swainson's warbler, American woodcock; Scrub-shrub- painted bunting.

North American Waterfowl Management Plan (2004)

The North American Waterfowl Management Plan (NAWMP) is an international plan to conserve waterfowl and migratory birds in North America. It was established in 1986 by Canada and the United States, and it expanded to include Mexico in 1994. The plan was updated in 1998 and 2004 and is scheduled for revision in 2012. The essence of the original plan was that waterfowl populations could only recover through habitat conservation at the continental scale. The plan identified general objectives for habitat conservation in five key priority regions, with the acknowledgement that each region would convert the objectives into local action plans. Regional partnerships, called joint ventures, are the implementing mechanisms of the NAWMP. There are 14 joint ventures in the U.S. today. Cumulatively, they have conserved 13,131,754 acres of habitat for waterfowl and migratory birds. Within the Gulf Coast Joint Venture are six initiative areas. Attwater Prairie Chicken NWR occurs in the "Texas Mid-Coast Initiative Area." This initiative area is comprised of 16 counties from San Patricio County to Harris County and inland. The goal of the Texas Mid-Coast Initiative Area is to provide wintering and migration habitat for significant numbers of dabbling ducks (*Anas* sp.), redheads (*Aythya americana*), lesser snow geese (*Anser caerulescens caerulescens*), and greater white-fronted geese (*Anser albifrons*), as well as year-round habitat for mottled ducks (*Anas fulvigula*) (Wilson and Esslinger 2002). For example, specific midwinter population objectives call for about two million ducks (13 species) in the Mid-Coast Initiative Area and about 770,000 geese (three species).

U. S. Shorebird Conservation Plan

The U.S. Shorebird Conservation Plan is designed to complement the existing landscape-scale conservation efforts of the North American Waterfowl Management Plan, Partners in Flight, and the North American Waterbird Conservation Plan. It seeks to stabilize populations of all shorebirds that are in decline because of factors affecting habitat in the United States. At a regional level, the plan's goal is to ensure that shorebird habitat is available in adequate quantity and quality to support shorebird populations in each region. At the national scale, its goal is to stabilize populations of all shorebird species known or suspected of being in decline due to limiting factors occurring within the U.S. while ensuring that common species are also protected from future threats. Ultimately, the goal of the plan is to restore and maintain shorebird populations throughout the western hemisphere through an international partnership. There are 214 kinds of shorebirds worldwide, 53 of which regularly occur in the U.S and 29 of which occur on the Refuge. The Refuge hosts two highly imperiled species, mountain plover (*Charadrius montanus*) and long-billed curlew (*Numenius americanus*), and 10 species of high concern.

1.3.3.3 Regional Plans and Initiatives

North American Bird Conservation Initiative: Bird Conservation Region Descriptions (2000)

The purpose of the North American Bird Conservation Initiative (NABCI) is to ensure the long-term health of North America's native bird populations by increasing the effectiveness of existing and new bird conservation initiatives, enhancing coordination among the initiatives, and fostering greater cooperation among the continent's three national governments and their people. In 1999, the U.S. NABCI approved a framework for delineating ecologically-based planning, implementation, and evaluation units for cooperative bird conservation in the U.S. and Canada known as Bird Conservation Regions (BCRs). Bird Conservation Regions are ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues. Attwater Prairie Chicken NWR falls within BCR 37 (Gulf Coast Prairie). In this area, flat grasslands and marshes hug the coast of the Gulf of Mexico from northern Tamaulipas, across the mouth of the Río Grande, up into the rice country of southeastern Texas and southwestern Louisiana, and across the great Louisiana marshlands at the mouth of the Mississippi River. Some 318 species of birds regularly occur in this BCR, and at least 45 more migrate through the region in the spring and/or fall. This BCR features one of the greatest concentrations of colonial waterbirds in the world, with breeding reddish egret (*Egretta rufescens*), roseate spoonbill (*Platalea ajaja*), brown pelican, and large numbers of herons, egrets, ibis, terns, and skimmers. The region provides critical in-transit habitat for migrating shorebirds, including buff-breasted sandpiper (*Tryngites subruficollis*) and hudsonian godwit (*Limosa haemastica*), and for most of the neotropical migrant forest birds of eastern North America. Mottled duck, fulvous whistling-duck (*Dendrocygna bicolor*), and purple gallinule (*Porphrio porphyris*) also breed in wetlands, and winter numbers of waterfowl are among the highest on the continent. These include dabbling ducks (especially northern pintail [*Anas acuta*] and gadwall [*Anas strepera*]), redhead, lesser scaup (*Aythya affinis*), and white-fronted geese from both the Central and the Mississippi Flyways. The most important waterfowl habitats of the area are coastal marsh, shallow estuarine bays and lagoons, and wetlands on agricultural lands of the rice prairies. This BCR, as mentioned previously, features one of the greatest concentrations of colonial waterbirds in the world. Loss and degradation of wetland habitats due to subsidence, sea-level rise, shoreline erosion, freshwater and sediment deprivation, saltwater intrusion, oil and gas canals, and navigation channels and associated maintenance dredging are the most important problems facing the area's wetland wildlife.

