Theodore Roosevelt and Holt Collier National Wildlife Refuges

Draft Comprehensive Conservation Plan and Environmental Assessment

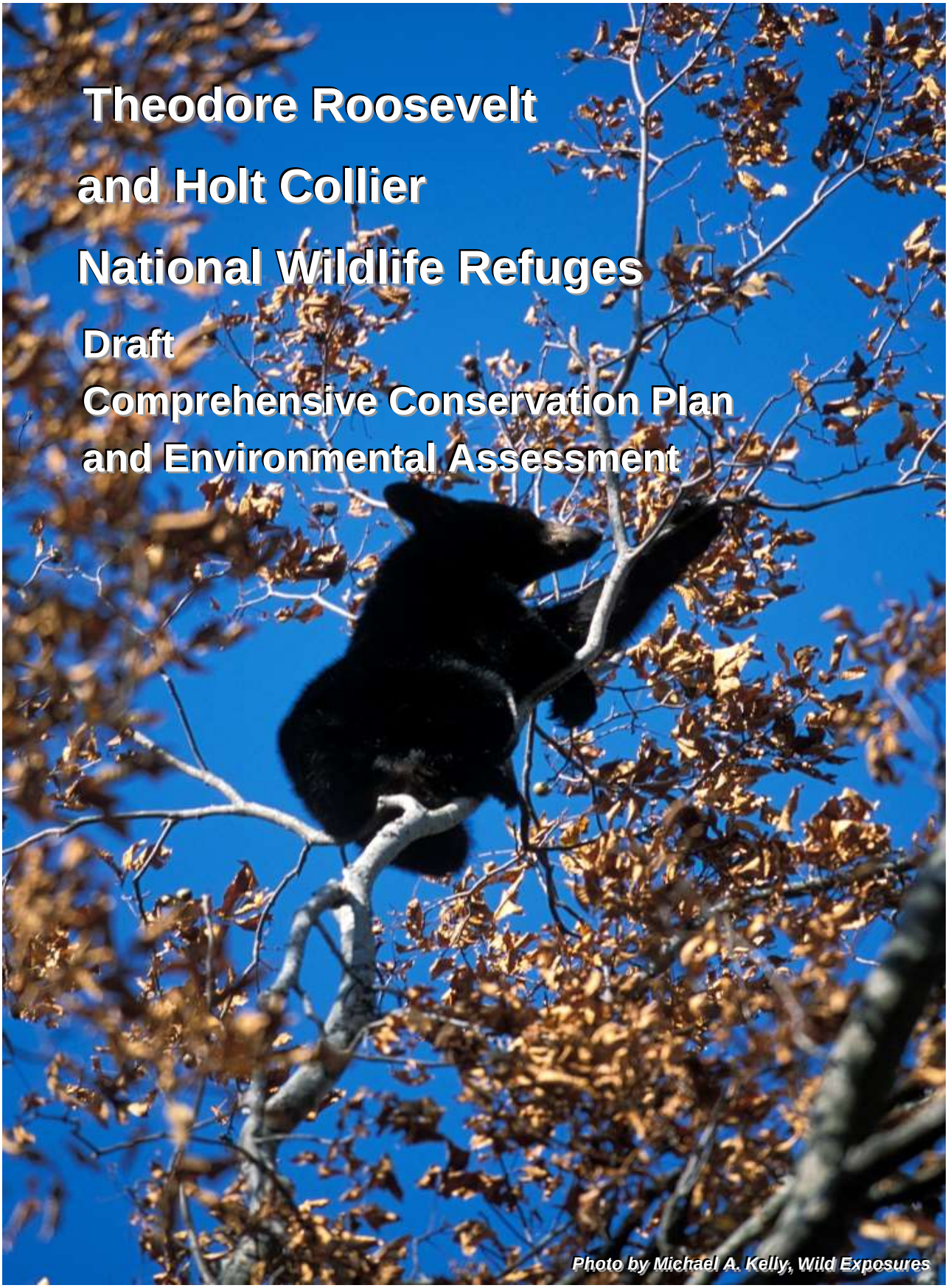

Photo by Michael A. Kelly, Wild Exposures

Comprehensive conservation plans provide long-term guidance for management decisions, set forth goals, objectives, and strategies needed to accomplish refuge purposes, and identify the Fish and Wildlife Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

DRAFT COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL ASSESSMENT

THEODORE ROOSEVELT AND HOLT COLLIER NATIONAL WILDLIFE REFUGES

Sharkey and Washington Counties, Mississippi

U.S. Department of the Interior
Fish and Wildlife Service

Southeast Region
Atlanta, Georgia

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SECTION A. DRAFT COMPREHENSIVE CONSERVATION PLAN

I. Background

INTRODUCTION

The Theodore Roosevelt and Holt Collier National Wildlife Refuges (NWRs) are managed by the U. S. Fish and Wildlife Service (Service) as part of the Theodore Roosevelt National Wildlife Refuge Complex (Complex), which includes these and five other refuges: Yazoo, Mathews Brake, Morgan Brake, Hillside and Panther Swamp NWRs (Figure 1). A Comprehensive Conservation Plan (CCP) was prepared for these five refuges in the Complex (USFWS 2006). A copy is available online at: *http://www.fws.gov/southeast/planning/PDFdocuments/Theo%20Roosevelt%20NWR%20Complex%20CCP/TRfinalCCP/TRFinalCCPformatted.pdf*

All refuges within the Complex are located in central Mississippi with Theodore Roosevelt in Sharkey County and Holt Collier in Washington County. Holt Collier NWR is located 29 miles southeast of Greenville, Mississippi and five miles east of Hollandale in the Darlove, Mississippi area. It is bordered on the north by the Bogue Phalia, on the east by the Big Sunflower River, and on the south by State Highway 12. Holt Collier NWR consists of 2,233 acres of former Mississippi Delta lands converted to agriculture with about 1,100 acres of marginal agricultural lands reforested primarily to bottomland hardwood. The approved acquisition boundary is 18,000 acres.

Theodore Roosevelt NWR is located in Sharkey County south of Cary, Mississippi and is between State Highway 1 and the Delta National Forest. Presently, the refuge includes 1,674 acres of former agricultural lands owned in fee title. Its approved acquisition boundary is 6,600 acres. The two refuges are among 15 national wildlife refuges in the State of Mississippi (Figure 2).

This Draft CCP was developed in compliance with the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act), and Part 602 of the Fish and Wildlife Service Manual. The actions described within this plan also meet the requirements of the National Environmental Policy Act of 1969 or NEPA. Compliance with NEPA is achieved by soliciting input from the public in the preparation of this plan, and through the preparation of an Environmental Assessment, which is Section B.

The Service prepared this Draft CCP for the refuges to guide its management actions and direction over the next 15 years. The CCP's overriding consideration is to carry out the purposes for which each refuge was established. Fish and wildlife conservation is the first priority in refuge management. Public use (wildlife-dependent recreation) is allowed and encouraged as long as it is compatible with each refuge's mission and purposes and if resources are available to support it.

A planning team developed a range of alternatives that best met the goals and objectives of the refuges and that could be implemented within the 15-year planning period. This Draft CCP is being made available to local, regional, state and federal government agencies, conservation partners, and the public for review and comment in 2015. The comments from each entity will be considered in the development of the final CCP.

Figure 1. Theodore Roosevelt National Wildlife Refuge Complex

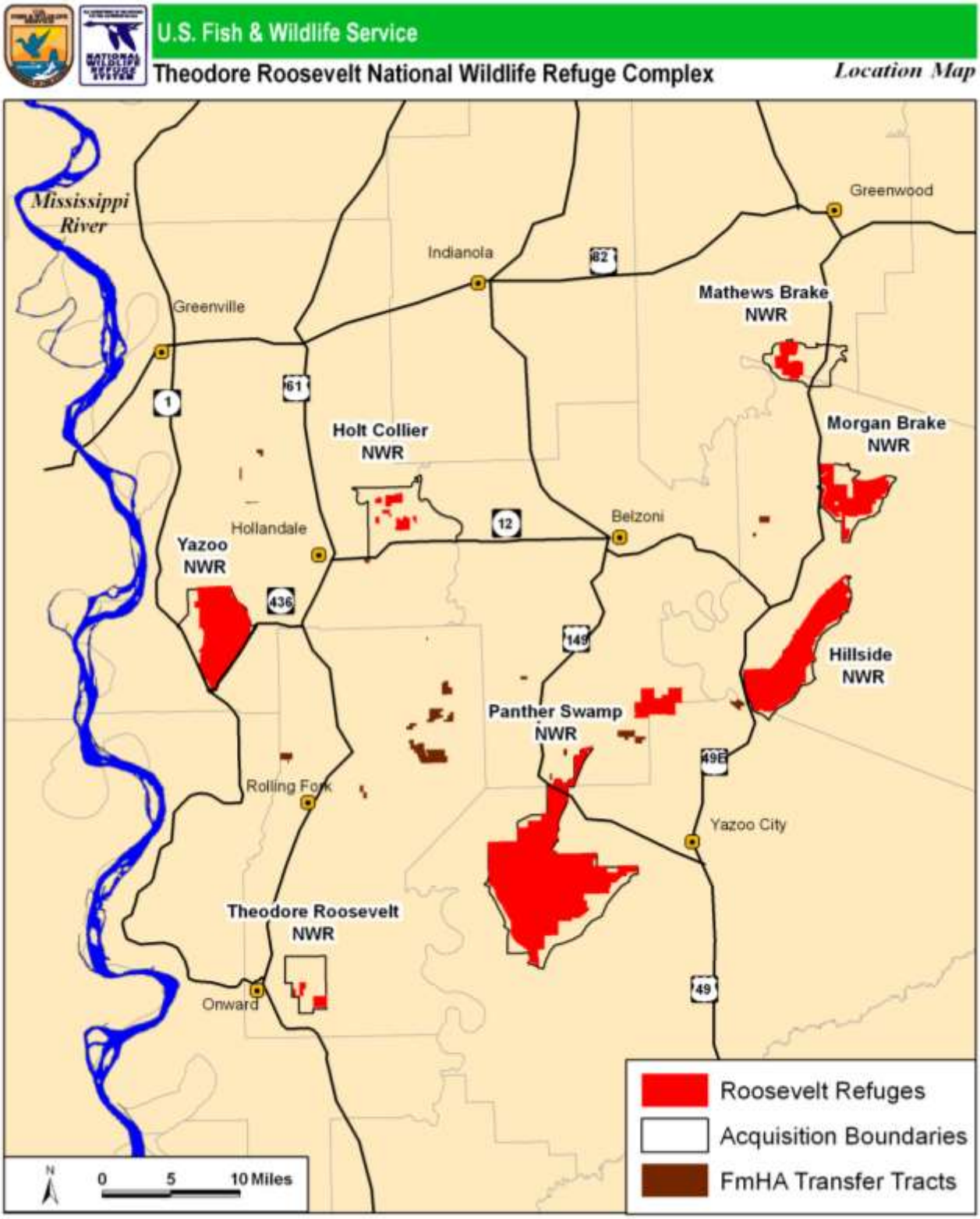
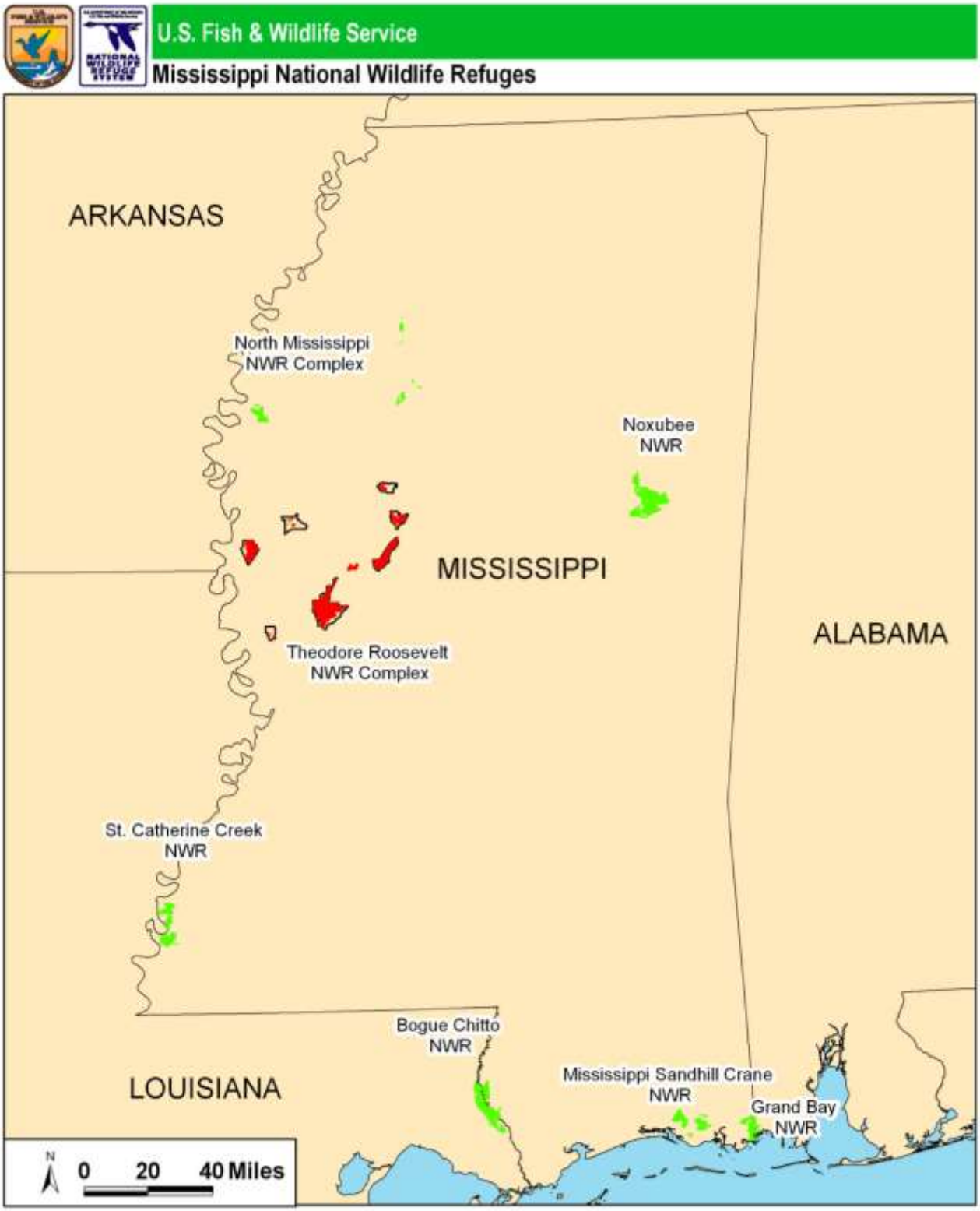


Figure 2. National Wildlife Refuges in Mississippi



PURPOSE AND NEED FOR THE PLAN

The purpose of the CCP is to develop an action that best achieves the purposes of the refuges; attains the vision and goals developed for the refuges; contributes to the mission of the National Wildlife Refuge System (Refuge System); addresses key problems, issues and relevant mandates; and is consistent with sound scientific principles applied to fish and wildlife management.

Specifically, the CCP is needed to:

- Provide a clear statement of the refuges' management direction;
- Provide refuge neighbors, visitors, and government officials with an understanding of the Service's management actions on and around the refuges;
- Ensure that the Service's management actions, including its land protection and public use programs, are consistent with the mandates and policies of the Refuge System; and
- Provide a basis for development of the refuges' budget requests for operations, maintenance, and capital improvement needs.

NATIONAL WILDLIFE REFUGE SYSTEM

Nationally 562 wildlife refuges provide over 150 million acres of habitat for more than 700 species of birds, 220 species of mammals, 250 species of reptiles and amphibians, and more than 1,000 species of fish. Sixty-one refuges were established for the primary purpose of conserving threatened or endangered species. There are over 1,400 domestic, native species that are federally listed as threatened or endangered. Of these, 280 occur on units of the Refuge System.

The mission of the National Wildlife Refuge System, as defined by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act), 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.

The Improvement Act established a clear legislative mission of wildlife conservation for the Refuge System and initiated the development of CCPs for all refuges. These plans, which are completed with public involvement, help guide the future management of refuges by establishing natural resources and recreation/education programs. They serve as guidelines for refuge management for a 15-year period following their approval. The Improvement Act states that each refuge shall be managed to:

- Fulfill the mission of the Refuge System;
- Fulfill the individual purposes of each refuge;
- Consider the needs of wildlife first;
- Fulfill the requirement of preparing a CCP for each unit of the Refuge System;
- Maintain the biological integrity, diversity, and environmental health of the Refuge System;
- Recognize that wildlife-dependent recreation activities, including hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation, are legitimate and priority public uses; and
- Retain the authority of refuge managers to determine compatible public uses.

For more information on the Refuge System, see *http://www.fws.gov/refuges/*.

National wildlife refuges connect visitors to their natural resource heritage and provide them with an understanding and appreciation of fish and wildlife ecology and their role in the environment. Wildlife-dependent recreation on refuges generates economic benefits to local communities. According to a report by Service economists entitled *Banking on Nature: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation* (Carver and Caudill 2013), approximately 46.5 million people visited national wildlife refuges in fiscal year 2011. Their spending generated $2.4 billion of sales in regional economies. As this spending flowed through the economy, over 35,000 people were employed and $792.7 million in employment income was generated. Additionally, recreational spending on refuges generated about $342.9 million in tax revenues at the local, county, state, and federal levels (Carver and Caudill 2013).

Volunteers and "friends of the refuge" (Friends groups) continue to be major contributors to the success of the Refuge System. In 2008, volunteers contributed more than 1.5 million hours on refuges nationwide, a service valued at over $30 million. Within the Service's Southeast Region, the number of Friends groups has steadily increased and reached over 200 (U.S. Fish and Wildlife Service 2009). The volunteer programs continue to grow. In the last decade, 70,501 regional volunteers contributed over 3.3 million hours valued at over $62 million.

The wildlife and habitat vision for national wildlife refuges stresses that wildlife comes first; that ecosystems and biodiversity are vital concepts in refuge management; that refuges must be healthy and their growth strategic; and that the Refuge System serves as a model for habitat management with broad participation from others.

The Improvement Act stipulates that CCPs be prepared in consultation with adjoining federal, state, and private landowners, and that the Service develop and implement a process to ensure an opportunity for active public involvement in the preparation and revision of the plans when needed.

All lands of the Refuge System will be managed in accordance with an approved CCP that will guide management decisions and set forth strategies for achieving refuge unit purposes. The plan will be consistent with sound resource management principles, practices, and legal mandates, including Service compatibility standards and other Service policies, guidelines, and planning documents (602 FW 1.1). The management and uses of the two newer refuges are the subject of this CCP since they were not included in the Theodore Roosevelt NWR Complex CCP approved in 2006.

LEGAL AND POLICY CONTEXT

LEGAL MANDATES AND ADMINISTRATIVE AND POLICY GUIDELINES

Administration of national wildlife refuges is guided by the mission and goals of the Refuge System, Congressional legislation, Presidential executive orders, and international treaties. Management of refuges is further refined through administrative guidelines issued by the Secretary of the Interior and by policy guidelines established by the Director of the Service. These laws, policies, and administrative guidelines assist the refuge manager in making decisions pertaining to soil, water, air, flora, fauna, and other natural resources; historical and cultural resources; research; and recreation on refuge lands. They provide a framework for cooperation between the Service and its partnering state agency, the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP). Those relevant to the administration of the Refuge System and the management of Theodore Roosevelt and Holt Collier NWRs are summarized in Appendix C.

Lands within the Refuge System are closed to public use unless specifically and legally opened. No refuge use may be allowed unless it is determined to be compatible. A compatible use is one

that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge. All programs and uses must be evaluated based on mandates set forth in the Improvement Act. Those mandates are to:

- Contribute to ecosystem goals, as well as the refuge's purposes and goals;
- Conserve, manage, and restore fish, wildlife, and plant resources and their habitats;
- Monitor the trends of fish, wildlife, and plants;
- Manage and ensure appropriate visitor uses, as those uses benefit the conservation of fish and wildlife resources and contribute to the enjoyment of the public; and
- Ensure that visitor activities are compatible with refuge purposes.

The Improvement Act identified six priority wildlife-dependent recreational uses. These uses are hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation. As priority public uses of the Refuge System, they receive consideration over other public uses in planning and management.

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. The policy is an additional directive for refuge managers to follow while achieving the purpose(s) of the refuge and the mission of the Refuge System. It provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on refuges and associated ecosystems. When evaluating the appropriate management direction for refuges, refuge managers will use sound professional judgment to determine each refuge's contribution to biological integrity, diversity, and environmental health at multiple landscape scales. Sound professional judgment incorporates field experience, knowledge of refuge resources and the refuge's role within an ecosystem, applicable laws, and best available science, including consultation with others both inside and outside the Service.

NATIONAL AND INTERNATIONAL CONSERVATION PLANS AND INITIATIVES

Many partnerships have been developed among government and private entities to address the environmental problems affecting regions. Conservation initiatives include broad-scale planning and cooperation between affected parties to address declining trends of natural, physical, social, and economic environments. Many agencies, organizations, institutions, businesses, and private citizens have developed relationships with the Service to advance the goals of the Refuge System. This CCP supports, among others, the plans described below.

NATIONAL WETLANDS PRIORITY CONSERVATION PLAN

The National Wetlands Priority Conservation Plan (NWPCP) mandates that the Secretary of the Interior establish, and periodically review and revise, a national wetlands priority conservation plan which shall specify, on a region-by-region basis, the types of wetlands and interests in wetlands that should be given priority with respect to Federal and State acquisition. The NWPCP is an ongoing program that provides guidance for making decisions regarding wetland acquisition. The NWPCP applies only to wetlands that would be acquired by Federal agencies and States using Land and Water Conservation Fund (LWCF) appropriations. For more information, see *http://www.fws.gov/policy/660fw4.html*.

NORTH AMERICAN BIRD CONSERVATION INITIATIVE

Started in 1999, the North American Bird Conservation Initiative (NABCI) is a continent-wide coalition of government agencies, private organizations, academic institutions, and industry leaders in the United States, Canada, and Mexico, working to ensure the long-term health of North America's native bird populations by fostering partnerships to facilitate an integrated approach to bird conservation for the benefit of all birds in all habitats. The NABCI-U.S. also works to increase financial resources for bird conservation. Theodore Roosevelt and Holt Collier NWRs are in Bird Conservation Region (BCR) 26, Mississippi Alluvial Valley. For more information, see *http://www.nabci-us.org/bcr26.html*.

The refuges support these major bird conservation planning efforts: the North American Waterfowl Management Plan; the Partners in Flight Initiative; the North American Waterbird Conservation Plan; and the Northern Bobwhite Conservation Initiative. They are described below.

North American Waterfowl Management Plan

The North American Waterfowl Management Plan (NAWMP) is an international action plan to conserve migratory birds throughout the continent. The plan's goal is to return waterfowl populations to their 1970s levels by conserving wetland and upland habitat. Canada and the United States signed the plan in 1986 in reaction to critically low numbers of waterfowl. Mexico joined in 1994, making it a truly continental effort. The plan is a partnership of federal, provincial, state, and municipal governments; non-governmental organizations; private companies; and many individuals, all working towards achieving better wetland habitats for the benefit of migratory birds, other wetland-associated species, and people. Its projects are international in scope, but implemented at regional levels. These projects contribute to the protection of habitat and wildlife species across the North American landscape. The NAWMP identified important waterfowl habitat areas and established habitat and population goals. For more information, see *http://www.fws.gov/birdhabitat/NAWMP/index.shtm*.

The 2012 revision of the NAWMP, "People Conserving Waterfowl and Wetlands" calls for integrating human dimensions into the plan by focusing objectives on waterfowl resource users, specifically hunters. A key action is to develop objectives for waterfowl hunting participation. It states that a major barrier to waterfowl hunt participation is the loss of area to hunt and crowding on public lands.

Interstate and international partnerships called joint ventures were developed to implement the plan's goals. The Lower Mississippi Valley Joint Venture (LMVJV) is a self-directed, non-regulatory partnership of private, state, and federal conservation agencies. Its purpose is to sustain bird populations and their habitats within the Lower Mississippi Valley and West Gulf Coastal Plain regions. This is done by communicating the goals and objectives of relevant national and international bird conservation plans and implementing them. For more information, see *http://www.lmvjv.org/*.

Partners in Flight Bird Conservation Plan

The Partners in Flight initiative was launched in 1990 in response to growing concerns about continental declines in the populations of many land bird species. A central premise of Partners in Flight is that the resources of public and private organizations in the Americas must be combined, coordinated, and increased in order to achieve success in conserving bird populations in this hemisphere. The Service is a member of the cooperative effort to promote research, land protection, and education about migratory birds. Other participants include federal, state, and local government

agencies, philanthropic foundations, professional organizations, conservation groups, industry, the academic community, and private individuals. While its top priority is to help species at risk, the goal of the initiative is also to keep common birds common. For more information, see *http://www.partnersinflight.org*.

Northern American Waterbird Conservation Plan

The North American Waterbird Conservation Plan (NAWCP) was initiated in 1998. It was established to help maintain healthy populations, distributions, and habitats of waterbirds in North America throughout their breeding, migratory, and wintering ranges. For more information, see *http://www.waterbirdconservation.org*.

Northern Bobwhite Conservation Initiative

The Northern Bobwhite Conservation Initiative (NBCI) is a landscape-scale habitat restoration and population recovery plan for northern bobwhites (*Colinus virginianus*) in the United States. The NBCI was developed in recognition of: (1) the continuing serious decline of bobwhite populations across most of the bird's range; and (2) the necessity for large-scale coordinated, collaborative action at the regional level. The plan focuses on the population and habitat objectives needed to achieve the overall goal of recovering bobwhite densities to their 1980 levels on remaining, improvable portions of the landscape.

The plan's building blocks are the bird conservation regions (BCRs). It contains population and habitat objectives for each BCR. Another important foundation of the NBCI is the land-use data collected and analyzed every 5 years by the National Resources Inventory (NRI), a database of the U.S. Department of Agriculture's Natural Resources Conservation Service. The intent of the BCR-based structure of the NBCI is to facilitate seamless integration of bobwhite habitat restoration efforts with those for migratory songbirds, along with other wildlife that share the bobwhite's habitats. For more information on the program, see *http://bringbackbobwhites.org/about-us/nbci*.

National Fish Habitat Action Plan

The 10-year mark of the National Fish Habitat Partnership (NFHP) and Action Plan was commemorated with a resolution passed by the Association of Fish and Wildlife Agencies (AFWA) in 2013. State fish and wildlife agencies recognize NFHP as a state-led effort and will work towards increasing support for implementing the Action Plan, distinguishing its value in furthering the conservation of fish, wetland and wildlife habitats and enhancing fishing opportunities for the public.

The mission of the National Fish Habitat Action Plan is to protect, restore, and enhance the nation's fish and aquatic communities through partnerships that foster fish habitat conservation and improve the quality of life for the American people. This mission will be achieved by:

- Supporting existing fish habitat partnerships and fostering new efforts;
- Mobilizing and focusing national and local support for achieving fish habitat conservation goals;
- Setting national and regional fish habitat conservation goals;
- Measuring and communicating the status and needs of fish habitats; and
- Providing national leadership and coordination to conserve fish habitats.

For more information on the plan, see *http://www.fishhabitat.org*.

CLIMATE SCIENCE CENTERS

Created by the Department of the Interior in 2010 to expand the scope and geographic reach of climate science efforts, eight regional climate science centers (CSCs) were developed for the United States to provide scientific information, tools, and techniques that land, water, wildlife, and cultural resource managers and other interested parties can apply to anticipate, monitor, and adapt to climate and ecologically driven responses at regional to local scales. The Southeast CSC delivers basic climate change effects science to the Service's Southeast Region and the Gulf Coast Plains and Ozarks Landscape Conservation Cooperative (LCC), including physical and biological research, ecological forecasting, and multi-scale modeling. It will prioritize the delivery of fundamental science, data, and decision-support activities to meet the needs of the LCC by providing information about climate change effects on natural and cultural resources, and by developing adaptive management and other decision-support tools for managers. For more information, see *http://www.doi.gov/whatwedo/climate/index.cfm* or *http://www.doi.gov/csc/southeast/index.cfm*.

RELATIONSHIP TO STATE WILDLIFE AND HABITAT PROTECTION AGENCIES

A provision of the Improvement Act and subsequent agency policy is that the Service shall ensure timely and effective cooperation and collaboration with other federal and state fish and game agencies and with tribal governments during the course of acquiring and managing refuges. State wildlife management areas and national wildlife refuges provide the foundation for the protection of species, and contribute to the overall health and sustainment of fish and wildlife in the State of Mississippi. This cooperation is essential in providing the foundation for the protection and sustainability of fish and wildlife throughout the United States.

The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) is a partnering agency with the Service, charged with enforcement responsibilities for migratory birds and endangered species, as well as with the management of the state's natural resources. The State of Mississippi owns or manages 731,891 acres for wildlife, recreation, and fisheries, including 52 wildlife management areas (WMAs) encompassing over 665,000 acres, 25 state parks (23,776 acres) and 18 lakes (4,030 acres).

The MDWFP coordinates the State's wildlife conservation program and provides public recreation opportunities, including an extensive hunting and fishing program on several WMAs and parks located near the Complex. The MDWFP's participation on the comprehensive conservation planning team has been valuable. A key part of the planning process is the integration of common mission objectives between the Service and the MDWFP, where appropriate. The agency is also an active partner in annual hunt coordination planning and in various wildlife and habitat surveys on the Complex.

For more information on the MDFWP, see *www.mdwfp.com*. A copy of the agency's Comprehensive Wildlife Conservation Strategy (plan) can be downloaded from the website's wildlife and hunting page under "featured topics". See *http://www.mdwfp.com/media/63792/cwcs.pdf*. Key rules and regulations pertaining to the State's wildlife programs are summarized in Appendix C.

II. Refuge Overview

INTRODUCTION

This chapter provides a general summary of Theodore Roosevelt and Holt Collier NWRs, including their history and purposes; physical, natural and socioeconomic environments; and management.

REFUGE DESCRIPTION, HISTORY OF ESTABLISHMENT, AND PURPOSES

The Theodore Roosevelt National Wildlife Refuge (NWR) Complex (Complex) is comprised of seven refuges: Hillside (1975), Holt Collier (2004), Mathews Brake (1980), Morgan Brake (1977), Panther Swamp (1978), Theodore Roosevelt (2004), and Yazoo National Wildlife Refuge (1936).

The Complex was originally known as the Yazoo National Wildlife Refuge Complex and then briefly named the Central Mississippi National Wildlife Refuge Complex. On January 23, 2004, Section 145 of Public Law 108-199, the Consolidated Appropriations Act of 2004, was signed into law by then President George W. Bush. The Act renamed the Complex as the Theodore Roosevelt National Wildlife Refuge Complex. It designated the geographically separate Bogue Phalia Unit of Yazoo NWR as Holt Collier NWR (see Figure 3). The refuge consists of 2,233 acres. It will continue to grow as a result of mitigation lands from the Army Corps of Engineers and potential carbon sequestration donations. The Service lists its purpose as being designated under the Fish and Wildlife Coordination Act (16 U.S.C. § 664). It "... shall be administered…for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon".

The Act also directed the Secretary of the Interior to establish the 6,600-acre Theodore Roosevelt NWR (Figure 4). No additional land was purchased for the two new refuges, rather they were assembled from disjunct Farm Service Agency (FSA, formerly known as Farmers Home Administration) lands already in Service possession. To date 1,674 acres have been acquired in the Theodore Roosevelt NWR. The Service lists both new refuges as being established "... for conservation purposes".

SPECIAL DESIGNATIONS

MISSISSIPPI DELTA NATIONAL HERITAGE AREA

The Mississippi Delta National Heritage Area Partnership describes the Delta as "the land where the Blues began, where Rock and Roll was created and where Gospel remains a vibrant art. This is an agricultural region where cotton was once king, and where 'precision-ag' rules today. It is a place that saw the struggles of the Civil War and the cultural revolution of the Civil Rights Movement. The Delta is the home of the Great Migration, and a land of rich culinary, religious, artistic and literary heritage."

Recognizing that the Mississippi Delta is a unique landscape which has created a distinct culture rich in heritage stories, efforts began in 2003 to promote a National Heritage Area designation for the 18 counties that comprise the Delta. This goal was achieved in 2009 through an act of Congress via legislation sponsored by Representative Bennie Thompson and Senators Thad Cochran and Roger Wicker. Following Congressional designation, the legislation was signed into law as part of the Omnibus Federal Land Management Act of 2009. The Act was signed by President Barack Obama on March 30, 2009.

Figure 3. Holt Collier National Wildlife Refuge

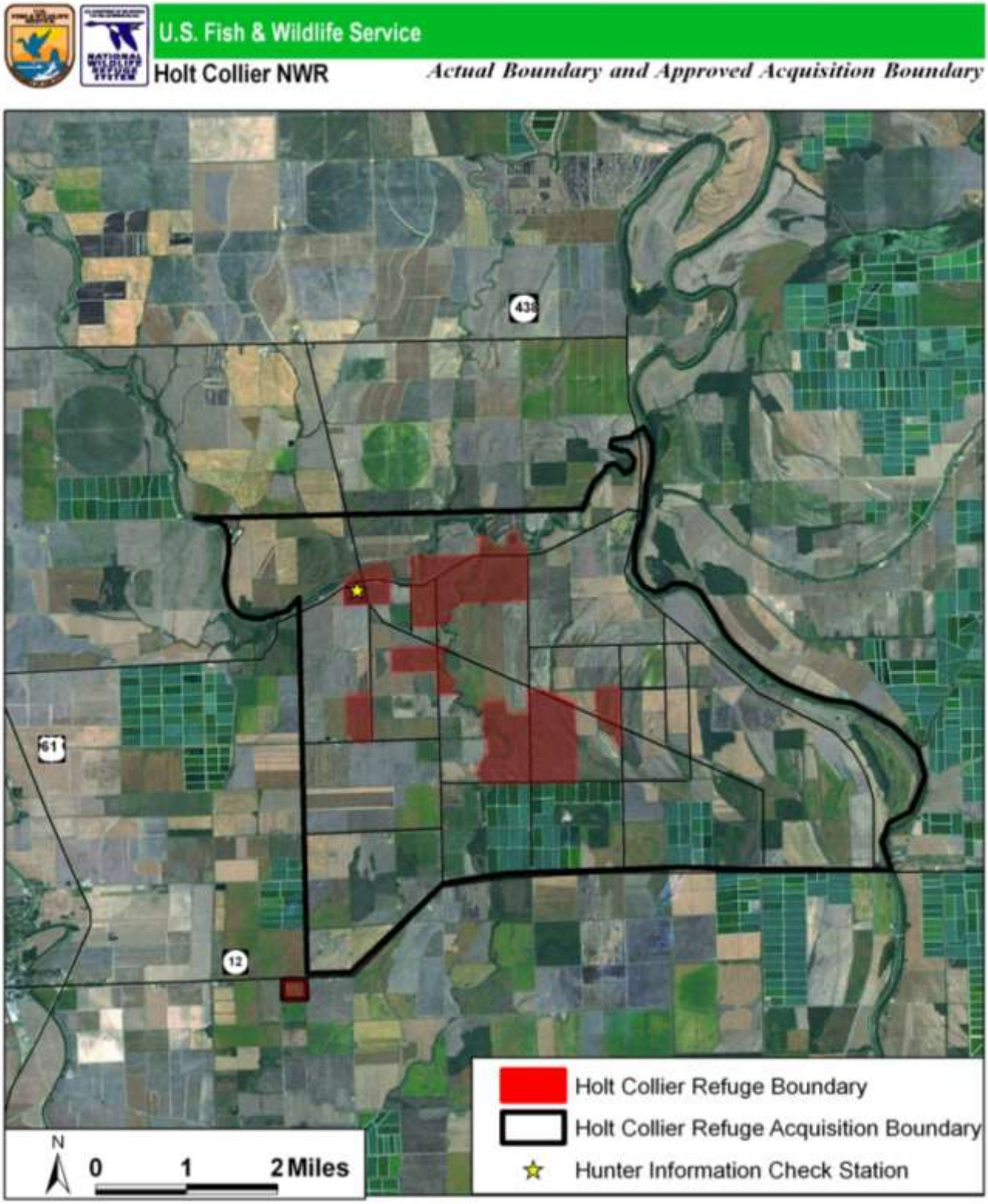
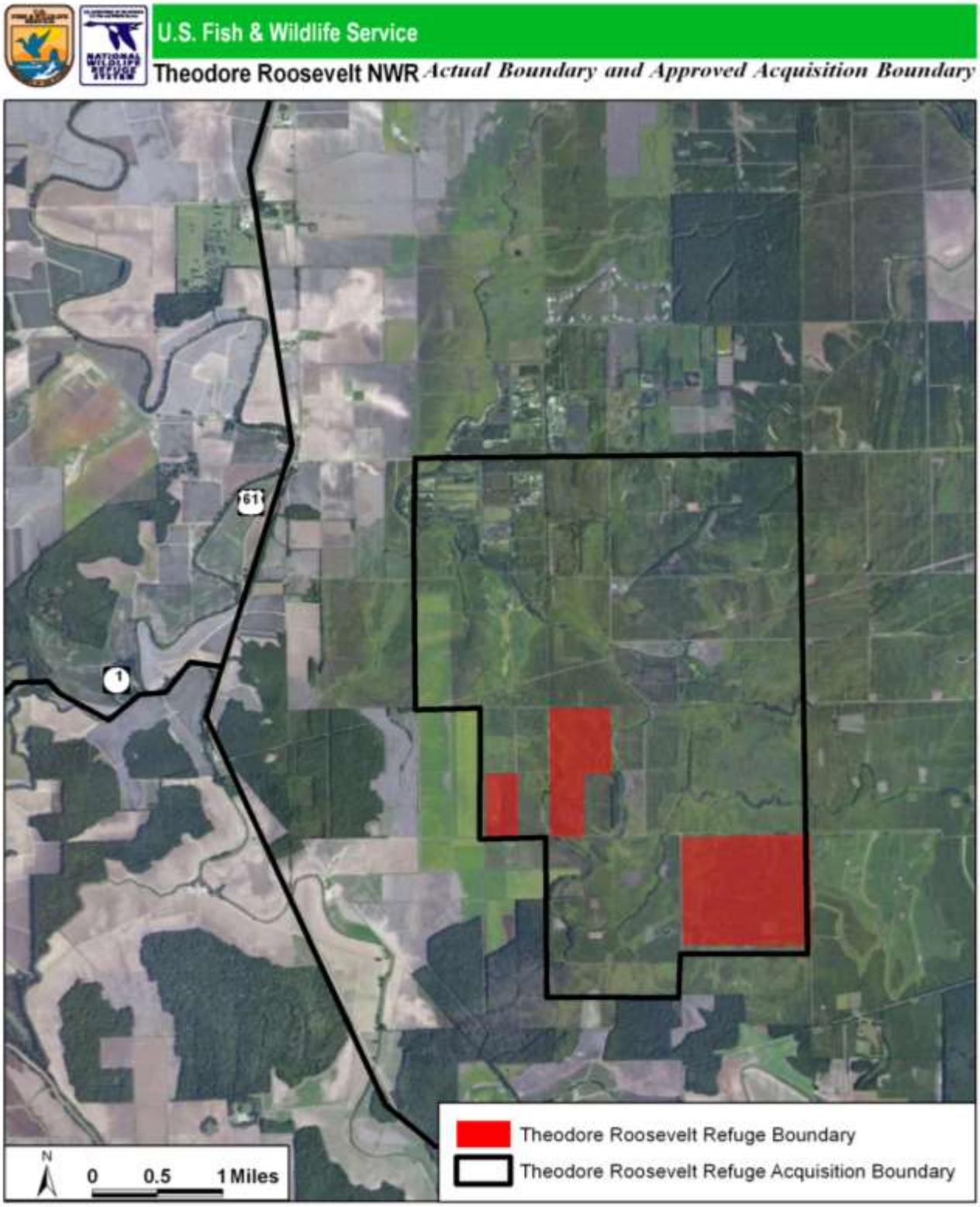


Figure 4. Theodore Roosevelt National Wildlife Refuge



This law linked the Delta to the National Park Service (NPS). The NPS provided initial funding to support the planning process. It appointed a locally-based governing board for the new National Heritage Area and required development of a detailed Mississippi Delta National Heritage Area Plan (Delta State University 2014). The draft was issued in November 2013 with public comments accepted until January 24, 2014. The final plan was approved on July 8, 2014 by the Secretary of the Department of the Interior. The NPS will provide financial support to implement the plan.

The Board of Directors of the Mississippi Delta National Heritage Area is working to create a management plan to support historic preservation, natural resource conservation, recreation, heritage tourism and educational projects. The plan will include an inventory of the cultural, historic, archaeologic, natural and recreational resources of the Heritage Area relating to the stories and themes of the region. It will include strategies which will bring partners together to accomplish the heritage area's goals in interpretation, education, preservation, community and economic development.

Many partnerships have been formed through the planning process which included public meetings from Southaven to Vicksburg, interviews, surveys, site visits and presentations to many organizations. The Mississippi Delta National Heritage Area will enhance existing efforts to tell the Delta's stories. It will add value to the ongoing efforts of the Mississippi Delta Tourism Association, existing and future museums and heritage-based businesses, and it will support education, interpretation, and preservation. For more information, see *http://www.msdeltaheritage.com/*.

ECOSYSTEM CONTEXT

Theodore Roosevelt and Holt Collier NWRs lay within a matrix of other publicly owned conservation lands in Sharkey and Washington Counties that provide protection of wildlife and their habitats. Figures 5 and 6 portray conservation lands in the vicinity of the refuges. Further, there is a network of 15 wildlife refuges in Mississippi (Figure 2). In addition to the seven refuges within the Theodore Roosevelt NWR Complex, the following refuges are located in Mississippi: Dahomey, Coldwater River and Tallahatchie NWRs (North Mississippi Refuges Complex); Sam D. Hamilton Noxubee NWR, Bogue Chitto NWR, St. Catherine Creek NWR; and Mississippi Sandhill Crane and Grand Bay NWRs (Gulf Coast Refuge Complex).

Figure 5. Theodore Roosevelt NWR Surrounding Conservation Lands

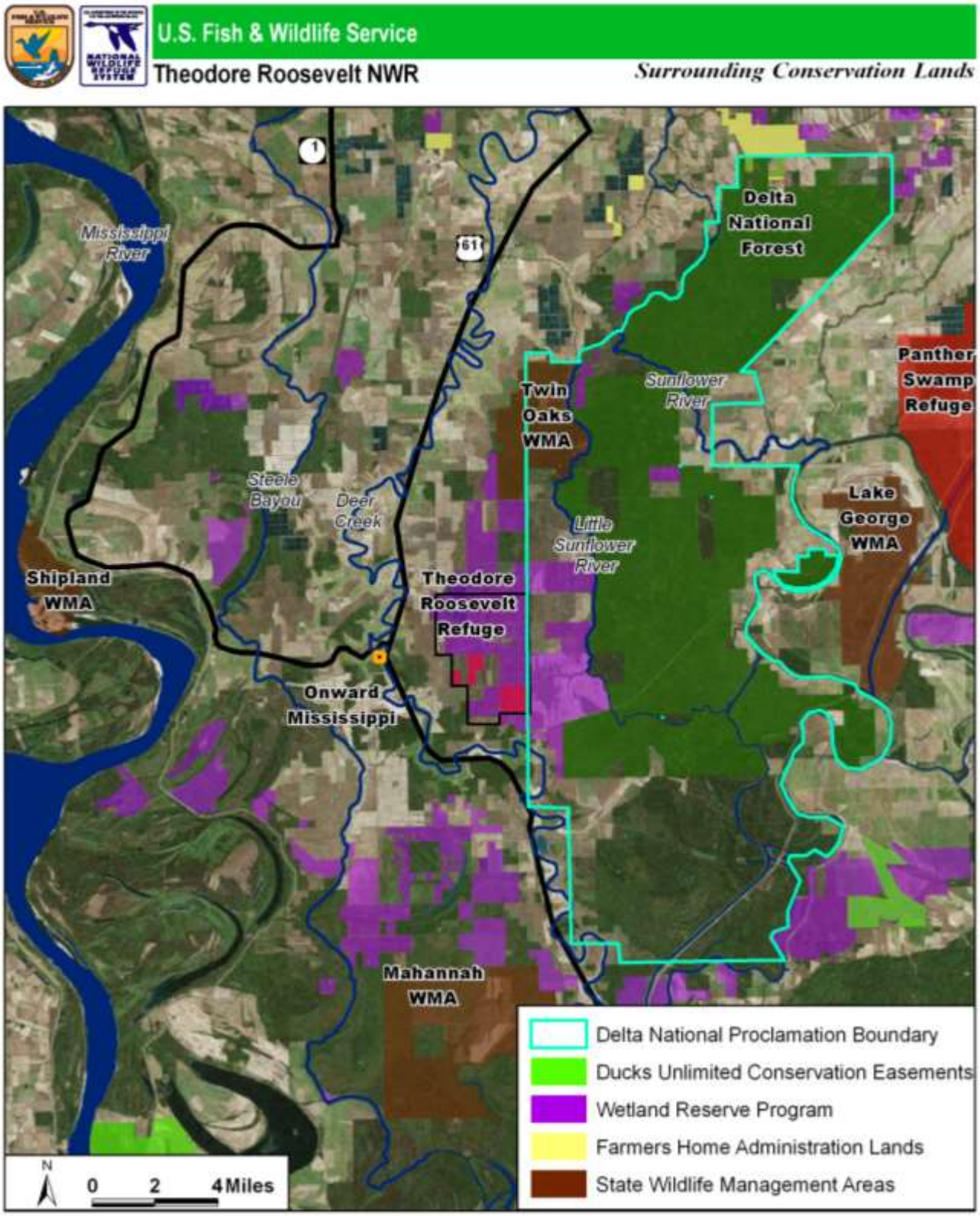
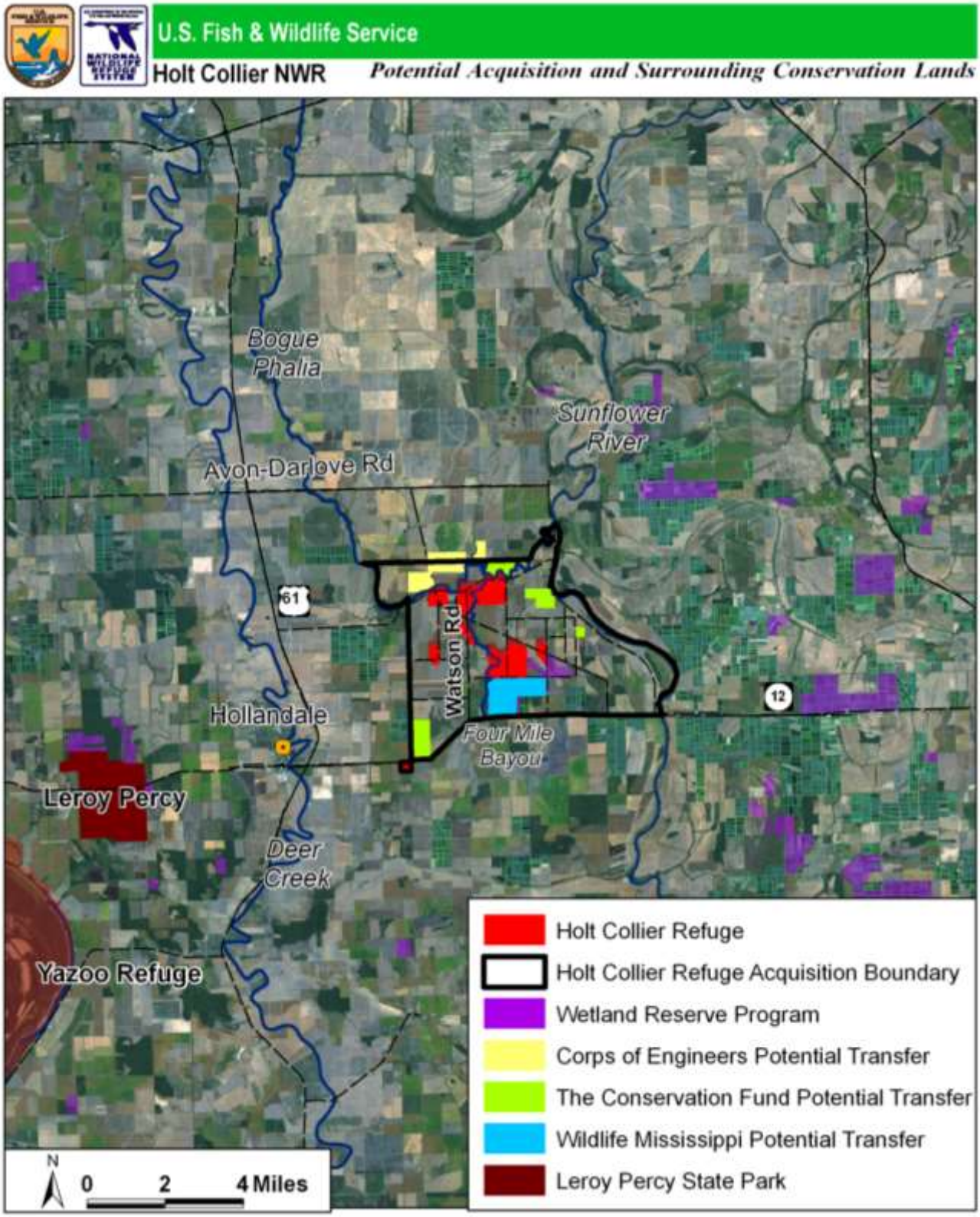


Figure 6. Holt Collier NWR Potential Acquisition and Surrounding Conservation Lands



LANDSCAPE CONTEXT

Ecosystem management is an integrated, flexible approach to the management of biological and physical environments. Using the tools of planning, land acquisition, environmental education, regulation, and pollution prevention, it is designed to maintain, protect, and improve the ecosystem's natural, managed, and human communities.

Strategic habitat conservation (SHC) is a science-based framework for making ecosystem management decisions about where and how to employ conservation measures efficiently to achieve specific biological outcomes. This framework helps resource managers to analyze, plan, implement, and then evaluate conservation methods. Across the United States, 16 landscape conservation cooperatives (LCCs) were established. The LCCs are fundamental units of planning and science capacity to help carry out the functional elements of SHC: biological planning, conservation design, conservation delivery, monitoring, and research. The LCCs are conservation partnerships among the Service, the U.S. Geological Survey, other federal agencies, states, tribes, non-governmental organizations, universities, and stakeholders. These cooperatives will provide information to enhance decision-making and address nationwide symptoms of environmental stress, such as habitat fragmentation, genetic isolation, the proliferation of invasive species, and water scarcity. All of these threats to the nation's natural resources are accelerated or exacerbated by the global threat of climate change.

GULF COASTAL PLAINS AND OZARKS LANDSCAPE CONSERVATION COOPERATIVE

Theodore Roosevelt and Holt Collier NWRs are within the Gulf Coastal Plains and Ozarks LCC (Figure 7). Comprising one of the sixteen LCCs in the continental United States, this LCC spans 12 states and encompasses 180 million acres. The geography includes most of the Mississippi River and its wetlands, along with some of the last vestiges of longleaf pine forests. From south to north, coastal dunes and marshes give way to grasslands, forested interior highlands and karst topography.