Partners In Flight Bird Conservation Plan: Gulf Coastal Prairie Bird Conservation Region (BCR) 37 (2008)

The PIF Bird Conservation Plan for this BCR is a step-down plan from the 2004 PIF North American Landbird Conservation Plan that focuses on seven species of concern: the Cerulean warbler (*Dendroica cerulea*), loggerhead shrike (*Lanius ludovicianus*), northern bobwhite (*Colinus virginianus*), golden-winged warbler (*Vermivora chrysoptera*), Swainson's warbler (*Limnothlypis swainsonii*), Le Conte's sparrow (*Ammodramus leconteii*) and seaside sparrow (*Ammodramus maritimus*). They regularly occur in the BCR and are listed in the North American Landbird Conservation Plan as in need of conservation action, as PIF feels they have been underrepresented in conservation efforts. APCNWR is home to four of the seven: loggerhead shrike, northern bobwhite quail, Swainson's warbler, and Le Conte's sparrow. The BCR plan outlines conservation recommendations for each species with the understanding that conservation measures would also benefit other bird species that live in the same habitat and would addresses the three major habitat types in the BCR of importance to landbirds: forests, grasslands, and emergent wetlands.

Gulf Coast Prairies and Marshes Ecoregional Conservation Plan (2002)

The Nature Conservancy (TNC) developed an ecoregional approach to conservation in 1996 that stated that biodiversity conservation required working at larger scales and along ecological instead of geopolitical lines. The goal of ecoregion-based conservation is the design and conservation of portfolios of conservation areas that will collectively ensure the long-term survival of the ecoregion's biodiversity. The conservation areas depicted in the Gulf Coast Prairies and Marshes (GCP&M) Ecoregional Conservation Plan are intended as a prioritization management tool for conservation action and resources. The plan contains supporting data for each site, as well as an ecoregional management strategy applicable to each management area. Management areas are prioritized by biodiversity and threats. Results and data from the ecoregional plan can be used to create site-specific conservation plans like the APCNWR CCP. The GCP&M is an area of approximately 24 million acres covering parts of Texas, Louisiana, and into Mexico. The GCP&M Ecoregional Plan identifies approximately 86 conservation areas encompassing 36 percent of the GCP&M ecoregion.

1.3.3.4 State and Local Plans and Initiatives

In administering the Refuge System, the Service will ensure that the CCP complements State and local efforts to conserve fish and wildlife and their habitats. During the development of the CCP, the Service is required to consult and coordinate with affected State conservation agencies, as well as adjoining Federal, local, and private landowners. The Service is required to ensure effective coordination, interaction, and cooperation in a timely and effective manner with the State during the course of acquiring and managing refuges. Under the Refuge Administration Act of 1966 and 43 CFR 24, the Director of the Service and the Secretary of the Interior's designee is required to ensure the Refuge System regulations and management plans are, to the extent practicable, consistent with State laws, regulations, and management plans.

Texas Comprehensive Wildlife Conservation Strategy (2005)

The Texas Comprehensive Wildlife Conservation Strategy (Texas Wildlife Action Plan) is required to assess the condition of the State's wildlife and habitats, identify the problems that wildlife and habitats face, and outline the actions that are needed for long-term conservation. The plan identifies a variety of actions aimed at preventing wildlife from declining to the point of becoming endangered. Instead of focusing on single species in isolated areas, the conservation strategy focuses on the steps needed to protect, restore, and enhance habitat types. The plan addresses the species status, conservation issues, and conservation actions needed in the state's 10 major ecoregions, including Gulf Coast Prairies and Marshes.

As part of the State Wildlife Grant Program, the Texas Wildlife Conservation Strategy was completed by Texas Parks and Wildlife Department (TPWD) to assist the agency and its conservation partners with the development of non-game initiatives and goals to address the needs of wildlife and habitats. This plan provides detailed species and habitat information on 10 major ecoregions in Texas. Attwater Prairie Chicken NWR occurs within the Gulf Coast Prairies and Marshes Ecoregion. The Gulf Coast Prairies and Marshes Ecoregion is ranked as a high conservation priority and is considered to be among the most threatened of the 10 ecoregions (TPWD 2005). The plan identified that inland prairies, coastal woodlands, and beach habitats are specifically threatened by increased population growth and associated development. The plan identifies 297 priority species within this ecoregion. In addition, several State priority species identified in the Texas Action Plan commonly occur or nest on Attwater Prairie Chicken NWR.