The LCC is a partnership where the Service will join others in establishing population objectives for priority species, identifying relationships between species and habitats and other limiting factors, and helping to coordinate conservation and development actions to inform where and how much habitat is needed to sustain fish and wildlife populations. Developing and coordinating adaptation strategies for the LCC in response to climate change and other key stressors (e.g., deforestation, water quality and quantity, and invasive species) represents a primary focus of the Service's interest in participating in landscape conservation cooperatives. For more information, see *http://www.doi.gov/lcc/Gulf-Coast-Plains-and-Ozarks.cfm* and *http://www.doi.gov/lcc/Gulf-Coast-Plains-and-Ozarks.cfm*

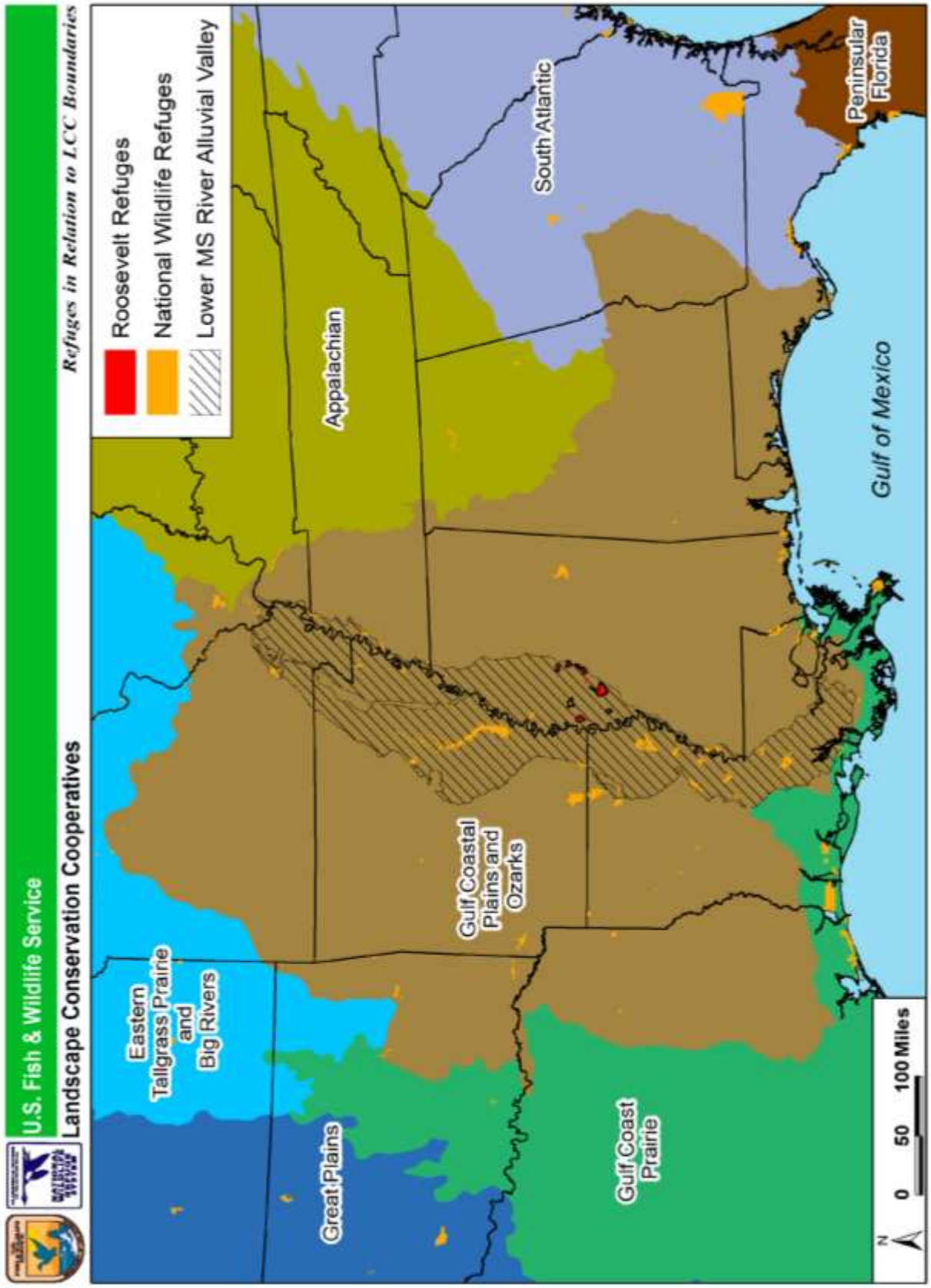
REGIONAL CONSERVATION PLANS AND INITIATIVES

A variety of regional conservation plans and initiatives were reviewed in the preparation of this CCP. Several of these plans address the management of conservation lands.

RECOVERY PLANS

Under the Endangered Species Act, the Service develops a recovery plan for each federally listed species under its jurisdiction. The Service prepared recovery plans for two federally listed species that may occur at the refuges: the threatened Louisiana black bear *(Ursus americanus luteolus)* (USFWS 1995) and the endangered pondberry plant *(Lindera melissifolia)* (USFWS 1993). The recovery plan for the Louisiana black bear addresses the need to eventually reestablish a population

Figure 7. Landscape Conservation Cooperatives



within its historical range, which includes the State of Mississippi. Pondberry is known to occur on areas in the region (e.g., Delta National Forest). No formal surveys have been conducted on the refuges to identify colonies of this rare shrub.

The goals of these plans are to ensure the long-term viability of these species in the wild. Each plan identifies the research and management actions necessary to support the recovery of a species and provides a schedule to undertake these. Recovery actions aim to permit reclassification or delisting of the species. As strategy documents, recovery plans do not commit manpower or funds for recovery actions, nor do they have the legal force of laws and regulations. Instead, they are used in setting regional and national federal conservation priorities for funding and implementation. The plans set forth criteria that, when met, will ensure a healthy, self-sustaining population of each imperiled species by reducing or removing threats to its existence. These documents provide the framework for major recovery initiatives within the region/nation/state.

SOUTHEASTERN COASTAL PLAIN COLONIAL WATERBIRD CONSERVATION PLAN

The Southeastern Coastal Plain Colonial Waterbird Conservation Plan is a regional effort of the NAWCP. It follows the same format as the other bird conservation plans with a focus on seabirds, colonial wading birds (e.g., herons and egrets), noncolonial wading birds (e.g., grebes, bitterns, and rails), and coastal waterbirds (e.g., gulls, terns, and pelicans) and their habitats. Through public use area closures and habitat protection, the Service provides important wintering habitat for 22 priority conservation species included in the plan. For more information on this waterbird conservation plan, see *http://www.waterbirdconservation.org/southeast_us.html*.

LOWER MISSISSIPPI ALLUVIAL VALLEY/WEST GULF COASTAL PLAIN SHOREBIRD MANAGEMENT PLAN

Eleven regional working groups are the core of the U.S. Shorebird Conservation Plan (2001). This plan assessed the status of shorebird species in North America, set population targets, and proposed methods for effectively monitoring changes in population size. The regional Lower Mississippi Alluvial Valley/West Gulf Coastal Plain Shorebird Management Plan (MAVGCP) recognizes the Delta as important for shorebirds and other non-game waterbirds. Thirty-one of the 43 species found in the MAVGCP occur regularly. Species of high conservation concern span a variety of habitats and foraging guilds, ranging from terrestrial gleaners (e.g., American golden-plover) to aquatic probers (e.g., least sandpiper). While a few shorebird species winter and breed in the MAVGCP, most of the shorebirds found in this region use the area as migratory stopover habitat. Clearing of much of the Mississippi Alluvial Valley, with resulting open/agricultural fields, has resulted in tremendous potential for providing shorebird habitat. Supplying the necessary mix of water depth and vegetative structure at the appropriate times is the most important management issue in this region. Habitats in the region that possess the greatest potential for shorebirds include agricultural fields, moist soil impoundments, semi-permanent impoundments, and aquaculture ponds. Recommended management practices for each of these habitat types are described in the regional plan.

The abundance of agri- and aqua-cultural land with water control capabilities, and the prevalence of water management for waterfowl in the region provide substantial opportunities for shorebird habitat management. Perhaps the factor most important to maintaining and increasing habitat for shorebirds in the MAVGCP is outreach and education. Providing land managers and supervisors with specific management information (i.e., migration chronology, water depth, and vegetation density tolerances, etc.) should facilitate an increase in the quality and quantity of shorebird habitat in the region.

Coordination of continued planning, implementation and evaluation of the MAVGCP Plan will be provided by the LMVJV Office. Interested members of the regional working group will serve as a technical advisory team, providing input to the LMVJV on the biological foundation and evaluation of shorebird habitat management objectives.

Successful long-distance migrants, such as shorebirds, require highly productive stopover sites where they can efficiently forage to replenish fat reserves. They typically require exposed mudflat habitats with an abundance of invertebrates that are shallowly flooded. Shorebird habitat objectives have not been established for Holt Collier or Theodore Roosevelt NWRs, however, habitats such as moist soil units and management of seasonal floodwaters could be developed.

LOWER MISSISSIPPI RIVER ECOSYSTEM TEAM GOALS AND OBJECTIVES

The purpose of the Service's Lower Mississippi River Ecosystem Team (LMRET) is to enhance, restore, and conserve the naturally occurring habitat types and functional values of the Lower Mississippi River Ecosystem Unit while maintaining the economic productivity and recreational opportunities of the region. The team produced an Ecosystem Plan in 2002 with one of its primary goals being to maintain, manage, and restore the values and functions of alluvial plain habitats. The plan has as an objective to restore and manage the wetlands and water quality functions of alluvial soils through the seasonal ponding of rainfall and runoff. A related strategy is to restore and manage the wetland hydrology of forested, moist soil, and cropped wetlands on public lands to provide food and foraging habitat for migratory waterfowl, wading birds, and shorebirds.

Another objective is to protect and restore the values and functions of bottomland hardwood forest habitats as needed to support trust species, minimize and reverse habitat fragmentation, and restore the contiguity of forested wetland complexes. The implementing strategy is to maintain, restore, and manage the forested acreage on national wildlife refuges as wintering habitat for migratory waterfowl and to provide for complexes of habitats important to many waterfowl species.

A third goal of the plan is to manage and protect populations of federal trust and interjurisdictional species – such as migratory birds. The objective is to manage migratory bird populations in partnership with other federal and state agencies and private landowners. Its related strategy is to provide food, protection, and sanctuary for migratory waterfowl on federal, state and private lands sufficient to maintain desirable distributions.

The plan also includes a goal to increase public awareness and support for ecosystem resources and their management. The objective is to promote increased stewardship of the ecosystem resources through environmental education, interpretation, and other outreach methods. One strategy is to place emphasis on special designation areas, such as national wildlife refuges, through increased outreach activities.

Management of Holt Collier and Theodore Roosevelt NWRs will contribute to these ecosystem goals through the management of bottomland hardwood and other wetland habitats for migratory waterfowl, and neotropical songbirds through the development of public outreach activities.

LOWER MISSISSIPPI VALLEY JOINT VENTURE

The LMVJV is a self-directed, non-regulatory private, state, and federal conservation partnership that exists for the purpose of sustaining bird populations and their habitats within the Lower Mississippi Valley and West Gulf Coastal Plain regions through implementing and communicating the goals and objectives of relevant national and international bird conservation plans. The LMVJV functions as the

forum in which the private, state, and federal conservation community develops a shared vision of bird conservation for the Lower Mississippi River Valley and West Gulf Coastal Plain regions; cooperates in its implementation; and collaborates in its refinement. This partnership focuses on the protection, restoration, and management of birds in the Lower Mississippi Valley and West Gulf Coastal Plain regions and their habitats.

The LMVJV has established foraging objectives for waterfowl at refuges within the Theodore Roosevelt Refuge Complex. These objectives identify the acreage of moist-soil, agricultural, and unharvested cropland habitats for waterfowl as recommended in the NAWMP and LMVJV. Since Holt Collier and Theodore Roosevelt NWRs are relatively new refuges, the LMVJV has not established specific objectives for these refuges at this time, but any management on the two refuges will aid the Complex in reaching or exceeding its foraging objectives.

STATE AND LOCAL CONSERVATION PLANS AND INITIATIVES

COMPREHENSIVE WILDLIFE CONSERVATION STRATEGY

In 2001, Congress established the State Wildlife Grants Program with a goal of managing species before they become imperiled. To participate in this program, in 2005, the Mississippi Museum of Natural Science, MDWFP, published a Comprehensive Wildlife Conservation Strategy (CWCS). The Strategy is an action plan for conserving all of the state's wildlife and vital natural areas for future generations, with an emphasis on focusing management to species in greatest need of conservation. The components or steps of the CWCS are:

1. Assess the distribution and abundance of wildlife species, including rare and declining species that are indicative of the diversity and health of the state's wildlife;
2. Describe the location and relative condition of key habitats and community types essential to conservation of these species;
3. Identify problems that adversely affect these species and habitats as well as research and survey efforts needed to address these problems;
4. Identify conservation actions needed to conserve these species and habitats, and priorities for implementing these actions;
5. Develop plans for monitoring these species and habitats, monitoring the effectiveness of conservation actions, and adapting conservation actions to respond to new information or changing conditions;
6. Develop procedures to review the conservation strategy at intervals not to exceed 10 years;
7. Coordinate plan development and implementation with federal, state, and local governments and other organizations that manage significant areas of the state or administer wildlife conservation programs; and
8. Encourage public participation in the development, revision, and implementation of the CWCS.

The State's CWCS identifies its Species of Greatest Conservation Need (SGCN), classifies and ranks Mississippi wildlife habitats, and identifies threats and conservation actions for species and their habitats (MDWFP 2005). The major habitats identified are: dry/mesic upland forests/woodlands; agriculture fields, hay and pasture lands, old fields, prairies, cedar glades and pine plantations; mesic upland forests; bottomland hardwood forests; riverfront forests/herblands/sandbars; wet pine savannas; spring seeps; bogs; inland freshwater marshes; swamp forests; and lacustrine (lentic) communities (MDWFP 2005).

Holt Collier has been mostly reforested to bottomland hardwood forests. This will be the major habitat type present at both Holt Collier and Theodore Roosevelt NWRs once acquisition reforestation efforts are

completed. The Mississippi CWCS indicates that bottomland hardwood forests are already vulnerable in the state due to widespread conversion in the past. Other factors that contribute to fragmentation and reduce function could lead to further declines as well.

Some of the priority conservation actions listed in the plan for bottomland hardwood forests include:

1. Encourage restoration and improved management of altered/degraded habitat when possible;
2. Encourage and improve agricultural/forestry/watershed land-use planning and BMPs;
3. Address nonpoint pollution, erosion and water quality issues;
4. Encourage retention, preservation, and conservation of remaining natural habitat through purchase, easements or Memoranda of Agreement;
5. Control exotic and invasive species (plant and animal);
6. Enhance viability of SGCN by providing habitat corridors between disjunct populations or subpopulations;
7. Provide public education about conservation of SGCN and/or their habitats; and
8. Encourage appreciation of SGCN and their habitats by providing public access and compatible recreational activities.

Inland freshwater marshes are also an important habitat discussed in the CWSC. A diverse wetland complex would be attractive to migratory birds. There is potential to acquire some of these habitats as both refuges are to grow to the limits of their approved acquisition boundaries.

ECOLOGICAL THREATS AND PROBLEMS

DEFORESTATION AND ALTERATION OF HABITAT

The Complex is situated within the physiographic region known as the Lower Mississippi River Alluvial Valley (LMRAV). The LMRAV was historically a 25-million-acre forested wetland complex that extended along both sides of the Mississippi River from southern Illinois to southeastern Louisiana. The extent and duration of flooding from the Mississippi River fluctuated annually and served to recharge aquatic systems, creating rich, dynamic habitats that supported diverse fish and wildlife resources.

As civilization pushed westward, the highest, least flood-prone lands were cleared and converted to rich farmland. With success in agriculture and an expanding human population, more land was cleared and additional flood control measures were implemented. Today, the LMRAV is dissected by levees and a myriad of flood control projects supporting less than 5 million acres of mostly fragmented bottomland hardwood forests. Declines in the fish and wildlife resources have mirrored the decline of the forest.

Although reforestation is an obvious solution to replace the forests converted to row-crop agriculture, reforestation would restore only one component of the landscape. In addition to reforestation, restoring or mimicking the historic hydrologic cycle is needed because flooding drives the ecological system in the LMRAV.

EXOTIC, INVASIVE, AND NUISANCE SPECIES

An "invasive species" is defined here as a species that is non-native (or alien) to the ecosystem and whose introduction causes or is likely to cause economic or environmental harm or harm to human health (Executive Order 13112). Invasive species can be plants, animals, and other organisms (e.g., microbes). Human actions are the primary means of invasive species introductions. Most refuges contain, and must contend with, both aquatic and upland invasive plants and animals.

The main invasive animal at the refuges is the feral swine (*Sus scrofa*). This species affects various refuge habitats by uprooting vegetation, increasing erosion, promoting the spread of invasive vegetation, reducing the success of ground-nesting birds, competing with native wildlife for food resources including soft and hard mast, and carrying diseases and parasites.

POTENTIAL IMPACTS ASSOCIATED WITH CLIMATE CHANGE

Department of the Interior (DOI) Secretarial Order 3226, issued on January 19, 2001, states that there is a consensus in the international scientific community that global climate change is occurring and that it should be addressed in governmental planning and decision-making. Secretarial Order 3226 was amended on January 16, 2009; however, Secretarial Order 3285, issued on March 11, 2009, replaced Amendment Number 1 and reinstated some of the provisions of the 2001 order. Secretarial Order 3285 established a Climate Change Response Council within the Office of the Secretary, Department of the Interior. Its purpose is to facilitate a Department-wide approach for applying scientific tools to increase understanding of climate change and to coordinate an effective response to the impacts of climate change upon tribes and on the land, water, ocean, fish and wildlife, and cultural heritage resources that the Department manages. It also made production and transmission of renewable energy on public lands a priority for the Department. The order calls for the incorporation of climate change considerations in long-term planning documents such as this CCP.

Climate change is the major conservation challenge of the 21st century. The Intergovernmental Panel on Climate Change (IPCC) reported that the warming of the world's climate is unequivocal based on documented increases in global average air and ocean temperatures, unprecedented melting of snow and ice, and rising average sea level (IPCC 2007). While the distribution and abundance of fish and wildlife are naturally dynamic relative to a variety of environmental factors, climate change may drastically alter and accelerate the natural cycles that we are familiar with today. Some effects may include changes in precipitation, increased frequency and intensity of extreme weather events, rising sea levels and tidal fluctuations, and invasions of new exotic species. Consequently, climate change is a challenge not only because of its direct effects, but also because of its potential to amplify the other stressors that have and will continue to be major conservation priorities, such as habitat fragmentation, urbanization, and invasive species.

Low-lying coastal areas and barrier islands will face the most direct and dramatic impacts of climate change, particularly from a rising sea level and from the increasing frequency and intensity of coastal storms (Emanuel 1987; Emanuel 2005; Webster et al. 2005; Mann and Emanuel 2006). The loss of habitat will result in the loss of species using that habitat, including migrating and nesting birds. This has consequences to the inland and upland areas used by migratory birds. Storm events also cause considerable physical damage to native vegetation along vulnerable shorelines, impacting nesting habitat for sea life and shorebirds. Rising sea levels may decrease the availability and abundance of prey for wading birds that forage in shallow waters on the expansive tidal flats of the Gulf Coast. Climate change is expected to amplify and hasten these effects, potentially at rates that exceed the

normal resiliency of plant communities to recover, shift or adapt accordingly (Stanton and Ackerman 2007; Clough 2008).

The effects of climate change both in time and space are uncertain, but new research and modeling efforts will lead to enhanced capabilities to model and then predict future scenarios. The most immediate action that the Service can take is to gather the best scientific data possible for understanding natural processes in their current state, modeling possible impacts and subsequent changes from sea level rise, and developing adaptive management strategies for future conservation needs. Through its Climate Science Centers, the Service is actively working with the scientific community and its partners to evaluate the effects of projected sea level rise on wildlife and their habitats. It will develop strategies to enhance the resiliency of natural communities to adapt to climate change, as well as formulate criteria for when direct intervention may be necessary to save a species, such as assisted migration or removal to captivity (Hoegh-Guldberg et al. 2008; Ross et al. 2009).

PHYSICAL RESOURCES

CLIMATE

The Mississippi Delta has a humid, warm-temperate, continental-type climate characteristic of the southern United States. January is generally the coldest month, while July is the hottest. Winters are mild, with temperatures seldom remaining below freezing for more than 24 hours. Summers are hot and humid with heat indexes commonly reaching 110 to 115 degrees Fahrenheit (°F). The average growing season is 219 days from March 25 to October 30.

The average yearly rainfall is 52 inches, with March being the wettest month (averaging 5.62 inches) and August being the driest (2.37 inches.) Tropical storms or hurricanes originating from the Gulf of Mexico may occasionally bring several days of heavy rain. Thunderstorms, which usually bring the heaviest rains, are only occasionally accompanied by hail and tornados. Drought conditions during the summer may increase the danger of fire. Average yearly snowfall is less than an inch.

GEOLOGY AND TOPOGRAPHY

In the geologic chronology that shaped the physiography of the LMRAV, several important events occurred around the beginning of the Holocene (12,000 years ago). Torrential melt water ceased flowing through the LMRAV, the river channel changed from braided to meandering, and human occupation began. Many new physiographic features developed during the Holocene as the Mississippi River periodically overflowed and occasionally altered its meandering course.

The most important of these relatively recent features are active and abandoned meander belts and their associated natural levees, ridges and swales, oxbow lakes, and backswamps. Natural levees of the Mississippi typically are 2 to 3 miles wide and 15 feet high. They form when sand is deposited as rivers overflow their banks and the river currents lose energy and velocity. When river channels are abandoned, natural levees remain on the landscape as elevated features that support different forest types and provide attractive sites for human settlement, transportation routes, and certain types of agriculture (e.g., corn and cotton). The active meander belt of the present Mississippi River and sections of five former meander belts have been mapped, but dates and lengths of occupation of the channels have not been determined.

Meander belts have affected the physiography of the LMRAV by creating a ridge and swale topography and some unique landscape features. Sediment dynamics in a meandering river are complex; with erosion and deposition occurring over time and depending upon the amount of flooding

and flow. If the course of a meandering river becomes extreme, the channel can cut off a loop and create an oxbow lake or abandoned channel segment. If the abandoned channel segment retains a hydrologic connection to the river, the oxbow fills rapidly with sand and other sediment. When no hydrologic connection remains, only fine sediments enter the oxbow when the overbank is flooded. In this case, the lake remains as open water. If enough time passes, fine sediment fills the lake. Then the only evidence of the former oxbow is the presence of a 'clay plug' at the location.

Backswamps are areas not occupied by glacial outwash, as described earlier, or by recent meander belts. They are areas lying between major, natural levee systems or between natural levees and uplands. Subject to little disturbance, backswamps gradually accumulate large amounts of fine silt and clay over long periods of time. Generally, backswamps are relatively flat with few distinctive features, and drainage is poorly developed.

Large areas of backswamp occur in the Yazoo Basin, which is the largest drainage basin in the LMRAV. It extends south from Memphis, Tennessee to Vicksburg, Mississippi and includes the lowlands of western Mississippi. This alluvial plain, created by meanderings of the Mississippi River, is known as the Mississippi Delta (Delta). The Delta (Figure 7) is 75 miles wide at the widest point, tapering on each end. The Mississippi River flows along the Delta's western edge, while the eastern edge is bordered by steep bluffs that rise 300 feet above the elevation of the Delta.

The Delta is composed of alluvial soils deposited primarily by the Mississippi River, with surface features resulting from the meandering of the Mississippi River and lesser streams such as the Yazoo River. The Delta has a slight downward slope to the east as a result of natural levee formation. This slope causes most of the drainage to be away from the Mississippi River, eventually flowing into the Yazoo River before joining the Mississippi River at the lower extremity of the Delta. Old channels, oxbow lakes, brakes, sloughs, and other features developed in areas that bordered the main river channels, while low-lying, slackwater areas separated from currents and the channel resulted in broad flats. These features intermixed as the Mississippi River meandered across the Delta (LMVJV 2002).

SOILS

The periodic influx of glacial outwash and subsequent development of multiple Mississippi River meander belts produced complex but characteristic landforms in the Yazoo Basin where sediments are sorted to varying degrees based on their mode and environment of deposition. The sorting process has produced textural and topographic gradients that are fairly consistent on a gross level and result in distinctive soils. Generally, within a meander belt, surface substrates grade from relatively coarse-textured, well-drained, higher elevation soils (e.g., Commerce) on natural levees directly adjacent to river channels. Progressively finer-textured and less well-drained soils (e.g., Dundee) occur on levee backslopes and point bar deposits. Very heavy clays (e.g., Alligator, Sharkey) exist in closed basins and backswamps. Soils of older meander belts are likely to show greater soil horizon development than soils in equivalent positions within younger meander belts (Autin et al. 1991). Similarly, older soils are likely to be more acid and deeper, show less depositional stratification and more horizonation, and have other characteristics of more advanced soil development than soils of younger meander belts.

The alluvial soils in the lower Delta range from silts and clays in the poorly drained areas to sandier, coarser-grained soils on natural levees and ancient sandbars. Most of the soils in the Complex including these two refuges are silts and clays, which have fine texture, low permeability, and high shrink-swell potential. The surface layer is often hard when dry, friable (i.e., readily crumbles) when moist, and plastic when wet, making moisture content an important consideration when working the soil. There are lighter soils in limited areas, such as natural levees adjacent to major streams.
The soil association at both Holt Collier and Theodore Roosevelt Refuges is Sharkey-Alligator-Dowling series. This association occupies broad, nearly level, poorly drained, slack-water areas with small acreages along stream banks with slopes up to five percent. Some areas, especially the long, narrow depressions are subject to backwater flooding. In places, the soils are clay throughout the profile. The reaction is strongly acid to neutral. At both refuges, the predominant soil type is the Sharkey series.

The Sharkey-Alligator-Dowling series consists of poorly drained, clayey soils that were formed in fine-textured sediments in slack-water areas along the Mississippi River. Their slope is less than two percent. The surface soil is very dark gray clay and is underlain by dark gray to very dark brown clay. In some areas the surface soil is a recent overwash of silt loam. When dry, these soils shrink and form cracks that are from 1 to 5 inches wide and several feet deep. When wet, they expand and the cracks fill. The reaction is medium acid to neutral. The native vegetation consisted of bottomland hardwoods and an undergrowth of vines and cane, however, most of the acreage of Sharkey soils have been cleared and are used for row crop production (USDA 1962).

HYDROLOGY

Prior to construction of modern levees, major Mississippi River floods would have inundated most or all of the Yazoo Basin (Moore 1972). However, modern mainstem-levees that prevent Mississippi River overbank flooding do not completely eliminate the influence of the river on the hydrology of the Yazoo Basin. High stages on the Mississippi River cause impeded drainage of tributary streams, which results in backwater flooding. An analysis of the major flood of 1973 (USACE 1973) indicated that the event would have inundated the entire Yazoo Basin had flood protection works not been in place. However, even though no federal levees failed in the LMRAV, approximately 40 percent of the Yazoo Basin was flooded anyway, mostly due to backwater effects.

Except during major floods, surface water entering the Yazoo Basin arrives as precipitation or as runoff from the hills along the eastern flank of the basin. The only surface outlet is through the Yazoo River, which enters the Mississippi River at the southern end of the basin near Vicksburg. Most surface water discharge in the Yazoo River originates in the uplands along the eastern flank of the basin and is carried to the Yazoo via the Coldwater, Yocona, Tallahatchie, and Yalobusha Rivers as well as several smaller streams.

Interior drainage is provided by numerous small streams that discharge to Deer Creek, the Big Sunflower River, Steele Bayou, or Bogue Phalia, which flow to the lower Yazoo River. The pattern of drainage within the basin is generally southward, but can be quite convoluted, reflecting the influence of a complex topography dominated by abandoned meander belts of the Mississippi River (Saucier 1994).

Groundwater also is an important component of the hydrology of the Yazoo Basin. The geologic units that flank and underlie the alluvial valley include major non-alluvial aquifers. In places, these are contiguous with the alluvial aquifer within the LMRAV, which occupies coarse-grained deposits that originated as glacial outwash and from more recent alluvial activity. Generally, the surface of the alluvial aquifer is within 30 feet of the land surface. It is essentially continuous throughout the

LMRAV and constitutes one of the largest and most heavily used freshwater sources in the United States. Where the top stratum is made up of coarse sediments, the alluvial aquifer is recharged by surface waters and subsequently it contributes to stream base flow during low-flow periods (Saucier 1994, O'Hara 1996).

The physical and biological environment of the Yazoo Basin has been extensively altered by human activity. Isolation and stabilization of the Mississippi River have effectively halted the large-scale channel migration and overbank sediment deposition processes that have continually modified the Yazoo Basin over the past 10,000 years. At the same time, sediment input to depressions and sub-basins within the area has increased manyfold in historic times due to erosion of uplands and agricultural fields (Saucier 1994). The Mississippi River no longer overwhelms the landscape with floods that course through the basin, but it continues to influence large areas through backwater effects. Patterns of land use and resource exploitation have had differential effects on the distribution and quality of remaining forest communities.

Historically, the refuges were subject to flooding by the Mississippi River in winter and spring. The lower Delta was completely flooded five times between 1882 and 1927, despite the river levee. Since then, the Steele Bayou levee and floodgate have been completed, preventing widespread flooding from the river. However, water from the Yazoo and Sunflower River systems can cause backwater flooding on Theodore Roosevelt NWR due to its lower elevation.

The water table is very shallow in the Delta. Irrigation wells are often drilled to a depth of 100 to 120 feet, reaching an aquifer connected to the Mississippi River (USFWS, 2010).

AIR QUALITY

Air pollution causes damage to the environment and property and affects human health. Monitoring data show that air pollutant emissions can be transported long distances, affecting air quality-sensitive resources in refuges located hundreds of kilometers downwind of their sources.

The U.S. Environmental Protection Agency (EPA) has the lead responsibility for the quality of air and through the 1977 Clean Air Act (as amended) (CAA), sets limits on the amount of pollutants that can be aerially discharged. Common air pollutants of ecological importance include sulfur and nitrogen oxides, ammonia, ozone, particulate matter, volatile organic compounds, and heavy metals (Porter 2000). These pollutants are either emitted directly from sources, including power plants, incinerators, industries, automobiles and fires, or, as is the case with ozone, are formed downwind of sources as emissions react and are transformed in the presence of sunlight (Porter 2000). Other downwind reactions produce fine aerosols and particles, including sulfates and nitrates, which may eventually be deposited into ecosystems (Porter 2000). There are natural sources of air pollution resulting from wildfires, dust storms, volcanic activity, and other natural processes. From a national perspective, air impacts upon refuges include: acidification of lakes, streams and soils; direct toxicity to sensitive species; changes in species composition; changes in nutrient cycling; bioaccumulation of toxins in food chains; and visibility impairment (Porter 2000).

Federal and state governments track air quality and visibility impairment through a network of over 4,000 monitors across the United States. The U.S. EPA has set national ambient air quality standards (NAAQS) for six principal air pollutants (also called criteria pollutants): Ground-Level Ozone (O3), Particulate Matter (PM), Nitrogen Dioxide (NO2), Sulfur Dioxide (SO2), Carbon Monoxide (CO), and Lead (Pb). The Mississippi Department of Environmental Quality (MDEQ) monitors all of these pollutants. The MDEQ 2012 Air Quality Data Summary (MDEQ 2012)

reported levels of the criteria pollutants in 2012 at various monitoring sites located in Mississippi. The state met all of the air quality standards for the criteria pollutants measured.

WATER QUALITY AND QUANTITY

Agricultural runoff from almost any source in the Delta carries organochlorine (OC) pesticides, which are bound to soil particles. These pesticides, heavily used for years in the Delta, have persisted in the soil for over 15 years since their use was banned, and likely will exist for many more. Pesticide contamination is an issue on all refuges in the Complex. Fish and wildlife species are subject to contain OC compounds that may exceed predator protection levels or human consumption concern levels.

To reduce contaminated runoff entering the refuges, best management practices (BMPs) such as drop inlet structures, minimum till practices, vegetative field borders, and grassed waterways can be installed on agricultural land in the watersheds, and some of the agricultural land with high erosion rates should be revegetated. Concentrations of DDTM (DDT + metabolites), toxaphene, and current-use pesticides should be monitored in fish and wildlife. Investigations should be undertaken to determine OC pesticides concentrations in fish, and aquatic-oriented wildlife such as wood ducks, raccoons, and fish eating birds and mammals. Also, temperature and pH (a scale that measures how acidic or basic a substance is and ranges from 0 to 14), along with concentrations of suspended solids, nutrients, and turbidity should be determined for the streams and lakes.

BMPs can also be implemented through the Service's Private Lands Program, the Natural Resources Conservation Service's Wetland Reserve and Conservation Reserve Programs, and the Mississippi Soil and Water Conservation Commission's Clean Lakes Program. These federal and state agency programs pay about 75 percent of the cost of the BMPs, and the landowner pays the remainder. Siltation, whether pesticide-laden or not, is a concern throughout the Delta, particularly for wetlands that receive agricultural runoff. These areas not only have diminished water quality, but are filling in, resulting in a loss of aquatic habitat (USFWS 2005).

Both refuges receive ample quantities of water especially during spring floods.

BIOLOGICAL RESOURCES

FLORA - HABITAT

The Yazoo Basin is in the east-central portion of the Mississippi Alluvial Plain Ecoregion (Omernik 1987, Chapman et al. 2004). Most forests of the basin are referred to as bottomland hardwoods, a term which incorporates a wide range of species and community types, all of which can tolerate inundation or soil saturation for at least some portion of the growing season (Wharton et al. 1982). Bottomland hardwood forests are among the most productive and diverse ecosystems in North America. Within-stand diversity varies from dominance by one or a few species to forests with a dozen or more overstory species and diverse assemblages of understory, ground cover, and vine species (Putnam 1951, Wharton et al. 1982).

Most major overviews of bottomland hardwood forest ecology emphasize the relationship between plant community distribution and inundation, usually assuming that floodplain surfaces that occupy different elevations in relation to a river channel reflect different flood frequency, depth, and duration (e.g., Wharton and Brinson 1978, Brinson et al. 1981, Larson et al. 1981, Wharton et al. 1982). This leads to classification of forests in terms of hydrologic "zones," each zone having characteristic plant communities. However, zonal concepts have limited utility in the Yazoo Basin, where multiple

meander belts of the Mississippi River dominate the landscape.

All major stream systems that internally drain the basin are either captured by these meander belts or are constrained between them and have not formed a series of abandoned floodplains (terraces). In the Yazoo Basin, the term “terrace” generally refers to glacial outwash valley train deposits rather than abandoned floodplains of extant tributary streams. Geomorphic elements such as natural levees and abandoned channels, which may be rather minor components of some southeastern floodplains, are common major features in the Yazoo Basin. In much the same way, the general zonal models imply that the principal hydrologic controls on community composition are flood frequency, depth, and duration, as indicated by elevation relative to a stream channel. Stream flooding is just one of several important sources of water in the wetlands of the Yazoo Basin, and factors such as ponding of precipitation, as indicated by geomorphic setting, may be more important than flooding effects in some places.

Prior to European settlement, the Delta vegetative cover type was primarily bottomland hardwood forest. Around 1820, settlers began clearing the forest. The dominant forest type was oak-gum-cypress, with canebrakes covering the understory of broad flats on slightly higher ground. Canebrakes were very extensive on natural levees, forming almost pure stands. Most of the surviving forests now occupy low-lying ground that is too wet for agriculture, and are dominated by wet-site species. These wetlands have a fluctuating water level and are semi-dry part of the year. The lowest areas contain bald cypress, water tupelo and buttonbush. Other woody species in permanent or semi-permanent flooded areas include swamp privet, water elm, black willow, and water locust. Prominent vines include poison ivy, cross-vine, Virginia creeper, muscadine grape, and false grape in forested areas, and ladies’ eardrops, peppervine, and trumpet creeper in more open sites.

Vegetation associations vary only slightly among Holt Collier and Theodore Roosevelt NWRs. In general, Theodore Roosevelt NWR has lower ground with fewer areas that can support species found on well-drained soils. Holt Collier NWR has a little more topographic relief and slightly more overall diversity. Both refuges were primarily former croplands that were reforested in the 1990s with bottomland hardwood species. Holt Collier was planted, by refuge staff, mainly with Nuttall oak, willow oak, water oak, swamp chestnut oak, overcup oak, cherrybark oak, bald cypress, sweet pecan, green ash, and persimmon. The lands acquired at Theodore Roosevelt NWR were enrolled in Wetlands Reserve Program (WRP) and had been planted by Natural Resources Conservation Service (NRCS). Primary species planted were Nuttall oak, water oak, willow oak, and green ash. A list of vegetative species known to occur at the refuges is included in Appendix I.

Exotic, Invasive, and Nuisance Species

While a vegetative survey has not been conducted on either refuge, several invasive plants (e.g., alligator weed) are known to occur in widespread areas across the Complex. These plants overtake native vegetation.

Rare, Threatened, and Endangered Species

One federally listed plant species is known to occur in the general vicinity of the two refuges: pondberry (*Lindera melissifolia*). Pondberry is a rare, deciduous bush that grows in bottomland hardwood communities.

FAUNA - WILDLIFE

Theodore Roosevelt and Holt Collier NWRs support a variety of wildlife including mammals, birds, reptiles, amphibians, invertebrates, and fish. Appendix I lists the species known or documented to occur on the refuges. It also includes species likely to occur due to the refuges having suitable habitat being within the animal's range for occurrence.

Mammals

The most common large mammal on the refuges is white-tailed deer. Feral swine (an invasive species) and the Louisiana black bear (a federally listed species) are occasionally seen. The Louisiana black bear is a generally recognized subspecies of the American black bear. It historically occurred in bottomland hardwood forests from eastern Texas through all of Louisiana to southern Mississippi. The Louisiana black bear became a threatened species primarily because the habitat of the bear has suffered extensive modification with suitable habitat having been reduced by more than 80 percent as of 1980. The remaining habitat has been reduced in quality by fragmentation due to intrusion of man and his structures (USFWS 2006).

Medium-sized mammals include opossum, armadillo, eastern cottontail and swamp rabbits, beaver, muskrat, nutria, coyote, red fox, gray fox, raccoon, striped skunk, river otter, and bobcat. Coyotes are a recent arrival, with the first Mississippi refuge sightings recorded in the mid-1980s. Their presence is thought to be responsible, among other things, for the scarcity of foxes. River otters appear to have made a comeback in recent years. Raccoons are abundant and tend to overpopulate. Surveys for small mammals have not been conducted, but the following species are thought to inhabit the refuges: shrews, bats, chipmunks, squirrels, rats, mice, voles, weasels, and mink.

Birds

More than 225 species of migratory birds use the Theodore Roosevelt NWR Complex, with 77 species breeding on Complex lands. Ten species with Partners-in-Flight "concern scores" of 20 or more are common or abundant, including prothonotary warbler, painted bunting, red-headed woodpecker, yellow-billed cuckoo, wood thrush, white-eyed vireo, yellow-breasted chat, Carolina chickadee, loggerhead shrike, and dickcissel. Other species include great crested flycatchers, eastern kingbird, indigo buntings, bobolinks, roseate spoonbills, white ibis and snowy egrets and four species of herons—green, great blue, little blue and black-crowned night herons. No bird surveys have been conducted at Holt Collier and Theodore Roosevelt NWRs. As these refuges are located strategically in the Mississippi Flyway, it is likely they provide habitat and resources for some of these species.

Breeding bird sites are directly affected by fragmentations which include those that are area-sensitive (dependent on continuous hardwood forest); those that depend on forest interiors; those that depend on special habitat requirements such as mature forests or a particular food source; and/or those that depend on good water quality. Partners in Flight (PIF), an international program of federal and state conservation agencies, private organizations, and corporate participants, has set population goals for breeding birds in the LMRAV, based on species and habitat priorities. The greatest potential for meeting these breeding bird habitat restoration and protection needs lies within the Delta, because of the relatively numerous, but separated bottomland hardwood forest habitat patches that could potentially be connected via reforestation (i.e., Holt Collier and Theodore Roosevelt NWRs) to restore larger contiguous blocks of habitat.

Migratory Birds. Neotropical migratory birds breed in Canada and the United States, and winter in Mexico, the Caribbean, Central America, and South America. Approximately 250 species of birds that breed in North America are neotropical migrants (Bonney et al., 1995). Like waterfowl, shorebirds, and wading birds, neotropical migrants also require stopover habitats along their migration routes in which to feed and rest for long flights, often over open water. The presence of suitable habitats along migration routes is crucial to the survival and reproduction of these birds. The bottomland hardwood habitats at Holt Collier and Theodore Roosevelt NWRs will continue to improve and become more valuable migratory bird habitat as the trees mature. Bottomland hardwood forests in the LMRAV are used extensively by these migrants during the nesting and migration seasons (Twedt and Nelms unpublished data).

More than 70 species of breeding neo-tropical migrant birds are found in the region. Populations of some of these species (e.g., Swainson's warbler, prothonotary warbler, swallow-tailed kites, wood thrush, and Cerulean warbler) have declined and need the benefits of large forested blocks to recover and sustain their existence (Pashley 2000). With the exception of the swallow-tailed kite, these species have been documented on Holt Collier and Theodore Roosevelt NWRs.

Waterfowl. The North American Waterfowl Management Plan (NAWMP) identifies the LMRAV ecosystem as a wintering habitat of international significance for mid-continental waterfowl populations. Wetlands in the Delta are important to meeting the habitat and population goals of the NAWMP. Mallards are the most abundant wintering waterfowl species in the Delta, followed by gadwalls, greenwing teal, pintails, and shovelers. Diving ducks are also abundant; lesser scaup and ring-necked ducks are the most common species. Wood ducks and hooded mergansers are common nesters in the spring and summer. All of these species are found on Holt Collier and Theodore Roosevelt NWRs.

Shorebirds and Waterbirds. About 20 species of shorebirds use the Complex. Some of the most numerous species are least sandpipers, pectoral sandpipers, lesser yellowlegs, and stilt sandpipers. The Lower Mississippi Alluvial Valley/West Gulf Coastal Plain Shorebird Management Plan recognizes the Delta as important for shorebirds and other non-game waterbirds. Successful long-distance migrants, such as shorebirds, require highly productive stopover sites where they can efficiently forage to replenish fat reserves. They typically require exposed mudflat habitats with an abundance of invertebrates that are shallowly flooded. At Holt Collier and Theodore Roosevelt NWRs, such habitats are provided as seasonal floodwaters recede.

Landbirds and Raptors. A variety of neotropical migratory songbirds are common on the refuges. Year-round residents include the Carolina chickadee, tufted titmouse, northern mockingbird, and red-winged blackbird. Winter birds include yellow-bellied sapsuckers, white-eyed vireo, hermit thrush, yellow-rumped warbler and white-throated sparrow. Raptors include the bald eagle, northern harrier, American kestrel and these hawks: sharp-shinned, Cooper's, broad-winged, and red-tailed.

Reptiles

Although a formal survey of reptiles has not been conducted on either of the refuges, a list of species has been prepared based on species ranges and personal encounters by refuge staff. The list includes American alligators, turtles (15 species); lizards (7 species); and snakes (27 species). Several species of water snakes are common or abundant, especially the broad-banded, diamond-backed, and green water snakes. Poisonous snakes include the copperhead, cottonmouth, and timber (canebrake) rattlesnake. Theodore Roosevelt NWR is known for a high population of cottonmouths. Rat snakes of mixed or uncertain subspecies, are significant nest predators, and are abundant on the Complex. Racers are common. The most common turtle species is likely the red-

eared turtle. Alligator snapping turtles are locally abundant and common snapping turtles are located on both refuges. Soft-shelled turtles occur in some waterways. The ground skink and the broad-headed skink are two of the most common lizard species.

Amphibians

No formal surveys have been conducted on either refuge. The species that may occur on the refuge include: salamanders, toads, treefrogs, chorus frogs, narrow-mouthed toads, cricket frogs, green treefrogs, bull frogs, and southern leopard frogs. Central newts or ambystomatid species are rarely encountered. Sirens or amphiumas are common in suitable habitat.

Fish

Fishery habitat is very limited on both refuges. Four Mile Bayou, a tributary of the Bogue Phalia, traverses Holt Collier NWR. Coon Bayou, a tributary of the Sunflower River, runs through Theodore Roosevelt NWR. Fish populations in both streams consist mostly of rough fish, which can withstand hot, murky water with low oxygen content, including long-nosed gar, buffalo, carp, bowfin, and catfish.

Invertebrates

Invertebrates comprise 97 percent of the animal kingdom. This class of animals is distinguished by the lack of a backbone. While many invertebrates are soft-bodied, some have exoskeletons or shells. Invertebrates include both terrestrial and aquatic species. While many species of insects and arachnids (e.g., spiders) would be expected, these also have not been surveyed. Invertebrates are important sources of food for people and wildlife. Many insects (e.g., bees and butterflies) are essential plant pollinators.

FLORA - PLANTS

No surveys or studies have been conducted on the refuges to document their flora. Appendix I contains a list of species observed by staff on these refuges.

Exotic, Invasive, and Nuisance Species

Invasive animals are present in various refuge habitats. Unlike indigenous species, these species typically do not have any natural predators to limit their populations and they can out-compete native animals for food and other resources. Feral swine are the main invasive species on the refuge. Swine cause extensive habitat damage. They cause mortality to mammals, reptiles, and amphibians through predation and indirectly through competition for food. No current estimates exist for the swine population on the refuges. Nutria populations (introduced from South America) cause much habitat damage, as do beavers. During the latter half of the 20th century, armadillos extended their range into the Delta region of Mississippi, though their impact here has not been fully investigated.

Threatened and Endangered Species

Louisiana Black Bear. The Louisiana black bear is a generally recognized subspecies of the American black bear. It historically occurred in bottomland hardwood forests from eastern Texas throughout all of Louisiana to southern Mississippi. The Louisiana black bear became a threatened species primarily because the habitat of the bear has suffered extensive modification with suitable habitat having been reduced by more than 80 percent as of 1980. The remaining habitat has been reduced in quality by fragmentation due to human activities and structures (USFWS 1995, 1993).

Pondberry. This rarely seen woody plant *(Lindera melissifolia)* grows in seasonally flooded forests and on the edges of sinks and ponds. The 36 remaining populations of the plant are scattered across seven Southern States. In Mississippi, the plant is known to occur in Bolivar, Sharkey, Sunflower, and Tallahatchie Counties. One of the largest populations is within the nearby Delta National Forest.

CULTURAL RESOURCES

Federal agencies are legally mandated to inventory, assess, and protect cultural resources located on those lands that the agency owns, manages, or controls. The Service's cultural resource policy is delineated in the Service Manual sections 614 FW 1-5 and 126 FW 1-3. In the Service's Southeast Region, the cultural resource review and compliance process is initiated by contacting the Regional Historic Preservation Officer/Regional Archaeologist. The Regional Archaeologist will determine whether the proposed undertaking has the potential to impact upon cultural resources, identify the "area of potential effect," determine the appropriate level of scientific investigation necessary to ensure legal compliance, and initiate consultation with the pertinent State Historic Preservation Office (SHPO) and federally recognized Native American tribes.

Numerous cultural resource inventories have been completed on about 25,000 acres throughout the Complex. Comprehensive surveys were conducted on Yazoo, Mathews Brake, and Hillside NWRs prior to and following land acquisition. Yazoo NWR is the only refuge in the Complex that has a number of historic properties likely due to having had the most studies. Five historic properties including the Swan Lake Mounds are part of the Swan Lake Archeological District, which is eligible for inclusion on the National Register of Historic Places.

It is known that several Native Indians inhabited the Delta. The Yazoo, Koroa, and Tunica tribes occupied areas along the lower Yazoo River. This area is now associated with the Choctaw tribes including the Choctaw Nation of Oklahoma, the Jena Band of Choctaws, and the Mississippi Band of Choctaws.

This summary is paraphrased and excerpted mainly from the National Park Services' planning document entitled *Draft Heritage Statement and Environmental Assessment* to implement provisions of the National Heritage Area designation. For a detailed accounting of the history and culture of the Mississippi Delta, view this online document at: *http://www.cr.nps.gov/delta/volume2/history.htm*. For an extensive timeline of Mississippi archaeology and history, see: *http://mdah.state.ms.us/timeline/*.

The first inhabitants of North America are Indians who crossed from Asia (Russia) to North America (Alaska) via an ancient land bridge in what is now the Bering Strait. Native Indians lived in the area we know as the state of Mississippi from about 12,000 years ago. These were the nomadic people of the Stone Age with a hunter-gatherer lifestyle characterized by the use of stone tools and weapons. Their time predated the use of horses or knowledge of the wheel. The Mississippi River provided not only ample sustenance, but it also served as a transportation corridor for the Indians eventually traveling and settling along its length.

Archaeologists use the term “Mississippian” to describe the diverse societies of Indians who inhabited the Mississippi River Valley around 1000 AD. The word “Mississippi” comes from the Algonquin Indian words meaning “great water”. From approximately A.D. 700 to the arrival of the first European explorers during the 16th century, the Mississippians thrived, sustained primarily by the farming of native plant crops. Farming corn enabled the Mississippians to produce food surpluses, which gradually transformed their way of life, yielding more complex social, political, and economic relationships. Eight hundred years ago, the Delta was home to highly organized societies. There were roads, commerce, and cultural centers anchored by awe-inspiring earthen monuments or mounds. Wonders of geometric precision, these earthworks were the centers of life. Some of the earliest were built to bury important members of local tribal groups.

The burial mounds were usually rounded, dome-shapes (e.g., Griffin mound on Yazoo NWR). Several mounds are located on Yazoo NWR; the largest is thought to be a ceremonial mound. Later mounds were rectangular, flat-topped, earthen platforms upon which temples or residences of chiefs were erected. By the time sustained contact with European colonists began around 1700, the long tradition of mound building was reaching its end. Today mounds owned by state or federal agencies are protected along with the lands for which those agencies are responsible. Most of the mounds in Mississippi, however, are on privately owned land. Many mounds have been irreparably damaged or completely destroyed by modern development and looting. As a result, Indian mounds are critically endangered cultural sites. (Indian Mounds of Mississippi, National Park Service 2002).

HISTORICAL PERIOD

The indigenous people had occupied the land thousands of years before the first European explorers arrived. The history and the way of life of Mississippian Indians were profoundly affected by newcomers to the area. The first Europeans to travel through the Delta were the Spaniards of De Soto’s 1540 expedition. The French arrived in the mid-1600s. The Europeans brought with them new ideas, customs, religions, weapons, transport (the horse and the wheel), livestock (cattle and sheep). They also brought diseases against which the Indians had not developed immunities, which caused major losses of the Indian population. Exploitation including the leverage of taxes, enforced labor and enslavement were part of their history, taking their toll on the Mississippian Indians. As a result of depopulation, the surviving Mississippians, who were refugees in their own land, began uniting into new communities, or what the British and Americans would term "tribes."

Trappers and hunters then brought the European fur trade to the Delta in the late 1600s. The Delta region supplied naval stores such as timber, tar, pitch, and other raw materials to the European colonial powers. Europeans, primarily the Spanish and French, and later the British and settlers (early Americans), used the river for moving people and goods. From the time the native people first encountered French explorers and for a 300-year era (roughly between 1519 and 1797), they experienced French (1699-1762), English (1763-1778) and Spanish (1779-1797) warfare, domination and colonization. Enslaved Africans were brought to Mississippi beginning in 1718.

In 1803, the land comprising what is now Mississippi and Alabama was sold to the United States as part of the Louisiana Purchase. Mississippi became a territory of the United States of America in March 1817. President James Monroe signed the enabling act to admit the State into the Union on December 10, 1817.

During the past two centuries, agriculture has been the mainstay of the Delta economy. What began as subsistence farming of extended families, developed into a labor-intensive, plantation system based initially on Native American and later on African slave labor in the 18th century. The emergence of the cotton gin in 1793 revolutionized the production of cotton, further solidifying the

institution of slavery in the South. "King Cotton" came to dominate the southern economy; as cotton production rose, so too did the number of slaves brought there to work the fields. The African-American population in the South rose from approximately 700,000 persons in 1790 to nearly 4 million by 1860. By the mid-19th century, the majority of the nation's cotton was raised in Mississippi, Alabama, and Louisiana.

Starting in the 1830s, the introduction of railroads promoted major changes in the way Americans transported products and people, in turn dictating the success or failure of numerous towns and cities throughout the Delta region. This industrial change would be repeated in the 20th century with the introduction of motor vehicles and the federal highway system.

Following the Civil War, sharecropping and tenant farming replaced the slave-dependent, plantation system. Sharecropping was a system of social and racial control used by post-Civil War plantation owners (often merchants, bankers, and industrialists). It inhibited the use of progressive agricultural techniques. Lower Delta agriculture evolved during the 20th century into large farms of hundreds to thousands of acres owned by nonresident corporate entities. These mechanized, corporate farms produced market-driven crops such as cotton, sugar, rice, and soybeans.

Continuing during the two centuries since the United States was established in 1776, the Native Indians and African Americans endured inequality and injustice. This led to the Civil Rights movement of the 1960s when basic civil rights were given the force of law. It was not until 1969 that all Indians were declared citizens of the United States and until 1979 that the American Indian Religious Freedom Act was passed. To present times, the Mississippi River and its bountiful Delta lands have attracted immigrants from around the world, represented today in a diverse culture of people.

SOCIOECONOMIC ENVIRONMENT

The Mississippi Delta is the distinct, northwest-section of the state of Mississippi that lies between the Mississippi and Yazoo rivers. It includes all or part of 18 counties. Technically, the area is not a delta but part of an alluvial plain, created by regular flooding over thousands of years. This region is remarkably flat and contains some of the most fertile soil in the world. Small farming communities are found along State Highway 1 and U.S. Highway 61. Fields are abundant with crops of corn, cotton, rice and soybeans ready for harvest each fall. The rich, alluvial soil has made this an area known for farming, but it also rich in nature, wildlife, and culture.