Land and Water Resources Conservation and Recreation Plan (2010)

Texas Parks and Wildlife Department developed the Land and Water Plan to aid the agency in conserving the natural and cultural resources of Texas for future generations. The criteria outlined in the plan will provide TPWD with a foundation for decision making regarding the State's conservation and recreation needs. The first goal discussed in the plan is to 'practice, encourage, and enable science-based stewardship of natural and cultural resources.' The plan outlines various methods for achieving this goal, which include basing management decisions on best available science, becoming leaders in managing State lands, fostering conservation on private lands, and developing effective conservation partnerships. The Land and Water Plan explains a second goal of increasing access to and participation in the outdoors through actions like encouraging nature and heritage tourism or facilitating access to private and public lands and waters for recreation purposes. Another goal for TPWD is to 'educate, inform, and engage Texas citizens in support of conservation and recreation.' The fourth goal described in the Land and Water Plan is to 'employ efficient, sustainable, and sound business practices,' which TPWD plans to accomplish using technology, professionalism, excellent customer service, financial resources, effective communication, and an organized culture. The plan culminates with a call to action directed at members of the public, motivating them to join in the conservation effort.

1.3.3.5 Species-specific Plans and Initiatives

Attwater's Prairie-Chicken Recovery Plan (2010)

This recovery plan delineates actions necessary to recover and/or protect the Attwater's prairie-chicken. Such plans are published by the U.S. Fish and Wildlife Service and are prepared with the assistance of recovery teams, contractors, State agencies and others. Approved recovery plans are subject to modification as dictated by new findings, changes in species status and the completion of recovery actions. The APCNWR serves as the U.S. Fish and Wildlife Service lead for APC recovery activities, including implementation of actions outlined in the APC Recovery Plan.

The Attwater's Prairie-Chicken Recovery Plan identifies the loss and fragmentation of the Gulf coastal ecosystem and associated isolation of sub-populations of birds brought about by agricultural conversion, urban and industrial expansion, overgrazing, and invasion of prairies by woody species as the ultimate factors responsible for the APC's decline (Lehmann 1941, Jurries 1979, Lawrence and Silvy 1980, McKinney 1996, Morrow et al. 1996). It also shows that proximate contributors to range-wide population declines in recent history may include stochastic weather events (Morrow et al. 1996), reduced genetic variability (Osterndorff 1995), parasites (Peterson 1994, Purvis 1995), disease (Peterson et al. 1998) and red imported fire ants (*Solenipsis invicta*) (Mueller et al. 1999). The recovery goal stated in the Recovery Plan "…is to protect and ensure the survival of the APC and its habitat, allowing the population to reach a measureable level of ecological and genetic stability so that it can be reclassified to threatened status (downlisted) and ultimately removed from the endangered species list (delisted)." Strategies for recovery are focused on three primary areas: habitat management, captive and wild population management, and public outreach. Strategies for wild population management in the short term will depend on the release of captive-reared birds. The Recovery Plan also places importance on applied research to identify factors limiting recovery.

Coastal Prairie Conservation Initiative

With less than one percent of the Texas coastal prairie ecosystem remaining today and private ownership in the State of Texas at 94 percent, recovery of the Attwater's prairie-chicken is doomed without the support of private landowners. For this reason, the Coastal Prairie Conservation Initiative (CPCI) was formed.

The goal of the CPCI is to conserve, enhance, or restore coastal prairie on private lands and create potential release sites for Attwater's prairie-chickens. The initiative provides cost-share and technical assistance needed to implement prairie restoration and management practices on private lands. The CPCI formed in 1995 when the Service issued a Safe Harbor permit to the Sam Houston Resource Conservation and Development Area, Inc. (RC&D) for Attwater's prairie-chicken, Houston toad, and Texas prairie dawn. By 2002, the RC&D had undertaken 19 habitat restoration projects on 17 ranches in the coastal prairie. More than 79,000 acres were enrolled in the Safe Harbor agreement with RC&D, and the Service granted funds to the RC&D to share the cost of implementing habitat enhancement and restoration practices on more than 44,000 acres of private land with the assistance of landowners and the Texas Parks and Wildlife Department. In 2003, the Service entered into a cooperative agreement with the Grazing Lands Conservation Initiative (GLCI), The Nature Conservancy, TPWD, and the Natural Resources Conservation Service (NRCS) to expand the CPCI's capacity. In 2007, GLCI entered into a Safe Harbor Agreement with the Service that covers Attwater's prairie-chicken, northern aplomado falcon (*Falco femoralis septentrionalis*), and whooping crane (*Grus americana*). Also, in 2007, Attwater's prairie-chickens were released for the first time on private lands in Goliad County.

The CPCI program has not only helped conserve and enhance coastal prairie habitat, but also has served as a very positive outreach tool in narrowing the gap between private lands rights and endangered species issues.

1.3.4 Coordination with the State of Texas

The Service is required to consult and coordinate with State conservation agencies, as well as Federal agencies and private landowners. The Service ensures effective coordination, interaction, and cooperation with the State during the course of managing refuges. This CCP recognizes that both the Service and TPWD have authorities and responsibilities for management of fish and wildlife on the Refuge. Under the Refuge Administration Act of 1966 and 43 CFR 24, the Director and the Secretary's designee are required to ensure Refuge System regulations and management plans are, to the extent practicable, consistent with State laws, regulations, and management plans. As such, the Service will ensure this plan complements the State of Texas' efforts to conserve fish and wildlife and their habitats.