Theodore Roosevelt NWR is located adjacent to Delta National Forest, the only National Bottomland Hardwood Forest in the United States. With many trails, it is an excellent place to observe migratory waterfowl. Fishing activities are plentiful, as well as opportunities to hunt for white-tail deer, small game and waterfowl during designated seasons.

The Mississippi Delta region has many monikers. It is known as "The Birthplace of the Blues". It has been called "The Most Southern Place on Earth" because of its unique racial, cultural, and economic history. No matter where you are in the Delta, you'll be surrounded by history, entertainment, and hospitality. In Onward, Mississippi, you will find the origin of the teddy bear. In 1902 from a camp on the Little Sunflower River, President Theodore Roosevelt tried to hunt bear with renowned hunting guide, Holt Collier, an area resident. The unsuccessful hunt made history in another way with the creation of the toy, a result of that outing (USFWS 2006). Theodore Roosevelt NWR and Complex is the only refuge named for an American president. Holt Collier NWR is the first refuge named for an African American historical legend.

President Roosevelt was an avid sportsman and conservationist. After his bear-hunting trip to Mississippi, in 1903, he created the first national wildlife refuge on Pelican Island in Florida. During his Presidency, he went on to establish 51 national wildlife refuges and is remembered today as the father of the Refuge System.

Washington County, which is named after our first President, has a total area of 761 square miles of which 724 square miles are land and 37 square miles are water. The county seat is Greenville (wikipedia.org).

Sharkey County has a total area of 435 square miles; of which 428 are land and the remaining 7 water. This county is named after William L. Sharkey, the provisional Governor of Mississippi in 1865. The county seat is Rolling Fork (wikipedia.org).

DEMOGRAPHIC DATA

The United States Census Bureau estimates that the population of Mississippi was 2,984,926 in July 2012. This is a 0.6 percent increase over the 2010 U.S. Census. While the total population has not increased much, it is a young population with some of the change being due to new births.

Sharkey County has the tenth lowest per capita income in Mississippi and the 73rd lowest among counties in the United States. About 36 percent of families live below the poverty line. In Washington County, about 38 percent of families are impoverished compared to state and national demographics.

Table 1. Demographic data comparison for Sharkey and Washington Counties, the State of Mississippi, and the United States (2010)

Characteristic	Sharkey County	Washington County	Mississippi	United States
Population	4,916	51,137	2,967,297	308,745,538
Median household income	$29,451	$28,591	$38,718	$52,762
Per capita income	$14,750	$16,856	$20,521	$27,915
Persons below the national poverty level	35.8	37.8	22.3	14.9
Median age	38	38	36	37
Percent of population over age 65	14.7	12.5	13.0	13.3
Unemployment rates	10.9	10.9	10.4	9.6

Source:
U.S. Department of Commerce, U.S. Census Bureau 2010 American Community Survey
http://quickfacts.census.gov/qfd/dates/28000.html.

Table 2. Employment by industry

Annual Labor Force Report - 2012	Sharkey Co.	Washington Co.	Mississippi
Manufacturing	0	1,320	137,000
Nonmanufacturing	1,300	16,960	966,200
Natural Resources & Mining - includes agriculture, silviculture, hunting and fishing	220	570	9200
Construction	20	350	48,300
Wholesale Trade	60	850	34,400
Retail Trade	170	2,640	133,500
Transportation and Warehousing	30	860	47,900
Information	10	290	12,500
Finance and Insurance	40	410	32,700
Real Estate, Rental and Leasing	20	230	11,500
Professional and Business Services	30	1,370	96,900
Educational Services	30	170	12,200
Health Care and Social Assistance	140	1,840	121,100
Arts, Entertainment and Recreation	0	370	11,000
Accommodation and Food Service	40	1,860	110,900
Other Service	30	760	37,900
Government	420	4,360	246,200
Education	180	1,400	106,800
Total Nonagricultural Employment	1,300	18,280	1,103,200

Source: Mississippi Department of Employment Security – Annual Labor Force Report- Year 2012

ECONOMY, RECREATION, AND TOURISM

The Bureau of Economic Analysis estimates that Mississippi's total state product in 2010 was $98 billion. Per capita personal income in 2006 was $26,908. While Mississippi has the lowest per capita personal income of any state, it also has the nation's lowest cost of living. And, Mississippians consistently ranks high per capita in their charitable contributions.

On August 30, 2007, a report by the United States Census Bureau indicated that Mississippi was the poorest state in the country. Many cotton farmers in the Delta have large, mechanized plantations, some of which receive extensive federal subsidies. Yet many other residents remain poor in this rural area, laboring on farmland they cannot afford to own. There has been little federal assistance apportioned for rural development. See *http://en.wikipedia.org/wiki/Mississippi#Economy*.

The legislature's 1990 decision to legalize casino gambling along the Mississippi River and the Gulf Coast has led to economic gains for the State. In 2007, Mississippi had the third largest gambling revenue of any state. Federally recognized Native American tribes have established gaming casinos on their lands, which are yielding revenue to support education and economic development.

While Mississippi has been especially known for its music and literature, it has embraced other forms of art. Its residents' strong religious traditions have inspired striking works by independent artists who have been shown nationally. Jackson established the USA International Ballet Competition, which is held every four years. This ballet competition attracts the most talented young dancers from around the world. The Magnolia Independent Film Festival is the first and oldest in the state. *The New Southern View Ezine* is the state's first online magazine. Musicians of the state's Delta region were vital to the development of the blues. The state is creating a Mississippi Blues Trail, with dedicated markers explaining the foremost sites where blues music originated. The Delta region's unique culture and historic importance is reflected in its being designated a National Heritage Area in 2009 as discussed in Chapter 2. (*http://en.wikipedia.org/wiki/Mississippi#Culture*)

REFUGE ADMINISTRATION AND MANAGEMENT

LAND PROTECTION AND CONSERVATION

Management policies of the refuges are designed to conserve, restore, and enhance in their natural ecosystems all imperiled animals and to manage for endemic habitats and species.

Land Acquisition

Land acquisition is a tool used to set aside habitat for wildlife in perpetuity, through the purchase of land in fee title from willing sellers. The refuges' approved acquisition boundaries identify priority parcels for acquisition. However, the sale of those properties is contingent upon the landowners' willingness to sell and the availability of funds to purchase them.

Funding for land acquisition within the approved acquisition boundaries of Theodore Roosevelt and Holt Collier NWRs would come from the Land and Water Conservation Fund; the Migratory Bird Conservation Fund; U.S. Army Corps of Engineers' mitigation programs; or donations from conservation and private organizations. Conservation easements and leases can be used to obtain the minimum interests necessary to satisfy refuge objectives if the refuge staff can adequately manage uses of the areas for the benefit of wildlife. The Service can negotiate management agreements with local, state and federal agencies, and accept conservation easements.

The National Survey of Fishing, Hunting, and Wildlife-associated Recreation (National Survey) has been conducted about every 5 years since 1955. It provides information both statewide and nationally on the number of participants in fishing, hunting, and wildlife watching (observing, photographing, and feeding wildlife), and the amount of time and money spent on these activities.

The National Survey (USFWS 2011) contains information on the number of persons who participated in wildlife-related recreation in Mississippi in 2011. It found that 1.4 million persons age 16 and older fished, hunted, or watched wildlife in Mississippi. Of the total number of participants, 651,000 fished, 483,000 hunted, and 781,000 participated in wildlife-watching activities. The economic contributions from wildlife-dependent recreation are also reported by state. For Mississippi, in 2011, residents and non-residents spent $2.6 billion on wildlife recreation. Of that total, trip-related expenditures were $650 million and equipment expenditures totaled $1.7 billion. The remaining $268 million was spent on licenses, contributions, land ownership and leasing, and other items.

The National Survey also contains information on wildlife-related recreation throughout the United States. It notes that over 90 million U.S. residents 16 years old and older participated in wildlife-related recreation in 2011. During that year, 33 million people fished, 14 million hunted, and 72 million participated in at least one type of wildlife-watching activity including observing, feeding, or photographing fish and other wildlife in the United States.

Wildlife recreationists' avidity also is reflected in the $145 billion they spent in 2011 on their activities, which equated to 1 percent of the Gross Domestic Product. Of the total amount spent, $50 billion was trip-related, $70 billion was spent on equipment, and $25 billion was spent on other items such as licenses and land leasing and ownership. Sportspersons spent nearly $90 billion in 2011—$42 billion on fishing, $34 billion on hunting, and $14 billion on items used for both hunting and fishing. Wildlife watchers spent $55 billion on their activities around the home and on trips away from home.

Public Access

Holt Collier NWR has limited public access. It is accessible on the west side via U.S. Highway 61 and Avon-Darlove Road and on the south side via State Highway 12 and Watson Road. Access is affected by weather conditions as the local roads are mostly gravel. A hunter check station, which serves as the only visitor contact station, is the only public facility.

Being closed to public use, Theodore Roosevelt NWR has no access, however, it has road frontage that allows for scenic and wildlife viewing. When opened, the primary access point will be via Omega Road in Sharkey County.

Priority Public Uses

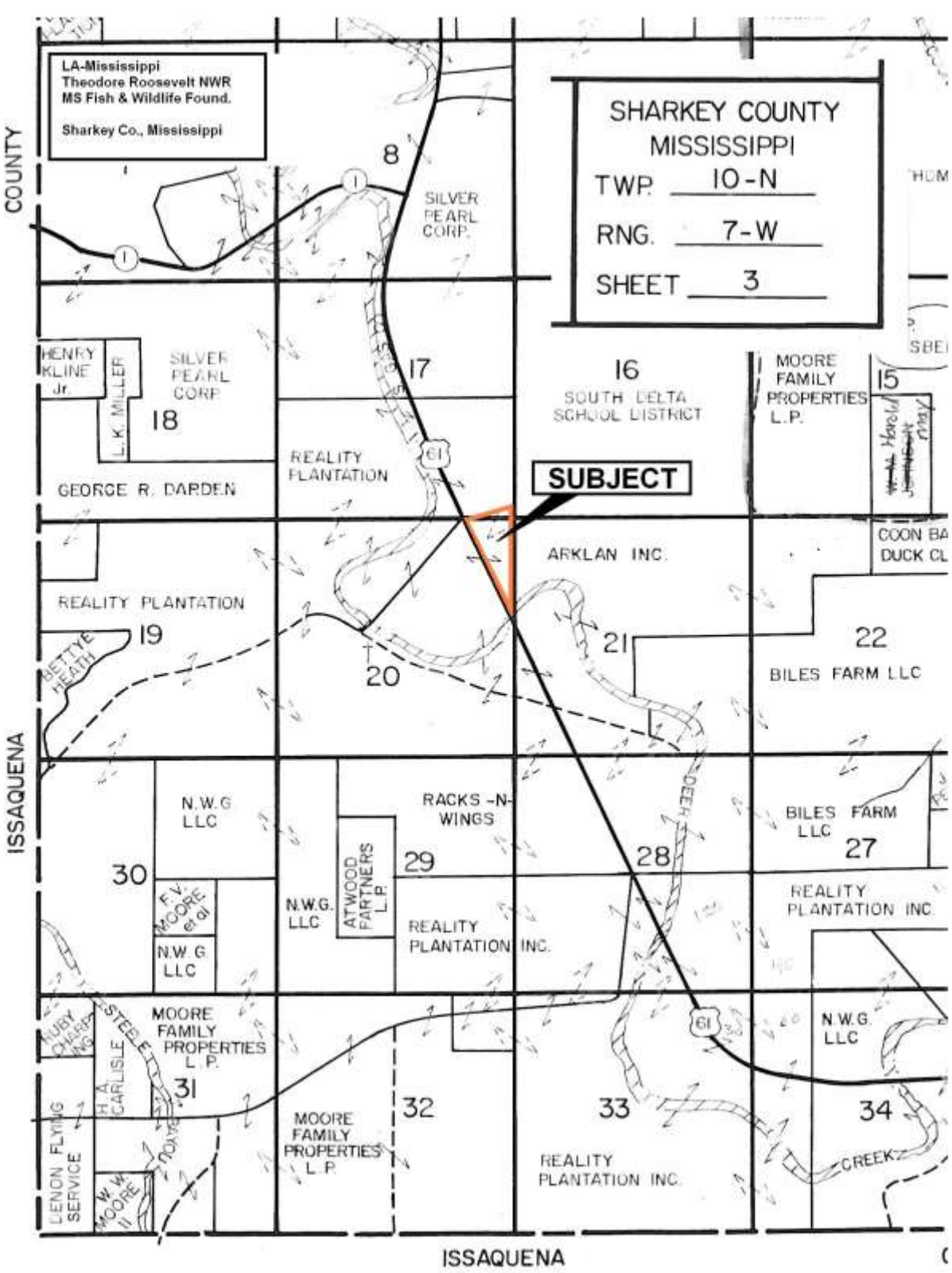
The Improvement Act established six priority wildlife-dependent public uses on national wildlife refuges if they are compatible with the purposes of each refuge. These priority uses are hunting, fishing, wildlife photography, wildlife observation, environmental education and interpretation. Holt Collier NWR offers all but fishing. Hunts include muzzleloader and archery deer hunts. Small game hunts (i.e., rabbit-hunting) are also offered. There are no formal programs or facilities, such as trails, observation towers or photography blinds available for wildlife observation or photography, but these uses are allowed. Environmental educational or interpretive activities may be conducted in areas and at times approved by the Refuge Manager.

PERSONNEL, OPERATIONS, AND MAINTENANCE

Seven refuges are administered by the Theodore Roosevelt NWR Complex: Hillside, Holt Collier, Matthews Brake, Morgan Brake, Panther Swamp (Headquarters), Theodore Roosevelt, and Yazoo NWRs. The Complex currently has 14 full-time positions, two of which are vacant. Four of the 14 positions are based at Yazoo NWR, and support Yazoo NWR as well as Theodore Roosevelt and Holt Collier NWRs. They include: a Wildlife Refuge Manager, a Federal Wildlife Officer, and an Engineering Equipment Operator. There is also a vacant Biological Technician.

There are no facilities on Theodore Roosevelt or Holt Collier NWRs. Appropriations were made in 2004 for the building of the Theodore Roosevelt NWR Complex Visitor Center to be located at Theodore Roosevelt NWR (see Figure 8). The Fiscal Year 2014 budget for Yazoo NWR (including Holt Collier and Theodore Roosevelt refuges) was $514,110 for payroll, utilities, and operational and maintenance needs. This only supports the operation of Yazoo NWR.

Figure 8 – Proposed site of the Visitor Center for Theodore Roosevelt NWR Complex



III. Plan Development

PUBLIC INVOLVEMENT AND THE PLANNING PROCESS

This CCP for Theodore Roosevelt and Holt Collier NWRs was prepared in accordance with Service guidelines and in compliance with the National Environmental Policy Act of 1969 (NEPA). This law requires the Service to include public involvement in its comprehensive planning efforts. A summary of that involvement is included in Appendix D and described below.

Letters were sent to the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) and four Native American Indian tribes in early 2013 inviting them to participate in the comprehensive planning process. The MDWFP appointed James Callicutt as the state's liaison to the Service for this effort. Mr. Callicutt is a biologist with the Department's Waterfowl Program. In 2013, a planning team of Service staff and the MDWFP representative started meeting regularly to develop a CCP for the refuges.

A public notice announcing the Service's intent to prepare a CCP for the refuges was published in the *Federal Register* on July 30, 2013. An advertised public comment period was held from July 30 through August 29, 2013. Notices informing the public of the CCP scoping process and were published in local newspapers and other media (e.g., television and radio) and provided to libraries. Three comment letter/emails were received during the public scoping period and are summarized in Appendix D. The CCP team considered the public and partner agency advisory comments and prioritized the issues to be addressed by the Service over the 15-year life of the CCP.

PRIORITY RESOURCE ISSUES

The planning team identified nine priority resource issues related to fish and wildlife population management, habitat management, resource protection, visitor services, and refuge administration. The priority resource issues are summarized below.

FISH AND WILDLIFE POPULATION MANAGEMENT

1. Threatened and Endangered Species
The protection and recovery of threatened and endangered plants and animals is an important responsibility of the Service and a mission of national wildlife refuges. Two imperiled species may use the refuges – the threatened Louisiana black bear and the endangered pondberry plant. Recovery plans for the Louisiana black bear identify and address the need to reestablish over time a population within its historical range, including the State of Mississippi. The large blocks of interior forest in the region, as occur in Panther Swamp NWR and Delta National Forest, could potentially be sites for reestablishment.

Pondberry is known to occur in areas surrounding the Complex (e.g., Delta National Forest). There have been attempts by USDA Forest Service researchers to reestablish and study small plantings of pondberry on various refuges. A formal survey needs to be conducted to determine whether any plant communities exist on the refuges. It should also ascertain whether the refuges have any areas of suitable habitat for pondberry reestablishment.

2. Invasive Species
The extent of invasive species that occur on the refuges is unknown. The most prominent and destructive animal species is feral swine, which causes extensive habitat damage. Swine also cause direct mortality to other mammals via predation and they provide competition for food. Alternative

means of controlling the population need to be evaluated.

3. Migratory Birds
Both refuges are located within the Lower Mississippi River Alluvial Valley, one of the most important regions for wintering waterfowl in North America. A principal conservation and management consideration is to provide sufficient sanctuary and foraging resources as part of a complete wetland complex for waterfowl. Through active habitat management, these refuges have the potential to provide more waterfowl habitat as well as suitable habitat for other migratory waterbirds.

HABITAT MANAGEMENT

4. Bottomland Hardwood Management and Restoration
Historically, the Lower Mississippi River Alluvial Valley contained 25 million acres of forested wetlands. The extent and duration of flooding from the Mississippi River fluctuated annually and served to recharge aquatic systems, thereby creating rich, dynamic habitats that supported diverse fish and wildlife populations. Over decades, land clearing and flood control measures increased as agriculture and the population expanded into the floodplain. Now the Valley is bisected by levees and many flood control structures. Reduced to fragments and only a fifth of its historic range, less than 5 million acres of bottomland-hardwood forests remain presently. With the decline of the forest, fish and wildlife resources have diminished. Reforestation has been done on Holt Collier NWR since the 1990s and on Theodore Roosevelt NWR in the past decade. There is a need to acquire land and to restore and/or mimic the historic hydrologic cycle of flooding that drives the Valley's ecology.

RESOURCE PROTECTION

5. Cultural Resources
There is a need to identify cultural resources that could be located on the refuges. Within the Complex, a need exists to showcase the cultural heritage of the region.

VISITOR SERVICES

6. Provide Priority Public Uses
The National Wildlife Refuge System Improvement Act of 1997 established six priority public uses on refuge lands when they are compatible with the defined purpose(s) of that refuge. The priority uses are hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. There are currently no facilities to support these uses on either refuge and Theodore Roosevelt NWR is closed to the public. With adequate staff and funding, a variety of wildlife-dependent public uses could be developed between both refuges for refuge visitors.

7. Visitor Center
The Complex currently maintains three administrative buildings--the Complex headquarters at Panther Swamp and refuge offices at Yazoo and Morgan Brake NWRs. The need exists to construct new facilities to welcome and orient visitors and to provide visitor service programs. Funding has been appropriated to build a Visitor Center to showcase the Complex's primary Visitor Services themes – the natural and cultural heritage of the refuges within the regional (Delta) area.

REFUGE ADMINISTRATION

8. Administrative Resources Shortage
Adequate staffing, funding, and facilities are needed to fulfill the refuges' purposes. Currently, there is no staff dedicated to the two refuges exclusively beyond the Refuge Manager. Funding received for Yazoo, Theodore Roosevelt, and Holt Collier NWRs is not sufficient to meet the needs beyond those of operating Yazoo NWR. There are no facilities on either refuge and some abandoned structures that must be removed. Before Theodore Roosevelt NWR could be opened to public use, this would need to be addressed.

9. Partnerships
There is a need to establish partnerships for all areas of management on the refuges. A Friends group is needed to provide both financial and volunteer support to the refuges/complex. Partners could be used to assist refuge staff, conduct studies, raise funds, and share resources.

WILDERNESS REVIEW

The Service's planning policy requires a wilderness review as part of the comprehensive conservation planning process for all refuges. The purpose of the wilderness review is to identify and recommend for congressional designation any Refuge System lands and waters that merit inclusion in the National Wilderness Preservation System. The Service inventoried the current land holdings within the approved acquisition boundaries of both refuges and found that none meet the eligibility criteria for a wilderness study area, as defined by the Wilderness Act. Therefore, the suitability of the refuges lands for wilderness designation is not further analyzed in this CCP. The results of the wilderness inventory and review are provided in Appendix H.

IV. Management Direction

INTRODUCTION

The Service manages fish and wildlife habitats considering the needs of all resources in decision-making. Fish and wildlife conservation assumes priority in refuge management. A requirement of the Improvement Act is for the Service to maintain the ecological health, diversity, and integrity of refuges. Public uses are allowed if they are appropriate and compatible with wildlife and habitat conservation and the purposes for which each refuge was established. The Service has identified six priority wildlife-dependent public uses. These uses are: hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. This CCP emphasizes these uses.

Three alternatives were developed for managing the refuges and were considered in the Environmental Assessment for Theodore Roosevelt and Holt Collier NWRs (see Section B). Alternative A (Current Management) is the No Action alternative. Alternative B is the proposed alternative. An optional alternative is Alternative C. Described below is the comprehensive conservation plan for managing the refuges over the next 15 years. This management direction contains the goals, objectives, and strategies that will be used to achieve the refuges' vision. For both refuges, it will enable the Service to expand their land area, provide the priority public uses, and manage the refuges for priority species. The addition of the Visitor Center at Theodore Roosevelt NWR provides the opportunity to welcome visitors and promote the Delta area's natural resources and cultural heritage. We would continue with tasks and operations that are either self-supporting or require minimal commitments of funds or staffing. At such time that additional resources or increasing budgets may allow for refuge operations, then the Service would take on additional responsibilities and provide opportunities on both refuges for the big six public uses. These would be phased in as staffing and the land area can accommodate.

VISION

Theodore Roosevelt and Holt Collier National Wildlife Refuges are located within the Mississippi Delta. Established for conservation purposes, these refuges contribute to the vision of the Theodore Roosevelt Complex: to protect, manage, and, restore a system of lands and waters that provide habitat for wildlife and fisheries within the Lower Mississippi River Ecosystem.

We envision that conservation, partnerships, habitat management, environmental education, research, and priority public uses will be undertaken to further the effectiveness of these refuges. Habitat fragmentation will be reduced over time by providing additional protected habitats for migratory birds and other federal trust species via land acquisition from willing donors or sellers. A sizeable bottomland hardwood forest will result in time through reforestation and restoration efforts on adjacent lands within acquisition boundaries. Special focus will be given to natural riverine systems, wetlands, and the promotion of habitat for migratory birds as these lands amass.

With our conservation partners, we will expand, protect, restore, and enhance the habitats of these refuges, as well as, promote recreational use, environmental education, and sound science-based stewardship for the benefit of present and future generations.

GOALS, OBJECTIVES, AND STRATEGIES

REFUGE GOALS

Goal 1. Wildlife and Population Management

Maintain species representative of the Lower Mississippi River Valley, with special emphasis on waterfowl, other migratory birds, and imperiled species.

Goal 2. Habitat Management

Maintain habitats to support waterfowl, other migratory birds, and imperiled species.

Goal 3. Resource Protection

Protect cultural and historic resources for future generations.

Goal 4. Provide Visitor Services

Develop programs for the public which promote wildlife-dependent recreation, environmental education, and interpretation and the cultural heritage of the Delta. Provide and promote public use that leads to enjoyable experiences and a greater understanding of fish, wildlife, and habitat conservation.

Goal 5. Refuge Administration

Seek to obtain and provide sufficient infrastructure, staffing, partnerships, and administrative support to meet the refuges' goals and objectives for managing their natural resources.

SUMMARY

As these are newer refuges authorized by Congress in 2004, the focus of this plan is to develop them. Congress established the refuges with a mandate to grow them to their designated land acreages. Therefore, our efforts over the next 15 years will be focused on land acquisition to build-out the refuges to their approved acquisition boundaries. Passive habitat protection and the addition of new resource lands beneficial to wildlife will help preserve habitat in perpetuity and to lessen fragmentation. This plan has the objective of providing sanctuary for migratory species as a group, not just priority waterfowl species. White-tailed deer management would continue through the Holt Collier NWR hunt program and eventually at Theodore Roosevelt NWR. Integrated damage control of invasive and nuisance species would lessen their negative effects on the refuges' habitats.

Another primary focus of the plan is to create a visitor services program that provides opportunities for wildlife-dependent recreational uses. The priority public uses would be phased into both refuges as their areas are amassed and staffs become available. Compatibility determinations are updated and proposed for these and other uses (e.g., research). For both refuges, some commercial uses would be allowed under a Commercial SUP, including commercial photography, firewood gathering, timber harvest for forest management, and trapping. See Appendix F for a full description.

The legislation that created the refuges also funded a Visitor Center to provide visitor services and to promote the Delta area's natural resources and cultural heritage. A major focus of this plan and Service efforts will be to site, build, and staff the Visitor Center. Once a location is secured for the

Visitor Center, regular Service procedures would be followed for site and building design and construction. Key interpretive messages would focus on natural resources (e.g., Louisiana black bear) and cultural heritage and would reach a broader audience and geographic area. Staff would be hired to run the Visitor Center, to provide environmental and interpretive programs, and to coordinate volunteers.

The basic administrative and operational needs of the refuges have been addressed. This CCP assumes a modest growth of refuge resources over its 15-year implementation period. Essential new staffing is proposed through the addition and funding of three permanent employees to be added to the Complex. Current partnerships would be maintained and new ones would be sought including the creation of a Friends group.

Funding for basic facilities on the refuges would be sought. Funding would be needed for the Visitor Center to maintain the grounds and structure. Signage or posting of the refuges' boundaries and regulations may be required. Once the Visitor Center is built, funding would be needed for equipment to maintain it and for shop and storage facilities, if not included in the design/site plan.

The goals, objectives, and strategies presented are the Service's responses to the issues, concerns, and needs expressed by the planning team, the refuge staff and partners, and the public. They reflect the Service's commitment to achieve the mandates of the Improvement Act, the mission of the Refuge System, and the purposes and vision of the Complex and the refuges. Assuming adequate resources are provided through Congressional budget and grant funding, the Service aims to accomplish these goals, objectives, and strategies within the next 15 years.

FISH AND WILDLIFE POPULATION MANAGEMENT

Goal 1. Maintain species representative of the Lower Mississippi River Valley, with emphasis on waterfowl, other migratory birds, and imperiled species.

Discussion: The objectives for this goal are designed to keep common, native species of the Delta and refuges from becoming imperiled and to restore populations of native Delta species that have been reduced due to habitat fragmentation, hydrologic alteration, and over harvesting. This goal focuses on population management objectives including providing habitat on the refuges.

In contrast, Goal 2 - Habitat Management, focuses on objectives for acquiring, maintaining and restoring habitat for these priority species. As land acquisition will be a primary activity of the Service during the timeframe of this plan, new lands will be available to provide additional habitat for migratory birds as a group and for imperiled species. Land protection and forest management objectives are also included in Goal 2.

Objective 1.1. Migratory Birds – Create partnerships to provide quality habitat for migratory birds on the refuges.

Discussion: At least 225 species of migratory birds are known to use Complex lands including 77 breeding species. No bird surveys have been conducted at Holt Collier and Theodore Roosevelt NWRs. As these refuges are located strategically in the Mississippi Flyway, it is likely they provide habitat and resources for some of these species. Waterfowl has been and remains the priority species for management within the Complex. More specifically, these waterfowl groups are most prevalent on the Complex: nesting ducks, wintering dabblers, divers, and geese. The Complex meets or exceeds the foraging resource objectives that step-down from the Lower Mississippi Valley Joint Venture initiative for waterfowl. These two refuges would further support and enhance those efforts.

Strategies:

- Seek partnerships to create impoundments that provide feeding and loafing areas for waterfowl.
- Maintain a seasonal flooding regime and manipulate water levels as appropriate.
- Implement cooperative farming agreements as detailed in the proposed compatibility determination (see Appendix F).
- The Refuge Manager will continue to approve Special Use Permits for wildlife research conducted by outside agency partners on the refuges if they benefit migratory birds.
- Continue to support data calls by the Service's Inventory and Monitoring teams as they compile regional survey data.

Objective 1.2. Imperiled species - Continue to support the regional efforts to meet recovery objectives where possible on the local (refuge) level for any threatened or endangered species, or to support the consideration of future candidate species.

Discussion: Currently, there is one imperiled animal species known to occasionally occur in the vicinity of the refuges—the Louisiana black bear. While once common across Southern Mississippi, Louisiana, and East Texas, extensive hunting and habitat loss in the 1900s caused the Louisiana black bear to be reduced to isolated populations. It is now a federally threatened species for which a recovery plan was issued in 1993.

Bears are wide-ranging and have big territories. They need a varied range of habitats to meet their needs: food, water, cover and den sites. There is a need to reestablish connectivity between the populations, to improve genetic variety, and to reverse the tide of habitat fragmentation. The need for connectivity is commonly known as providing habitat for bear travel "corridors". Goal 2 addresses the bears' habitat needs. The MDWFP has taken the lead on regional recovery and designated a biologist for bear research and monitoring in Mississippi.

Strategies:

- The Refuge Manager will continue to approve Special Use Permits for wildlife research conducted by outside agency partners on the refuges if they benefit imperiled species.
- Continue to support data calls by the Service's Inventory and Monitoring teams as they compile regional survey data of imperiled species.
- Continue to support State research and monitoring efforts for the Louisiana black bear.

Objective 1.3. Native Wildlife – Provide habitat and actively manage for priority species' populations.

Discussion: The most common large mammal on the refuges is white-tailed deer. The Louisiana black bear, discussed in Objective 1.2, is occasionally seen on the Complex. Medium-sized mammals include opossum, eastern cottontail and swamp rabbits, beaver, muskrat, red fox, gray fox, striped skunk, river otter, and bobcat. River otters have made a comeback in recent years. Raccoons are abundant. The following small mammal species are thought to inhabit the refuges: shrews, bats, chipmunks, squirrels, rats, mice, voles, weasels, and mink. Being unstaffed and unfunded refuges for the decade since their establishment; little to no baseline data exists not only for mammals, but also for fish, amphibians, reptiles and invertebrate species.
There is active management for white-tailed deer, a priority mammal species. Other native species do benefit from habitat protection as well as from other techniques (waterfowl and timber management) conducted on the Complex.

Strategies:

- The Refuge Manager will continue to approve Special Use Permits for wildlife research conducted by outside agency partners on the refuges if they benefit native wildlife.
- Continue to support data calls by the Service's Inventory and Monitoring teams as they compile regional survey data of native wildlife.
- Baseline surveys could only be conducted if staffing, outside assistance, grant or study funding opportunities arise.
- Continue to manage the white-tailed deer population through the Complex's hunting program.
- Once Theodore Roosevelt NWR is of sufficient acreage to host it, work with State partners to determine deer management objectives by establishing a hunt program.
- Consider the re-establishment of a wild turkey population on the refuges.
- Manage a healthy alligator population for their protection and to enhance opportunities for public-viewing, a major draw for visitors to wildlife refuges.

Objective 1.4. Invasive and Nuisance Animal Species - Integrated Damage Control. Continue opportunistic operations and seek new partnerships to implement integrated damage control programs on both refuges. Through various tactics and techniques, and by using partnerships, control nuisance, pest, predator, and invasive species on an ongoing and as-needed basis.

Discussion: Invasive animals are present in various habitats on the refuges. These are species that interfere with or threaten the attainment of Complex objectives, or that pose a threat to human health. Unlike indigenous species, these species typically do not have any natural predators to limit their populations. They can out-compete native animals for food and other resources. Feral swine are the main invasive species on the refuges. Swine cause extensive habitat damage and negatively affect wildlife through direct mortality to mammals, reptiles, and amphibians etc. via predation and also from competition for food. No current estimates exist for the swine population on the refuges.

Nutria populations (introduced from South America) cause much habitat damage as do beavers who have thrived in bottomland hardwoods due to a lack of, or a reduced number of, natural predators. Beavers construct large dams and block water control structures, holding back or deepening water. The resultant flooding kills trees. Raccoons are abundant and tend to overpopulate. Along with skunks and beavers they have become nuisance species. In the Complex, they eat crops planted for waterfowl. Raccoons prey on nesting birds, often killing the occupant during the nest incubation which limits cavity-nesting species. They also spread diseases including rabies. During the latter half of the 20th century, armadillos extended their range into the Delta region of Mississippi. Their impact here has not been fully investigated. Coyotes are a recent arrival with the first Mississippi sightings recorded in the mid-1980s. Their presence is thought to have caused the scarcity of foxes.

Two bird species also pose a threat to the refuges' wildlife and habitat. In many areas of Mississippi, double-crested cormorant populations are at an all-time high. While not yet present on either refuge, they are known to be a nuisance species to commercial aquaculturists in the area, particularly to catfish farmers, who suffer economic losses due to cormorant depredation on catfish ponds. Huge roosting broods can destroy native trees and ponds on refuges. Snow geese congregate in large numbers on Complex lands during the winter season and consume agricultural grains planted for high-priority migratory waterfowl. Snow goose hunting is promoted on Complex lands through information in hunt brochures and public contact opportunities.

Control of invasive animal species is done opportunistically by Complex staff or partners. Animal species control includes removal by Complex staff and limited harvest during existing hunts on Holt

Collier NWR. There was an Interagency Agreement with the USDA Wildlife Services for trapping at Yazoo, Theodore Roosevelt and Holt Collier NWRs in 2014. Ongoing efforts are needed to lessen the effects of nuisance species on habitat and native wildlife, particularly feral swine.

Strategies:

- Staff will continue to remove nuisance species opportunistically and through trapping and hunting programs on both refuges. See the compatibility determinations in Appendix F for descriptions of these refuge and commercial uses.
- Apply for grants or develop partnerships (e.g., USDA or counties) to control nuisance species opportunistically, for example, along highways that bisect the refuges.
- If cormorants become a nuisance species on the refuges, conduct population management control with the USDA Animal and Plant Health Inspection Service in accordance with 50 CFR 21.47, to minimize habitat damage and wildlife displacement.
- Consistent with the hunting programs proposed for the refuges and described in the hunting compatibility determination (Appendix F), use social media and interpretive means to promote snow goose hunting on the refuges when offered.

HABITAT MANAGEMENT

Goal 2. Maintain habitats to support waterfowl, other migratory birds, and imperiled species.

Discussion: The two refuges have been created from agricultural lands converted from forested wetlands. Historically, the Lower Mississippi River Alluvial Valley contained 25 million acres of forested wetlands. Now forested wetlands are reduced to fragments and occur in only a fifth of their historic range. With the decline of the forest, fish and wildlife resources have also diminished. A major action of this plan will be to acquire new lands for wildlife habitat.

Objective 2.1. Habitat Protection via Land Acquisition – Working with willing sellers/donors and partners, ensure the conservation of sustainable plant communities and wildlife habitats in perpetuity through land acquisition.

Discussion: To fulfill the Congressional mandate for these refuges, acquisition efforts will focus on building base acreage for the refuges to the limits of their approved acquisition boundaries. This action will help reverse habitat fragmentation and establish protected lands, which could provide connectivity to other wildlands and potentially serve as travel corridors for the endangered Louisiana black bear.

Strategies:

- Holt Collier NWR- Continue to seek funding to acquire fee-title interest in lands within the refuge's approved acquisition boundary through land exchanges whenever willing sellers are available.
- Theodore Roosevelt NWR– Continue to acquire lands via trade or donation to build the refuge's land area to the limits of its approved acquisition boundary.
- Imperiled species needs and potential would be considered in acquiring new lands for the refuges, i.e. threatened Louisiana black bear and endangered pondberry habitat.
- As required by the Wilderness Act, within 2 years of acquisition, all new lands would be evaluated for their potential as Wilderness Study Areas.

Objective 2.2. Forest Management – Maintain habitat for native wildlife and imperiled species (i.e., Louisiana black bear).

Discussion: Reforestation has been done on Holt Collier NWR since the 1990s to return the refuge lands to bottomland-hardwood forest, which is more representative of its native environment. Theodore Roosevelt NWR was established from agricultural lands and is now also reforested. Bottomland hardwood forest is now the primary habitat type on the refuges. As the main focus for the 15-year lifespan of this plan is to acquire lands and establish the refuges' land base, reforestation of newly acquired lands will be the priority habitat management activity undertaken by refuge staff and refuge partners. Active forest management will be done as a part of ongoing Complex operations as prescribed in the Complex Forest Habitat Management Plan.

In past plans, a Habitat Management step-down plan would be an objective in a CCP. While Service policy calls for the development of a Habitat Management Plan (HMP) for each refuge, there is presently no biological staff for the refuges or Complex to prepare a plan or implement active habitat management and that is not the primary objective. These are newer refuges that will grow over 15 years. Further, due to budget reductions, the planning function within the Service's Southeast Region has been reduced and the development of step-down plans is not a current regional priority. If, or when, biological staff becomes available, or at such time as the Complex Forest Management Plan is revised, or a plan is initiated for Yazoo NWR, the Refuge Manager would consider including the two refuges within those plans.

Strategies:

- Work with partners to restore newly acquired altered lands as needed by planting trees to return them to forest conditions more like native/natural ecosystems.
- Forest management would be done as needed as a part of refuge operations by prescription as outlined in the compatibility determination (see Appendix F - Timber Harvest for Forest Management) and to support the objectives of the Complex's Forest Habitat Management Plan.
- To adaptively manage forest habitats: host research; maintain current relationships; and encourage new partnerships with nationally recognized organizations, universities and colleges, and other agencies to provide valuable scientific data that will enhance the protection and restoration of native habitats.

Objective 2.3. Water Resources - Hydrology – Work with partners to initiate a hydrologic study for the refuges.

Discussion: Historically, the extent and duration of flooding from the Mississippi River fluctuated annually and served to recharge aquatic systems, thereby creating rich, dynamic habitats that supported diverse fish and wildlife populations. Over decades, land clearing and flood control measures increased as agriculture and the population expanded into the floodplain. Now the Valley is bisected by levees and many flood control structures. At the site level of each refuge, there is a need to understand what the altered environment could support so that using adaptive management; it could be returned to a more natural ecology and hydrology. This study would benefit native wildlife and imperiled species.

Strategy:

- The Refuge Manager will continue to seek partnerships and grant, restoration, or study funding opportunities as they arise.

Objective 2.4 – Exotic and Invasive Plant Species: Integrated Damage Control – On an ongoing and as-needed basis, continue opportunistic refuge operations and seek new partnerships to employ tactics to minimize damage on both refuges caused by invasive plant species.

Discussion: There are no dedicated resources or staff for the control of invasive plant species. This work is done as needed and opportunistically by Complex staff or partners.

Strategies:

- As resources allow, eradicate or control infestations of nonindigenous, invasive plants on all refuge-owned and managed lands by applying pesticides under permit and using best management practices.
- Apply for grants or develop partnerships (e.g., USDA or counties) to control nuisance species opportunistically, for example along highways that bisect the refuges.

Objective 2.5 – Green Tree Reservoirs (GTRs) - Flood impoundments or portions thereof containing mast-bearing trees during the dormant season.

Discussion: Appropriate and effective water management and red oak species perpetuation are keys to a successful GTR. Ideally, GTRs should be flooded only during the dormant period specific to common deciduous hardwood trees in each impoundment. Flooding should not occur before the dormant period starts in late fall (mid-November to late-December) and only rarely after dormancy breaks in the spring. Flooding dates and duration should be varied annually. Periodically, the GTR should not be flooded. Poorly managed water levels resulting in deep water (i.e., greater than 18 inches) provide little benefit to waterfowl. Deep-water flooding for sustained periods will eventually kill trees in the GTR or change the forest to species more tolerant of a deeper water habitat. (Fredrickson et al. 1992).

Strategy:

- As resources allow or through partnerships, enhance forested areas with water control structures and levees to hold winter water.

Objective 2.6 – Pondberry – Assist in the recovery of this plant at the refuge level as applicable.

Discussion: Pondberry, a shrub in the Laurel family, has been listed as federally endangered since 1986. It occurs in seasonally flooded wetlands and swampy depressions. Pondberry populations are rare and have declined in Mississippi due to alteration of natural hydrology and/or destruction of their favored habitats from land clearing or drainage and/or from timber harvest. No natural colonies of pondberry have been discovered on the Complex or refuges, but the refuges are located within the historical range of this species. The plant is found on Delta National Forest, which abuts Theodore Roosevelt NWR.

Strategies:

- Seek a partnership to conduct a baseline survey of the refuges to document whether this plant occurs. If found, consult with Ecological Services in Jackson and review the Pondberry Recovery Plan (USFWS 1993) for actions that could be taken to protect it.
- Seek a partnership to survey the refuges to determine if suitable habitat/host sites exist for reestablishment of this species.

RESOURCE PROTECTION

Goal 3. Protect cultural and historic resources for future generations.

Cultural and Historic Resources

Discussion: With the enactment of the Antiquities Act of 1906 and passage of the National Historic Preservation Act of 1966 and Archaeological Resources Protection Act of 1979, Congress emphasized the importance of cultural resources and sought to protect archaeological sites and historic structures on lands owned, managed, or controlled by the United States. Associated regulations call for: (1) Each agency to systematically inventory the historic properties on its holdings and to scientifically assess each property's eligibility for the National Register of Historic Places; (2) federal agencies are to consider the effects of management actions on cultural resources and seek to avoid or mitigate adverse effects; (3) cultural resources are to be protected from looting and vandalism via informed management, law enforcement efforts, and public education; and (4) groups such as Native American tribes should be consulted to address how a project or management activity may impact specific cultural sites and landscapes deemed important to those groups. The objectives and strategies below outline the Service's plan to achieve its mandated historic preservation responsibilities.

Objective 3.1. Cultural Resources Preservation - Identify and protect cultural resources on the refuges.

Discussion: The aforementioned cultural and historical laws and Department of the Interior and Service policies require federal land managers to integrate cultural resources protection and management into refuge programs, plans, and operations. At present there are no known archaeologic or historic sites or buildings on the refuges. If these were to be found, protection would typically be addressed in refuge operations, by law enforcement patrols, and via consultation with the Regional Archaeologist/Historic Preservation Officer (RA/HPO).

Strategies:

- Integrate cultural resource preservation concepts and practices into the refuges' programs, and modify operations and management plans to protect cultural resources in perpetuity.
- Conduct archaeological or cultural heritage surveys as opportunity arises.
- Refer all requests for activities by refuge staff or others that would potentially affect cultural resources to the RA/HPO.
- Develop and implement law enforcement procedures to protect any resources discovered and require each Complex law enforcement officer to take the Service's Archaeological Resources Protection Act training course.

Objective 3.2. Understanding of Refuge Ecology and Human Impacts – Enhance the public's understanding of, and appreciation for, the refuges' ecology in relation to the historic human influence on the Lower Delta region's ecosystems.

Discussion: The human presence in the area of the refuges goes back thousands of years to prehistoric times. The many generations of human beings who have resided in this area have all used and depended upon its natural resources. Learning the story of evolving human impacts upon natural resources and the environment is important to developing the basis for a sustainable society. In historic times, the Delta has a unique cultural heritage that ties to the creation of the National Wildlife Refuge System through visits by President Roosevelt and his legendary bear-hunting guide,

Holt Collier. Legislation that came with the passage of Theodore Roosevelt NWR included a Visitor Center facility to inform the public and to showcase the area's rich cultural heritage.

Strategy:

- Theodore Roosevelt NWR - Cultural history will be a theme for the Visitor Center. Incorporate information that conveys the areas' natural resources and cultural history/heritage in the development of public environmental education and interpretive programs, exhibits and displays, printed materials (e.g., brochures, tear sheets), social media, and websites.

VISITOR SERVICES

Goal 4. Develop programs for the public which promote wildlife-dependent forms of recreation, environmental education and interpretation, and the cultural heritage of the Delta. Provide and promote public use that leads to enjoyable experiences and a greater understanding of fish, wildlife, and habitat conservation.

Discussion: The public would be provided with opportunities for quality wildlife-dependent recreational activities that are compatible with the primary purpose of wildlife conservation, as staffing levels allow. As identified in the Improvement Act, there are six priority, wildlife-dependent public use activities: hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. The Service would promote outreach opportunities that lead to a greater understanding of and stewardship for the refuges' fish and wildlife and their habitats. Also, the Service will promote the cultural heritage of the Lower Delta region.

Refuges are closed to the public unless uses are specifically allowed. This CCP makes provisions for the allowance of all six priority public uses, as well as several other uses. For details on the public uses that are proposed to be allowed in the refuges, refer to the Compatibility Determinations in Appendix F. To ensure a quality, compatible wildlife-dependent recreational experience, various management tools and restrictions will be applied. For example, some uses may be prohibited in certain areas of the refuge to minimize impacts to environmentally sensitive habitats or wildlife. Other restrictions might be used to prevent conflicts among users. Certain uses may be limited on a seasonal, year-round or permanent basis, or have other stipulations as described in Appendix F.

Objective 4.1. Wildlife-dependent Public Uses – Provide opportunities for appropriate and compatible wildlife-dependent recreational uses on both refuges.

Discussion: Currently, five of the "Big Six" priority (wildlife-dependent) public uses are allowed on Holt Collier NWR: hunting; wildlife observation; wildlife photography; environmental education; and interpretation. Fishing is not offered. Theodore Roosevelt is closed to all public use. No facilities exist on either refuge for visitors. The Service plans to phase in all six priority public uses on both refuges at such time that they are of sufficient acreage and have sufficient staff and/or facility resources to support the uses.

Strategies:

- Approve the draft appropriate use (Appendix E) and compatibility determinations (Appendix F) with plan adoption.
- During the 15-year life of this CCP, revise and update the refuges' appropriate use and compatibility determinations as needed.

- Open Theodore Roosevelt NWR to the Service's priority public uses once the land area and staff resources are adequate to support these uses.
- Interpretation – Provide interpretive programs and develop signs, panels, and materials to help visitors comply with refuge regulations and appreciate the refuges' resources.
- Interpretation - Continue to seek and use offsite locations for displays on interpretive themes and/or attend off-site events. Current activities for the Complex include these events: Great Delta Bear Affair; Mississippi Wildlife Extravaganza; and Career Days at local high schools (e.g., Simmons and Riverside). To increase public contact, expand staff support to attend these and other venues, or as requested.
- Interpretation - Key messages would put focus on cultural heritage, Louisiana black bear, etc. Annually consider themes and how to promote them. For example, to increase public contact, enhance website and social media interpretation and maintain regular updates for site viewers and refuge visitors.
- Environmental Education – Continue to provide these programs as part of ongoing Complex and Yazoo NWR management. Expand staff support to provide programs to a broader geographic area and audience.
- Hunting - See the hunting compatibility determination in Appendix F for full details of the proposed refuges hunting programs. The Complex 2010 Sport Hunting Plan may need to be updated or appended.
- Hunting - Open Theodore Roosevelt NWR for hunting.
- Hunting – Expand hunt opportunities on Holt Collier NWR.
- Wildlife observation and photography – Some opportunities would become available during hunts on both refuges. For Theodore Roosevelt NWR, facilities may be incorporated with the proposed Complex's Visitor Center's design to enhance opportunities for these uses (see Objective 4.2).
- Fishing – Open the refuges to recreational fishing by bank or boat. Theodore Roosevelt NWR may have boat-fishing potential at Coon Bayou and Holt Collier NWR could accommodate bank fishing. See the fishing compatibility determination in Appendix F for full details.

Objective 4.2. Theodore Roosevelt NWR Visitor Center - Build, operate, and maintain the Visitor Center to showcase and promote the Delta Area's natural resources and cultural heritage.

Discussion: With the passage of legislation creating the refuges in 2004, funding was provided for the establishment of a Visitor Center. It is proposed to be located at Theodore Roosevelt NWR (Figure 8). An Environmental Education and Interpretive area will be named for legendary hunting guide to President Theodore Roosevelt, Holt Collier, an area resident. Funding to open, staff, operate and maintain the Visitor Center may have to come from an outside source as there is currently no operating budget for the refuge.

Strategies:

- Approve the draft appropriate use (Appendix E) and compatibility determination (Appendix F) for the siting and operation of the Visitor Center with plan adoption.
- A position is proposed to staff and operate the Visitor Center: a Park Ranger (Visitor Services Specialist) to train and coordinate volunteers.
- The Complex would provide a variety of displays, programs, facilities on environmental education and interpretive themes relevant to the Lower Mississippi River Delta to area residents, school-age children, and visitors with the establishment and operation of the Visitor Center.

Objective 4.3. Provide for commercial and other uses on Theodore Roosevelt and Holt Collier NWRs consistent with the Complex's appropriate use and compatibility determinations.

Discussion: The Complex's Compatibility Determinations (CDs) from the 2006 CCP (Appendix V, pp. 221-224) describe and allow for these four commercial uses on Theodore Roosevelt and Holt Collier NWRs: Firewood Gathering; Commercial Photography; Timber Harvest for Forest Management; and Trapping. The four Complex CDs for commercial uses are proposed to be updated by new CDs proposed for and specific to the two refuges. An updated CD for Research and Monitoring is also proposed for the two refuges. See Appendix F, Compatibility Determinations, for details of the uses, resource impacts, and stipulations to ensure compatibility.

Strategies:

- Approve the research and four commercial appropriate use (Appendix E) and compatibility determinations (Appendix F) with plan adoption.
- During the 15-year life of this CCP, revise and update the refuges' appropriate use and compatibility determinations as needed.

REFUGE ADMINISTRATION

Goal 5. Seek to obtain and provide sufficient infrastructure, staffing, partnerships, and administrative support to meet the refuges' goals and objectives for managing their natural and cultural resources.

Discussion: There is currently no budget or staffing for either refuge. The administrative functions that are associated with operating wildlife refuges include a wide array of activities that are critical to the mission of the Refuge System and the purposes of the refuges. These include: staffing, training, budgeting, planning, partnering, biological monitoring, prescribed fire management, law enforcement, community relations, facilities construction, and maintenance. Protecting the refuges' natural resources and ensuring the safety of visitors are fundamental responsibilities of the Service. Detailed study and design are underway for the proposed construction of a Visitor Center at Theodore Roosevelt NWR.

Objective 5.1. Adequate Administrative Capacity – Secure resources and take administrative actions necessary to complete projects and tasks as outlined in the refuges' annual performance plan in support of the Service's strategic plan and this CCP.

Discussion: Both refuges are currently unfunded, unmanned, and without facilities for proposed future staff or the public. Staff at Yazoo NWR, which is also responsible for the two refuges include: a refuge manager, law enforcement officer, and a heavy equipment operator. A term employee also assists with office work.

The organization chart for the Theodore Roosevelt NWR Complex (Figure 10) includes 14 positions and proposes three new positions. The Complex also works with staff specialists from the Service's Southeast Regional Office for program accomplishments, including imperiled species recovery, land acquisition, information technology, and contracting. The Fiscal Year 2014 budget for Yazoo NWR (including Holt Collier and Theodore Roosevelt NWRs) was $514,110 for payroll, utilities, and operational and maintenance needs.

Strategies:

- Initiate an annual operating budget for the refuges.

- Dedicate permanent, full-time staffing (FTEs) to these refuges to fulfill the workload need identified in this CCP. This CCP calls for adding three positions during the 15-year course of this plan. These include: 1 Wildlife Refuge Manager, 1 Park Ranger (Visitor Services Specialist/Volunteer Coordinator), and 1 Maintenance Worker.
- The use of temporary (term) or student/intern employees would also be considered as funds allow if an operating budget is secured.
- Consider the use of volunteers for maintenance or other uses, worker/campers, etc.
- Enhance and maintain an active, dynamic volunteer and student intern program to assist in all refuge operations, including public outreach, environmental education, wildlife interpretation, biological monitoring, habitat restoration, and facilities maintenance.
- Consider the use of dual and cross-trained positions (e.g., collateral duties) to maximize the use of full-time, permanent employees. Use contracted work to keep the need for permanent employees to a minimum.
- Consider or initiate the use of prison and trustee crews for refuge maintenance work.
- Construct and maintain an appropriate suite of facilities to support programs on the refuges and to ensure safe and efficient operations. Proposed facilities include: the Visitor Center on Theodore Roosevelt NWR, a shop, maintenance, and storage facilities.
- Equipment needs will be assessed periodically at the Complex level.

Objective 5.2. Professional and Safe Setting – Maintain a safe, efficient, and professional working atmosphere for staff and visitors.

Discussion: Maintaining a professional and safe setting is crucial not only for the safety and welfare of staff, but also for the visiting public. Visitors should be treated by the refuge and Service staff in a professional and welcoming manner in order to provide a positive experience and to enhance the safety of the visitor experience. The Complex has step-down plans that detail strategies for meeting these objectives. They include a Safety Plan, Law Enforcement Management Plan (in draft), and a Hurricane/Disaster Plan.

Strategies:

- Implement the Theodore Roosevelt Complex Safety, Hurricane/Disaster, and Law Enforcement Management Plans and review and revise them as needed.
- Ensure that Service personnel meet all annual, mandatory training requirements.
- Provide continuing education, training, and professional development opportunities to all staff to ensure a highly competent and motivated team, for example, through staff retreats, team- building workshops, on- and off-site activities, and detail assignments.
- Encourage training in state-of-the-art processes, such as adaptive management, structured decision-making, GIS, modeling, and integrated database management, to apply advances in wildlife and habitat management strategies.
- Procure and maintain safe and efficient equipment and vehicles to perform operations and maintenance.
- To ensure equipment accountability, maintain equipment maintenance logs and assign responsibility to staff for assigned or used equipment.
- Incorporate sustainable “green” building technology when practical into all future construction and renovation projects for government facilities, consistent with the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, developed by the U.S. Green Building Council.

- Purchase new motor vehicles and equipment that incorporate the highest energy efficiency standards available to reduce the Complex's carbon footprint from operations and maintenance functions.

Objective 5.3. Law Enforcement – Maintain a law enforcement program that will ensure the safety, security, and protection of employees, visitors, real property, equipment, and the wildlife and natural resources of the refuges.

Discussion: Yazoo NWR has one Federal Wildlife Officer for three refuges in the Theodore Roosevelt NWR Complex. Sufficient law enforcement staffing and funding are crucial to the prevention and deterrence of illegal activities, and to bring perpetrators to justice when crimes are committed. A visible law enforcement presence is needed to ensure visitor and employee safety and to protect the refuges' wildlife and natural resources.

Strategies:

- Enhance law enforcement capabilities through ongoing collaboration, partnerships, detail assignments of officers, and cooperative agreements with local, state, and federal enforcement agencies, including, but not limited to, the MDFWP and County Sheriff's Offices.
- Work cooperatively with the Service's Office of Law Enforcement to protect against illegal trade, unlawful commercial exploitation, habitat destruction, and environmental hazards.
- Provide ongoing emergency response for natural disasters (e.g., hurricane details) or other response and recovery activities (e.g., oil spills) and search and rescue efforts.
- Provide information on the refuge rules and regulations, through the use of signs, interpretive programs, and materials (e.g. phone apps and websites).
- Participate in local community law enforcement events (e.g., other venues, booths at fairs) to provide education and outreach programs as part of preventative law enforcement efforts.
- The law enforcement officer would receive annual "refresher" training courses.

Objective 5.4. Refuge Partnerships – Continue developing internal and external partnerships to share equipment, manpower, and expertise in all aspects of refuge administration.

Discussion: The Complex personnel work with partners who provide expertise in specialized fields or disciplines, such as invasive species control, scientific research, etc. Seek and maintain partnerships for all areas of management on the refuges to assist Complex and proposed staff hired to work at these refuges. See Appendix K for a list of existing and potential partnerships.

Strategies:

- Maintain current relationships and encourage new partnerships with conservation organizations, academic institutions, and other agencies to provide scientific data that will enhance the management, protection, and restoration of native species and habitats.
- Use cooperative agreements, interagency agreements, special use permits, and memoranda of understanding to facilitate collaborative research and management activities to meet the refuges' objectives.
- Initiate a Friends group at the Complex level to lend support to the refuges and set up according to Part 633 of Chapters 1-4 of the Service Manual (2014).
- Develop partnerships with energy efficiency specialists and organizations to incorporate sustainable "green" practices into all refuge operations and maintenance functions.

V. Plan Implementation

INTRODUCTION

Under the Improvement Act, Congress legislated a clear mission of wildlife conservation for all national wildlife refuges. Unlike other public lands, refuges are dedicated to the conservation of the Nation's fish and wildlife resources and to the promotion of wildlife-dependent recreational uses if they are compatible with each refuges purpose(s). Priority projects on refuges therefore emphasize the protection and enhancement of fish and wildlife species while balancing the needs and demands for wildlife-dependent recreation and environmental education.

To implement the proposed comprehensive conservation plan for Theodore Roosevelt and Holt Collier NWRs, this chapter identifies nine projects; proposes staffing, equipment, and funding; lists partnership opportunities; describes step-down management plans; and details plan updates and reviews.

PROPOSED PROJECTS

Listed below are the proposed project summaries and their associated costs for fish and wildlife population management, habitat management, resource protection, visitor services, and refuge administration over the next 15 years. This proposed project list reflects the priority needs identified by the planning team and public based upon available information. These projects were generated for the purpose of achieving the Complex and refuges' goals, objectives, and strategies as outlined in the previous chapter detailing the proposed management direction. The links between these projects to the goals and objectives in Chapter IV are identified at the end of each summary.

FISH AND WILDLIFE POPULATION MANAGEMENT

1. Science-based Inventorying and Monitoring of Wildlife Populations and the Pondberry Plant

Science-based inventorying and monitoring are critical to ensuring the biological integrity of the refuges. The information collected through a systematic and standardized inventorying and monitoring program forms the basis for developing, implementing, revising, and evaluating management actions; enables informed decisions; and guides refuge management activities. To date, comprehensive inventories have not been completed for most taxonomic groups in the refuges and only a few species are monitored. This project would address this shortfall by initiating the inventorying and monitoring of top priority species (e.g., migratory birds, colonial nesting birds, pondberry). A baseline survey of biota could be conducted for a first-year cost of $50,000, with a recurring cost of $25,000 (twice over 15 years) for each additional survey as acres are acquired. The total project cost over the 15-year period of the CCP is $100,000. (Linkages: Goal 1, Objectives 1.1, 1.2, 1.3; Goal 2, Objective 2.6).

HABITAT MANAGEMENT

2. Inventory and Control of Invasive Plants and Nuisance Animals

In order to eradicate or control populations of invasive plants and nuisance animals, continued emphasis must be placed on detecting and monitoring the presence, spread, and damage caused by these species, particularly upon listed native plant and wildlife species and their habitats. Outreach and education must also be expanded to inform the public about the negative impacts of invasive

species on the landscape, and to solicit public support for controlling invasive species on private lands as well. This project consists of inventorying, monitoring, and controlling invasive species. The first-year cost of this project is $50,000 for survey and treatment, with an annual, recurring cost the following 14 years of $10,000. The total project cost over the 15-year period of the CCP is $190,000. (Linkages: Goal 1, Objective 1.4; Goal 2, Objective 2.4).

3. Hydrologic Monitoring and Restoration
The Mississippi Delta's hydrology has been completely altered with the construction of levees along the Mississippi River and its major tributaries. Small scale wetland restoration projects have been conducted with success on numerous NWRs and private land. This project will survey and evaluate both refuges to identify certain sites as potential areas for hydrologic and wetland restoration. The first-year costs include $300,000 for survey. A one-time restoration project of 100 acres is proposed at a cost of $2,500 per acre or $250,000. The total project cost is $550,000. (Linkages: Goal 2, Objectives 2.2 and 2.3).

4. Habitat Restoration
A site of roughly 700 acres has been identified at Holt Collier NWR for hydrological restoration and enhancement. It consists of an old catfish farm and is currently owned by a partnering agency, Mississippi Wildlife. This agency and the Service's Realty branch are in current discussions about selling the property to the Service. Once the property is purchased, the Service could restore the hydrology and create a manageable wetland. The project could be done at one time or split into three phases. The total project cost over the 15-year period of the CCP would be about $1.5 million. (Linkages: Goal 2, Objectives 2.2 and 2.3).

5. Land Acquisition
Dozens of land inholdings still remain within the approved acquisition boundary for each refuge. The Service seeks to acquire from willing sellers all available inholdings of vacant, natural habitat. This would enhance our ability to manage large tracts of habitat, expand connectivity across the landscape to facilitate native plant and animal dispersal and movement, and reduce habitat fragmentation. Land values are approximately $3,000 per acre, bringing the total project cost to $3 million over the 15-year period of the CCP. The Service also has the authority to trade FSA tracts for lands within the Theodore Roosevelt NWR where applicable. (Linkages: Goal 1, Objective 1.2; Goal 2, Objective 2.1.).

RESOURCE PROTECTION

6. Posting of the Refuges' Boundaries
A contract for signage and the posting of the refuges' boundaries is needed. The first-year cost of this project will be $50,000. An estimated recurring cost of $10,000 will be needed annually to post the boundaries. Any surveys needed or disputed would be done at a cost of $10,000 per mile. Within 15 years from plan approval, an estimated 5 miles will be surveyed for a total of $50,000. The total project cost over the 15-year period of the CCP is $250,000. (Linkages: Goal 3, Objective 3.1; Goal 4, Objectives 4.1 – 4.3; Goal 5, Objectives 5.2 and 5.3.)

VISITOR SERVICES

7. Outdoor Visitor Facility Improvements and Visitor Center
A Visitor Center, to be located on Theodore Roosevelt NWR (Figure 8), was proposed with the establishing legislation of the Refuge. This comes to the Service with $2.6 million in appropriations for planning, design, and construction of the building. The building would have an annual, recurring cost of $30,000 for operations, utilities, and maintenance. The Visitor Center site (Figure 9) would also have outdoor, interpretive areas and facilities to enjoy nature, such as a boardwalk, demonstration wetland, and two camper pads for resident volunteers. Construction costs for the outdoor facilities would be $150,000 and they would have an annual, recurring cost of $20,000 for utilities and maintenance. The total project cost, excluding the current appropriations ($2.6 million), over the 15-year life of the CCP is $900,000. (Linkages: Goal 4, Objectives 4.1 and 4.2)

REFUGE ADMINISTRATION

8. Equipment Replacement
This project includes vehicle and equipment needs for the refuges including two trucks, an all-terrain vehicle (ATV), a utility-terrain vehicle (UTV), an agriculture tractor with implements, and a commercial mower for daily operations. Regular maintenance of this fleet is required annually and each item would need to be replaced at least once during the 15-year life of this CCP. The cost would be $195,000 to purchase the equipment listed above. An annual, recurring cost of $30,000 is needed to repair and replace equipment. The total project cost over the 15-year period of the CCP is $645,000. (Linkages: Goal 5, Objectives 5.1 and 5.2).

9. Construction and Maintenance Projects
This project includes the following construction and maintenance projects for both refuges: construction of two equipment sheds and one fuel-storage facility. The first-year cost is $150,000 with an annual, recurring cost of $5,000. The total project cost over the 15-year period of this CCP is $175,000. (Linkage: Goal 5, Objective 5.1).

Table 3 summarizes the nine projects and their first-year and annual recurring costs.

FUNDING AND PERSONNEL

Current (2015) staffing for the Theodore Roosevelt NWR Complex includes 16 permanent positions (FTEs), four of which are vacant. Three new, additional positions are proposed to be under the Yazoo NWR management to staff Theodore Roosevelt and Holt Collier NWRs. The duties and costs (salaries and benefits) of the proposed new staff positions for the Complex are shown in Table 4. Figure 10 shows an organizational chart of the current Complex positions and the proposed positions needed to operate Theodore Roosevelt and Holt Collier NWRs.

Figure 9 – Proposed site plan for Visitor Center

Table 3. Summary of plan implementation projects.

PROJECT NUMBER	PROJECT TITLE	FIRST YEAR COST (U.S. $)	RECURRING ANNUAL COST (U.S. $)
1	**Science-based Inventorying and Monitoring of Wildlife Populations and the Pondberry Plant**	100,000 (includes 50,000 first year cost plus 2 follow-up surveys at 25,000 each)	
2	**Inventory and Control of Invasive Plants and Nuisance Animals**	50,000	10,000
3	**Hydrologic Monitoring and Restoration**	550,000 (includes 300,000 survey and 250,000 restoration costs)	
4	**Habitat Restoration**	1,500,000	
5	**Land Acquisition**	3,000,000	
6	**Posting of the Refuges' Boundaries**	100,000	10,000
7	**Outdoor Visitor Facility Improvements and Visitor Center**	150,000	50,000
8	**Equipment Replacement**	195,000	30,000
9	**Construction and Maintenance Projects**	150,000	5,000
Grand Totals		$5,795,000	$105,000

Figure 10. Proposed organizational chart for Theodore Roosevelt NWR Complex.

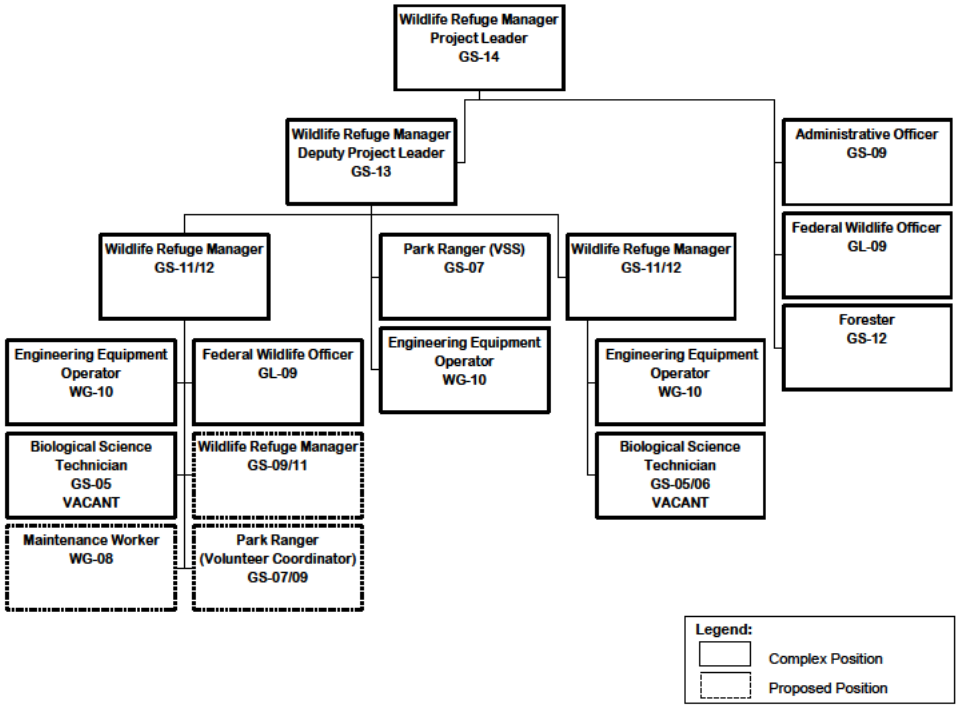


Table 4.
Approximate annual costs of proposed new staff positions for Theodore Roosevelt and Holt Collier NWRs (2014 costs).

Title	Responsibility	Grade	Annual Cost[1] (U.S. $)
Wildlife Refuge Manager	Assistant Manager for Theodore Roosevelt and Holt Collier NWRs	GS-09/11	90,000
Park Ranger (Visitor Services Specialist)	Develop and Coordinate Volunteer Program to Staff Visitor Center Provide EE & I programs	GS-07/09	77,025
Maintenance Worker	Maintenance	WG-08	58,760

[1] *Annual cost includes only salaries and benefits. Other management costs associated with new positions, such as equipment, training, etc. are often estimated at another 25 percent start-up.*

PARTNERSHIP AND VOLUNTEER OPPORTUNITIES

A key element of this CCP is to establish partnerships with local or seasonal volunteers, landowners, private organizations, and state and federal natural resource agencies. Many partnerships already exist to enhance coordination and cooperation on resource management issues with various agencies (e.g., MDWFP, Sharkey and Washington Counties). A list of the established and proposed partnerships is provided in Appendix K.

STEP-DOWN MANAGEMENT PLANS

A comprehensive conservation plan is a strategic plan that guides the direction of refuges. A step-down management plan provides more specific guidance and details on normal refuge operations in certain program areas, such as habitat management, law enforcement, and visitor services. Step-down plans have been prepared at the Complex level. These are described below. The Service proposes to implement, update, and revise as needed, six Complex step-down plans within the 15-year timeframe of this CCP. A list of these plans, their completion dates, and anticipated revision dates is presented in Table 5.

Hunting Plan

This plan will guide the refuges' visitor services and recreation fee programs. It includes strategies to avoid or minimize visitor impacts to wildlife and their habitats, address wildlife population dynamics, visitor access needs, all consumptive use activities, and interpretation and communication of the refuges' valuable resources. It aims to provide quality visitor opportunities for present and future generations.

Forest Habitat Management Plan

The Theodore Roosevelt NWR Complex Forest Habitat Management Plan will guide all forest habitat management activities for the seven refuges of the Complex. Developed in 2010, it will determine actions through 2024. This plan addresses current and desired future conditions of mature forests as well as reforestation areas. Habitat needs and resources of concern are identified along with strategies and prescriptions to benefit all wildlife species, including imperiled species. Various silvicultural techniques are considered in the plan to best enhance habitat conditions. The plan includes parameters for using adaptive management principles to fine-tune management and improve results for targeted priority wildlife species, species assemblages, and habitats. Monitoring desired forest conditions through time will help determine which silvicultural manipulations are needed to provide optimum habitat. The plan also addresses native and nonnative plant and animal species (e.g., kudzu, beaver, swine) that may require direct management strategies and intervention to control their abundance, distribution, and impacts upon the forest resources of the Complex.

Fire Management Plan

Department of Interior policy requires that every managed area with burnable vegetation have an approved fire management plan consistent with firefighter and public safety policies; values to be protected; and land, natural and cultural resource management plans. The Theodore Roosevelt NWR Complex Fire Management Plan was approved in 2010. It addresses public health issues and potential wildland fire occurrences including the full range of responses to wildland fire. It also addresses the potential for prescribed fire to take place. This plan is consistent with the intent of the Service's Fire Management Handbook, the Interagency Fire Management Plan template of April, 2009, and the Guidance to Implementation of Federal Wildland Fire Management Policy.

Law Enforcement Plan
This plan provides a ready reference to Service, Regional and station policies, procedures, and programs for refuge law enforcement. It describes the objectives of the law enforcement function on the seven refuges of the Complex and notes three priority categories: refuge-specific violations; state fishing and boating safety regulations; and easement and encroachment violations. It details the scope of law enforcement authority: jurisdiction; active memoranda of understanding; and authorities of refuge officers both on and off the refuges. The plan describes preventative law enforcement operations as well as procedures for violations and crimes on refuge/Complex lands; surveillance and patrols; evidence handling; and investigations. It outlines procedures for arrests, case management, searches and rescues, traumatic incidents and medical emergencies. The plan also describes procedures for imperiled species and for physical asset inspection and security. It details cooperative efforts with other law enforcement agencies and provides a current list of these contacts.

Safety Plan
The goal of the safety program is to provide an occupationally safe and healthful environment for the visiting public and federal, cooperative, contractual, and youth personnel; to minimize unsafe acts and work-related illnesses through education, training, and the use of recognized management techniques; to identify and correct hazardous conditions; to minimize accidental property damage or loss; and to make safety and environmental health an integral part of every task.

Hurricane/Disaster Plan
This plan is updated annually to outline general procedures to prepare for the protection of facilities, employees, and natural resources before, during, and after extreme weather events, particularly hurricanes, tornadoes, floods, ice storms and other natural disasters.

Table 5. Theodore Roosevelt NWR Complex Step-down Management Plans

Theodore Roosevelt NWR Complex Step-down Management Plans	Revision or Completion Date
Hunting Plan (2009)	2016
Forest Habitat Management Plan (2010)	2024
Fire Management Plan (2010)	2015
Law Enforcement Plan (in draft)	2015
Safety Plan (2014)	2018
Hurricane/Disaster Plan (2013)	Updated Annually

MONITORING AND ADAPTIVE MANAGEMENT

Adaptive management is a flexible approach to long-term management of biotic resources that is directed over time by the results of ongoing monitoring activities and other information. More specifically, adaptive management is a process by which projects are implemented within a framework of scientifically driven experiments to test the predictions and assumptions outlined within a plan.

To apply adaptive management, specific surveying, inventorying, and monitoring protocols will be adopted for the refuges. The habitat management strategies will be systematically evaluated to determine management effects on wildlife populations. This information will be used to refine approaches and determine how effectively the objectives are being accomplished. Evaluations will include ecosystem team and other appropriate partner participation. If monitoring and evaluation indicate undesirable effects for target and nontarget species and/or communities, then alterations to the management projects will be made. Subsequently, this CCP will be revised. Specific monitoring and evaluation activities will be described in the step-down management plans.

PLAN REVIEW AND REVISION

This CCP will be reviewed annually as the Complex annual work plans and refuge budgets are developed and to determine any need for revision. A revision will occur if and when major conditions change or significant information becomes available. Examples include a significant change in ecological conditions or a major refuge expansion. This CCP will be augmented by the detailed Complex step-down management plans described above to address the completion of specific strategies in support of the Complex CCP and the refuges' goals and objectives.

SECTION B. ENVIRONMENTAL ASSESSMENT

I. Background

INTRODUCTION

The U.S. Fish and Wildlife Service (Service) has prepared this Environmental Assessment for Theodore Roosevelt and Holt Collier National Wildlife Refuges (NWRs) in compliance with the National Environmental Policy Act of 1969 (NEPA) and the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act). The Draft CCP (Section A) proposes a management direction in Chapter IV, which is described in detail through a set of goals, objectives, and strategies. It addresses current management issues and provides long-term management direction and guidance for the refuges. This Environmental Assessment (EA) determines and evaluates a range of reasonable management alternatives. The intent is to support informed decision-making regarding future management of the refuges. Each alternative presented in this EA was generated with the potential to be fully developed; however, only the proposed Alternative (B) is presented within the Draft CCP. Following a public review and comment period on the Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA), a final decision will be made by the Service on the alternative that will guide the management actions of Theodore Roosevelt and Holt Collier NWRs over the next 15 years.

PURPOSE AND NEED FOR ACTION

The purpose of the proposed action is to establish and implement a management direction for Theodore Roosevelt and Holt Collier NWRs for the next 15 years through the adoption of a comprehensive conservation plan for the refuges. The action is needed because an adequate, long-term, comprehensive plan for managing the refuges does not exist. Management of the refuges is currently guided by general policies, federal mandates, and specific Complex step-down action plans (e.g., 2010 Forest Habitat Management Plan).

In the “Final Environmental Assessment and Land Protection Plan for the Proposed Establishment of Theodore Roosevelt National Wildlife Refuge” (USFWS 2006b), Appendix B includes a Draft Conceptual Management Plan for the Proposed Theodore Roosevelt National Wildlife Refuge, Mississippi which is interim guidance for the refuge lands until a CCP is approved. Appendix C to that document provides additional guidance in the “Interim Compatibility Determination” approved July 5, 2006. As the refuge is presently closed to public use, this interim guidance has not been enacted. Current compatibility determinations for Holt Collier NWR were approved on January 30, 2006 with the final CCP (see its Appendix V). A hunting plan for the Theodore Roosevelt NWR Complex was approved in January 2009 (USFWS 2009), which further details the hunt program offered at Holt Collier NWR. The compatibility determinations for both refuges needed to be updated and are proposed in Appendix F.

The Service has identified a number of issues, concerns, and needs through discussions with the public, agency managers, and partnering agencies. For a description of the refuges’ priority resource issues, please refer to Section A. Chapter III, Plan Development, in the Draft CCP. To address these issues and concerns, the Service’s planning team devised three alternatives; evaluated the environmental consequences of implementing each alternative; and recommended Alternative B as the proposed management action. In the opinion of the Service and the planning team, Alternative B is the best approach to guide the refuges’ future management direction.

DECISION FRAMEWORK

Based on the assessment described in this document and public comments concerning the significance of the described effects, the Service must decide whether the proposed action would significantly impact the environment. If so, then an Environmental Impact Statement (EIS) would be prepared. If the proposed action is not found to be significant, then a Finding of No Significant Impact (FONSI) would be prepared. The FONSI is a statement that describes why the selected alternative will not have a significant effect on the quality of the human environment. This determination is based on an evaluation of the mission of the Service and the Refuge System, the purpose(s) for which the refuges were established, and other legal mandates. Assuming that no significant impact is found, a final CCP for Theodore Roosevelt and Holt Collier NWRs would be prepared and adopted. The plan will then be monitored annually and revised when necessary.

PLANNING STUDY AREA

The refuges are located in central Mississippi (see Figure 2, Section A). Holt Collier NWR is in Washington County and it is located 29 miles southeast of Greenville, Mississippi and five miles east of Hollandale in the Darlove, Mississippi area (Figure 3). It is bordered on the north by the Bogue Phalia, on the east by the Big Sunflower River, and on the South by State Highway 12. Theodore Roosevelt NWR is in Sharkey County south of Cary, Mississippi and it is located between State Highway 1 and the Delta National Forest (Figure 4). For purposes of this plan, the study area included the Lower Mississippi River Delta as depicted in Figure 7 of Section A. Many plans were reviewed that were at a much larger landscape level including, for example, international migratory bird plans.

AUTHORITY, LEGAL COMPLIANCE, AND COMPATIBILITY

The Service has developed this plan in compliance with the Improvement Act and Part 602 (National Wildlife Refuge System Planning) of the Fish and Wildlife Service Manual. The actions described within this plan also meet the requirements of NEPA. The Service has achieved compliance with NEPA through involvement of the public in preparing the CCP and through the development of this environmental assessment, which contains a description of the alternatives considered and an analysis of the environmental consequences of the alternatives (Chapters III and IV in this EA).

The plan's overriding consideration is to carry out the purposes for which the refuges were established. Please refer to Section A. Chapter II, Refuge Overview for the refuges' purposes. Fish and wildlife management is the first priority in refuge management.

COMPATIBILITY

The National Wildlife Refuge System Administration Act of 1966, as amended by the Improvement Act, states that national wildlife refuges must be protected from incompatible or harmful human activities to ensure that Americans can enjoy Refuge System lands and waters. Refuges are closed to public use unless specifically allowed through appropriate use determinations (Appendix E) and compatibility determinations (Appendix F). Before public activities or uses are allowed on a national wildlife refuge, they must be found to be compatible. A compatible use is defined as one that "... will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge." In addition, "wildlife-dependent recreational uses may be authorized on a refuge when they are compatible and not inconsistent with public safety." The Service generally allows, encourages and promotes public use (i.e., wildlife-dependent recreation) that supports the refuges' mission and purposes.

A list of the public uses proposed for Theodore Roosevelt and Holt Collier NWRs and their compatibility determinations are provided in Appendix F.

PUBLIC INVOLVEMENT AND THE PLANNING PROCESS

In accordance with Service guidelines and the requirements of NEPA, public involvement has been a part of the planning process in developing the Draft Comprehensive Conservation Plan and Environmental Assessment for Theodore Roosevelt and Holt Collier NWRs. For a description of the Service's public involvement efforts and the planning process that was used to develop the plan, please refer to Chapter III, Plan Development, in the Draft CCP (Section A).

II. Affected Environment

For a description of the affected environment, please refer to Chapter II, Refuge Overview, in the Draft Comprehensive Conservation Plan (Section A).

III. Description of Alternatives

The planning team identified three alternatives or different management actions and activities designed to achieve the refuges' purposes, vision, and goals; the mission of the National Wildlife Refuge System; and the mission of the Service. The alternatives are described below. They represent different approaches for managing and operating the refuges over a 15-year timeframe to provide protection and management of the refuges' fish, wildlife, plants, habitats, and other resources, as well as to provide appropriate and compatible wildlife-dependent uses. Each alternative was evaluated based on how it would address the nine priority resource issues that were identified by the Service, its partnering agency advisors, and the public during public scoping, as detailed in Chapter III of the Draft CCP (Section A). Table 6, which follows the summaries below, presents a comparison of how each alternative addresses the management issues. The table is grouped by the five goals outlined in Chapter IV of the Draft CCP.

FEATURES COMMON TO ALL ALTERNATIVES

Several elements of refuge operation and management are common to all three alternatives.

Habitat Management

Land acquisition is a major component of each management option to grow the refuges to the limits of their approved acquisition boundaries (AAB). This is a primary objective of the refuges' establishing legislation.

Resource Protection

As required by the Wilderness Act, within two years of acquisition, all new lands would be evaluated as potential wilderness study areas.

All management activities that could affect natural and cultural resources would be managed to comply with all applicable laws, regulations, and policies. As the plan is implemented and projects are developed, they will be subject to applicable future permit requirements. Individual projects may require additional consultation with the Service's Regional Archaeologist and the State of Mississippi's Historic Preservation Office. Consultation with the Service's Ecological Services Office and local, state and federal permits are likely to be required when the specifics of project development are known (e.g., design and site location).

Visitor Services

The Consolidated Appropriations Act of 2004, which established Theodore Roosevelt NWR, appropriated funds for the construction of a center for environmental education and interpretation to be named in honor of Holt Collier. Under all alternatives, the legislative mandate to build a center would be undertaken. The Service would incorporate the environmental education and interpretive facilities within a Visitor Center for the Complex to be located near Theodore Roosevelt NWR. Preliminary site planning and design started prior to the initiation of the CCP planning process. At present (early 2015), through the efforts of Complex and Refuge Managers, the Service is poised to receive a donation of nearly 7 acres of land upon which to construct a Visitor Center. This donation comes from a generous, partnering, non-governmental organization. Additional acreage for grounds and outdoor space is under preliminary site planning, design, and engineering. The administrative site is centrally located along a main highway, U.S. 61. See Figures 8 and 9 for the site location.

ALTERNATIVE A: CURRENT MANAGEMENT (NO ACTION)

Alternative A continues limited management activities and programs. Both refuges would remain unstaffed and without dedicated funding. Theodore Roosevelt NWR would remain closed until a sufficient land area is accumulated to accommodate public use. This alternative considered the possibility of placing the refuges in custodial (unmanaged) status.

Wildlife and Population Management

Baseline data (e.g., flora and fauna inventories) have yet to be conducted for the refuges. Complex personnel are unavailable to survey, inventory, or do monitoring work. We would continue to approve and support Special Use Permits (SUPs) to outside agencies to conduct research on the refuges. While there is no active research or management for listed species that may occur on the refuges, the Service supports State research efforts for the Louisiana black bear. Waterfowl are the priority species for management on the Complex, and both refuges have a passive role in providing sanctuary for waterfowl. Native wildlife species benefit from waterfowl and timber management on the Complex. At Holt Collier NWR, hunting programs aim to manage white-tailed deer and there are partnerships for healthy herd efforts and studies.

Habitat Management

The refuges' primary mission is to provide sanctuary for wildlife, particularly migratory birds (waterfowl). Major reforestation efforts in recent decades returned converted agricultural lands to bottomland hardwood forest. The Service would continue to acquire lands to grow the refuges. There is no active management of forest or water resources. Invasive species such as feral swine would be removed opportunistically by refuge staff and through a limited harvest by hunters at Holt Collier NWR. Grant opportunities and partnerships would be pursued to fund and/or conduct trapping.

Resource Protection

Under Alternative A, efforts to promote visitor safety, protect resources, and ensure public compliance with refuge regulations would continue as a collateral duty of one law enforcement officer. Complex personnel also provide safety and refuge regulation information. A law enforcement step-down plan is under development for the Complex. In keeping with the Service's responsibilities under cultural and historic preservation laws, cultural resource protection is addressed in refuge operations.

Visitor Services

This area is known for its cultural history and these refuges were created to honor and promote it. Efforts would continue to secure a site to build the Visitor Center and showcase cultural and natural heritage. At present the Complex provides information and interpretation via its and each refuge's websites and by staffing events or public talks. There are no volunteer or Friends programs to provide a base of support for staff assistance.

Access to both refuges is via state roads and highways that pass through them; wildlife viewing opportunities are limited. Theodore Roosevelt NWR is closed to public use and Holt Collier NWR has limited public use, mainly hunting. The only facility on either refuge is the hunter information station at Holt Collier NWR. Theodore Roosevelt NWR would be opened to wildlife-dependent public uses including hunting and fishing once the Service acquires enough land to support it.

Refuge Administration

Three permanent positions and one four-year term position, an Office Automation Assistant, are currently employed and stationed at Yazoo NWR for all three refuges. The current, permanent positions include:

1 Wildlife Refuge Manager;
1 Federal Wildlife Officer; and
1 Engineering Equipment Operator.

No additional positions would be sought exclusively for the two refuges under this alternative.

ALTERNATIVE B: PROPOSED ALTERNATIVE (MINIMALLY DEVELOPED REFUGES)

Under this alternative, the limited management efforts and activities of Alternative A would continue as described. Tasks and operations that are either self-supporting or require no to minimal commitments of funds or staffing would continue. Alternative B presents a management scenario in which these newer refuges are minimally managed for habitat and developed for public use recognizing that this would only be possible through outside funding or when appropriations become available. The Service would take on additional responsibilities when additional resources would allow for refuge operations. The priority would be to staff and operate the Visitor Center. This would enable the Complex and refuges to offer environmental education and interpretation. Under this alternative, the refuges would be minimally developed to allow for public use and more opportunities for wildlife-dependent recreation.

Wildlife and Population Management

Alternative A would be expanded to have an objective of providing sanctuary to migratory species as a group, not just priority waterfowl species. White-tailed deer management would continue through the Holt Collier NWR hunt program and eventually at Theodore Roosevelt NWR. Project funding is requested for baseline surveys and monitoring of priority species.

Habitat Management

Alternative B would continue land acquisition efforts to improve the connectivity of wildlands and to manage them according to the Complex's Forest Habitat Management Plan (HMP). Funding would be sought to initiate a hydrologic study with the aim of restoring or mimicking the natural hydrology on the refuges and for the restoration (reforestation) of newly acquired lands. The restoration of a 700-acre tract that may be acquired for Holt Collier NWR is proposed. Invasive species control efforts would lessen the negative effects on the refuges' habitats.

Resource Protection

At a time when sufficient land is amassed to allow for ample public use opportunities, we would need additional staffing for maintenance.

Visitor Services

Public use would be phased into Theodore Roosevelt NWR. When a suitable land base is acquired, the refuge would be opened to hunting and fishing, assuming funding and staffing are sufficient. Service procedures would be followed for site and building design and construction. If the site permits

and operational funds are secured, the refuge may be opened to limited, on-site public use (e.g., fishing, wildlife viewing, and environmental education).

Volunteers would be used opportunistically with particular emphasis on providing interpretation and for staffing the Visitor Center. Compatibility determinations are updated and proposed for some of the priority public uses and other uses. See Appendix F for full descriptions. For both refuges, all commercial uses as allowed in the Complex would be conducted under a Commercial SUP, including commercial photography, firewood gathering, timber harvest for forest management, and trapping, as consistent with the Complex.

Refuge Administration

Alternative B would dedicate staff to the refuges if new funding became available. Staff positions would be prioritized as follows.

If the Visitor Center is built at Theodore Roosevelt NWR, the minimum staff required to operate it would be one new Park Ranger (Visitor Services Specialist). This position would recruit and train interpretive and reception volunteers.

Staffing of both refuges would be done as funding becomes available. The minimum positions needed to operate and maintain the refuges include ones comparable to the following, recognizing that all Service positions are becoming broader and more generalized due to a shrinking work force both nationally and regionally: 1 Wildlife Refuge Manager (generalist assistant manager position) and 1 Maintenance Worker.

For a list of the costs and duties of these proposed new staff positions, please refer to Table 4 in Chapter V of the Draft CCP. Figure 10 in Chapter V shows the current organization chart for the Complex and the proposed positions that would be required to operate Theodore Roosevelt and Holt Collier NWRs.

Directional, entrance, boundary, and regulatory signage and posting of each refuge's boundaries would be required. Funding would be needed for the Visitor Center to purchase equipment to maintain the grounds and structure. A storage facility would be needed for both refuges for maintenance equipment. A fuel storage facility would be shared. A means or facility to house volunteers and worker/campers would also be considered for the Visitor Center site.

Current partnerships would be maintained and new ones would be sought. We would develop a Friends group and a volunteer program to staff the Visitor Center and to provide environmental and interpretive programs.

ALTERNATIVE C: OPTIONAL ALTERNATIVE

Like Alternative B, Alternative C presents a management scenario in which the newer refuges are minimally developed to allow for basic natural resource management, for the promotion of cultural heritage, and for wildlife-dependent public use. It also provides for minimal staffing to increase management capability by adding three positions to the three proposed in Alternative B. Whereas the facilities for public use will mainly be with the administrative Visitors Center site in Alternatives A and B, Alternative C adds facilities to the refuges proper to provide for basic visitor use and to promote wildlife-dependent recreation, mainly fishing, wildlife observation and photography.

Wildlife and Population Management

If new resources became available, the Service would expand its survey and monitoring of priority species as proposed in Alternative B. This would allow for the collection of baseline data for native species, none of which have been inventoried or their presence documented (e.g., selected mammals, fish, reptiles, amphibians and invertebrates).

Habitat Management

Active habitat management (e.g., cooperative farming, moist soil management) would occur with additional resources or filling of the vacant Biologist position in the Complex. Nuisance animal control and invasive plant species management would continue as described in Alternative B and be conducted opportunistically.

Resource Protection

Alternative C supports the additional Federal Wildlife Officer position proposed in Alternative B. The refuges would also seek partnerships with other agencies to support local area law enforcement and to aid in the protection of natural and cultural resources, should the latter be discovered or identified.

Visitor Services

New facilities are proposed to expand public use, especially wildlife-dependent recreation. These include adding a system of trails to each refuge, providing fishing access at Theodore Roosevelt NWR through the construction of a pond at the Visitor Center site and a primitive boat launch at Coon Bayou. To enhance wildlife viewing and photography, observation platforms and/or photo blinds would be constructed at each refuge.

Refuge Administration

Alternative C includes adding the positions proposed in Alternative B plus an office/administrative assistant or clerk position which, among administrative duties, would serve as a receptionist at the Visitor Center. This might enable the Visitor Center to be open more hours. Additionally, this alternative proposes a Facilities Operation Specialist to maintain the Visitors Center and a Federal Wildlife Officer position for both refuges to enhance safety and resource protection.

The refuges would be greatly improved though the addition of a maintenance compound on each refuge and visitor services facilities to promote access and use.

COMPARISON OF ALTERNATIVES

Table 6 compares the three alternatives relative to how they address the priority resource issues identified for Theodore Roosevelt (TR) and Holt Collier (HC) NWRs as described in Chapter III of the CCP.

Table 6. Comparison of alternatives by management issues for Theodore Roosevelt (TR) and Holt Collier (HC) NWRs.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
WILDLIFE AND POPULATION MANAGEMENT - Priority Resource Issues 1 and 3. See Draft CCP Chapter III for a full description.			
Goal 1: Wildlife and Population Management Maintain species representative of the Lower Mississippi River Valley, with special emphasis on waterfowl, other migratory birds, and imperiled species.			
Inventory and Monitoring (I & M)	Continue to approve and support current Special Use Permits (SUPs) for research. The Service's I & M staff are compiling regional survey data. Continue to support data calls.	SUPs – Same as Alternative A. Funding is proposed for a project to do a baseline survey of priority and imperiled (pondberry) species with 2 follow-up surveys within 15 years.	SUPs – Same as Alternative A. If the Complex Biologist position is filled or with outside assistance, create and implement an Inventory and Monitoring Step-down Plan or survey protocols. With a Complex Biologist, I & M staff, or outside assistance, conduct baseline surveys of native species.
Pondberry Plant[1]	No active management. Not surveyed to know if plant or suitable habitat exists.	As part of the project noted above conduct a baseline survey of the refuges to see if this plant occurs or is suitable for reestablishment.	If plant occurs or sites are suitable for reestablishment, seek partnership or biological staff to conduct annual abundance & distribution surveys, and the monitoring of or assistance with reestablishment host sites as applicable.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Louisiana Black Bear[1]	The recovery effort is regional with the State having a designated biologist to lead bear research and monitoring in MS. The Service assists with bear bait stations. TR – Because of its proximity to Delta National Forest, continue to support state research and monitoring efforts.	Continue to support the regional recovery objectives where possible on the local level. Seek partnerships, funding, and donations to obtain quality land acquisition and to conduct reforestation. The aim is to create potential travel corridors or reestablishment sites for bears. TR- With the establishment and staffing of the Visitor Center, the Louisiana black bear could be a theme and focus of its displays and environmental education and interpretive programs.	Same as Alternative B.
Migratory Birds[3]	Waterfowl is the priority species. Continue to provide sanctuary and seek to aid the Complex in meeting LMVJV foraging resource objectives.	Seek partnerships to restore agricultural impoundments. Alternative A would be expanded to include migratory species as a group with an objective to provide sanctuary. Initiate small-scale habitat management for migratory species (restore habitat).	If a Complex Biologist or outside assistance was available, active habitat management (e.g., cooperative farming, moist-soil management) could occur. The emphasis would shift to include other birds besides waterfowl (e.g., shorebirds, waterbirds, landbirds).

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Native Wildlife	Little to no management. Native species benefit from other techniques (waterfowl and timber management) on the Complex. HC – The hunting program aims to manage the white-tailed deer population. Continue partnership with Deer Management Assistance Program on efforts to maintain healthy herds.	Deer - Same as Alternative A. TR – determine deer management objectives in establishing a hunt program once the refuge is of sufficient acreage to host it.	Deer - Same as Alternative A. Seek partnerships and outside funding to establish a wild turkey population.
HABITAT MANAGEMENT **Priority Resource Issues 2 and 4. See Draft CCP Chapter III for a full description.**			
Goal 2. Habitat Management **Maintain habitats to support waterfowl, other migratory birds, and imperiled species.**			
Habitat Management Plan (HMP)[2 + 4]	As resources are available, continue to implement habitat management objectives to achieve the Complex goals outlined in the 2010 Complex Forest HMP.	Same as Alternative A.	Fill the vacant Complex biologist position to help achieve Complex goals and objectives in the 2010 Complex Forest HMP (step-down plan).
Forest Management[4]	HC – 90 percent of the former agricultural land has been reforested since the 1990s. No Active Management.	Maintain habitat, and as able, manage for wildlife according to the Complex Forest HMP. As practical and applicable, and potentially though the use of partnerships, restore newly acquired lands to forest conditions more reflective of native species that had occurred historically.	Same as Alternative B.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Water resources – water quality & quantity[4]	No management. The refuge manager pursues funding opportunities for grants and studies as they arise. Currently, no funding is available.	Pursue partnership or grant funding to initiate a study to discern and evaluate remedial efforts to restore or mimic natural hydrology. Adaptively manage to restore and improve areas in need. HC – initiate a restoration project of 700 acres if the tract is acquired and funding is available.	While this is a priority issue, it may not be possible to address it fully in the 15-year timeframe of the CCP due to resource and funding limitations.
Land Acquisition[4]	Continue to build the land base of each refuge up to its approved acquisition boundary acreage.	Same as Alternative A.	Same as Alternative A.
Invasive and Nuisance Species[2] - Integrated Damage Control	Feral swine and nuisance species are removed opportunistically by Complex staff and via limited harvest during existing hunts on HC. There was a partnership, i.e., an Interagency Agreement with USDA Wildlife Services for trapping at Yazoo, TR and HC NWRs in 2014.	Apply for grants or develop partnerships (e.g., USDA or counties) to control nuisance species opportunistically, for example along highways that bisect refuges. Feral swine efforts would be aimed at lessening the negative effects they have on refuge habitats and their prey species. TR- Open the refuge to the public and establish a hunt program for limited harvest of nuisance species and feral swine.	Same as Alternative B.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
RESOURCE PROTECTION **Priority Resource Issue 5. See Draft CCP Chapter III for a full description.**			
Goal 3. Resource Protection – Protect cultural and historic resources for future generations.			
Provide visitor safety, protect resources and ensure compliance with refuge regulations	One federal wildlife officer covers Yazoo, Theodore Roosevelt, and Holt Collier NWRs. He provides periodic law enforcement, helps prevent and prosecute illegal activities, and enforces area closures.	Bring in detailees and other law enforcement officials on special assignments as needed. Seek partnerships with other agencies to support local area law enforcement needs.	At the time when a sufficient land base is accumulated for the refuges and/or TR is open to public use, seek funding for an additional officer to support needed law enforcement patrols.
Cultural Resources[5]– **Archaeological and Historical site protection**	At present there are no known archaeological sites or cultural resources on either refuge. If discovered and identified, protect them from illegal take or damage. Protection is addressed in refuge operations, by law enforcement patrols, and via consultation with regional archeologist. The TR Complex has a Law Enforcement plan in draft, which would address cultural resource protection on all Complex refuges.	Expand Alternative A. If sites and resources are identified and the Visitor Center is operational, promote educational awareness, regulations, and voluntary compliance to protect sites via interpretive signs, displays and educational programs. Conduct archaeological or cultural heritage surveys as opportunity arises.	Expand Alternative B. If cultural sites and resources are identified, develop partnerships to aid in the management of the refuges' cultural resources.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
VISITOR SERVICES **Priority Resource Issues 6 and 7. See Draft CCP Chapter III for a full description.**			
Goal 4. Visitor Services – Develop programs for the public which promote wildlife-dependent recreation, environmental education, and interpretation and the cultural heritage of the Delta. Provide and promote public use that leads to enjoyable experiences and a greater understanding of fish, wildlife, and habitat conservation.			
Visitor Services Plan	The TR Complex CCP called for a series of Visitor Services and Sign step-down plans, which were to be written by 2007. To date a Hunting Plan was done in 2009, which includes HC. Update it as needed.	Same as Alternative A. Due to a cut of the planning program funding and planning support, the Service's Regional Office (RO) now has step-down plans as a lesser priority for implementing some refuge operations.	Same as Alternative A.
Accessibility	Use existing infrastructure of county roads and state highways that bisect refuges as described in Section A. Chapter II.	Same as Alternative A. There are no interior roads on either property.	Provide a trail system that is not only adequate for access, but would promote wildlife observation and wildlife-dependent recreation. Based on management needs, consider county road closures.
Visitor Center (Center)[7]	TR - Funds have been appropriated for a Center to be located at Theodore Roosevelt NWR and contain interpretation and environmental education facilities.	TR- We could not operate the Center without obtaining operational funding to maintain and staff it. Funding may have to come from an outside source. A compatibility determination is recommended for approval to site, construct and operate the Center as detailed in Appendix F, #11.	Consider alternative sites if one cannot be secured.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Welcome and Orient	Maintain public contact stations. At present only one hunter information station exists on HC. Annually review and provide information through websites, brochures, social media, etc. HC - Maintain and replace directional, entrance, boundary and regulatory signage as needed.	Expand Alternative A. TR - If opened to the public, add directional, entrance, boundary and regulatory signage. Both refuges - As public use is expanded, public contact stations would need to be established. (e.g., TR- hunter information station). TR – If the Center is built and staffing is available to run it, host an initial event and program to launch its opening.	Expand Alternative B. Use media releases, social media, and the Complex's and refuges' web sites to provide visitors current information on available events, programs, and facilities offered by the Service both on- and off-site.
Hunting[6]	HC - Current hunt programs offered include muzzleloader and archery deer hunts, and rabbit season. TR- closed to public and hunting. Open TR for hunting and expand hunting opportunities on HC. See the hunting compatibility determination in Appendix F for full details. The Complex's 2009 Hunting Plan would need to be updated.	Same as Alternative A. With recreation fees, the hunt programs could be expanded, minor facilities or items purchased (e.g., information/check stations, brochures) and would be phased in as the land base is accrued.	Same as Alternative A.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Fishing[6]	Recreational fishing is not currently offered at either refuge.	Open the refuges to recreational fishing by bank or boat. TR – May have boat-fishing potential at Coon Bayou. HC – bank fishing. See the fishing compatibility determination in Appendix F for full details.	Seek partnerships and funding to create limited fishing opportunities and/or facilities (e.g., primitive boat launch at TR). TR- With the establishment of the Center, seek or create a small lake or pond for fishing.
Environmental Education (EE)[6]	While there are no formal programs on the refuges at present, the Complex staff provide talks opportunistically and/or on request on various themes.	Hire a Park Ranger (Visitor Services Specialist) to develop and provide EE programs for the refuges. The Center facility and staff would expand the Service's ability to provide EE programs (e.g., outdoor classrooms, environmental science field classes).	Same as Alternative B.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Interpretation[6]	There is only one information panel on hunting regulations at HC. Continue to seek and use offsite locations for displays on interpretive themes and/or attend off-site events. Current activities for the Complex include these events: - Great Delta Bear Affair; - Mississippi Wildlife Extravaganza; - Career Days at local high schools (e.g., Simmons and Riverside); and - other venues upon request.	Expand Alternative A. Hire a Park Ranger (Visitor Services Specialist) to recruit and train volunteers to present interpretive programs. The addition of 1 new staff would help cover a broader geographic area and reach a wider audience. Key messages would put focus on cultural heritage, Louisiana black bear, etc. Annually consider themes and how to promote them. Enhance website interpretation and maintain regular updates for site viewers and refuge visitors. With the Center, add interpretive displays and programs.	Expand Alternative B. As refuges are opened and public uses expanded, consider ways to promote these and main themes (e.g., create a station-specific video, add kiosks, welcome station, info panels, use social media).
Wildlife Observation and Photography[6]	TR is closed to public use. HC – No facilities or trails exist. Some opportunities during hunts. Opportunities for both refuges are limited to viewing from roads and highways.	TR – Some opportunities would become available during hunts or may be incorporated with the Center's design. HC - Same as Alternative A.	Expand Alternative B. Build facilities at each refuge to enhance viewing such as trails, observation platforms/tower, and/or photo blinds.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Outreach	Continue to strengthen public relations with local, state and federal elected officials and promote refuge events through the media and social media. Work with partners to support outreach activities/events promoting the refuges' purposes and mission of the refuge system (e.g., hosting the Lower MS Valley Joint Venture).	Expand on Alternative A by updating key messages as noted in interpretation above. Maintain current visitor information on the Complex and refuges' web sites and social media venues regarding programs and facilities. There will be new outreach opportunities for the Complex with the addition of the Center at TR NWR.	Same as Alternative B. Support community organizations that share common resource and public use objectives/programs (e.g., Chambers of Commerce).
Volunteers	No current programs. A CCP objective for the Complex is to…Develop a volunteer corps for each of the complex headquarters. Yazoo would include TR-HC. Use volunteers as available for all program areas.	Same as Alternative A. Once the Center is built, create a volunteer corps to staff it.	Develop a volunteer plan including training protocols. Consider use of volunteers for all program areas (e.g., camper/ worker host site and/or provide office assistance or maintenance).
Friends group	Currently there is no Friends group for the Complex or the two refuges.	Start a Friends group at the Complex level that could lend support for the two refuges.	Same as Alternative B.
Appropriate Use and Compatibility Determinations (CDs)	Complex and Interim compatibility determinations for TR are not in effect because it is closed to the public. HC has CDs for 5 priority public uses: hunting, EE, interpretation, wildlife photography and wildlife observation.	TR – open the refuge to public use. Both refuges - Update and adopt compatibility determinations for all wildlife-dependent public uses and some others. See Appendix F for a full description.	Same as Alternative B.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Non-Big Six Uses:	The Complex Compatibility Determinations from 2006 CCP (Appendix V, pp. 221-224) describe and allow for these uses on TR & HC refuges: Firewood Gathering* Commercial Photography* Timber Harvest for Forest Management* Trapping* Research. * Approved as commercial uses.	The 4 Complex CDs for commercial uses are proposed to be updated for the 2 refuges. An updated CD for Research and Monitoring is also proposed. See Appendix F, Compatibility Determinations, for details of the uses, resource impacts, and stipulations to ensure compatibility.	Same as Alternative B.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
REFUGE ADMINISTRATION **Priority Resource Issues 8 and 9. See Draft CCP Chapter III for a full description.**			
Goal 5: Refuge Administration **Seek to obtain and provide sufficient infrastructure, staffing, partnerships, and administrative support to meet the refuges' goals and objectives for managing their natural resources.**			
Administrative Resources: Personnel Management[8]	TR and HC NWRs are currently unfunded and unmanned. FTE staff at Yazoo NWR, which is also responsible for TR-HC, includes: 1 Wildlife Refuge Manager; 1 Federal Wildlife Officer; and 1 Engineering Equipment Operator.	TR – If outside funding is secured to operate the Center, the priority position to staff it includes: 1 Park Ranger (Visitor Services Specialist- Volunteer Coordinator). At the time which a base area of sufficient size is accumulated so that TR NWR may be opened to public use (beyond at the Center site) and HC NWR public use might be expanded, the following positions are proposed with priority to the Wildlife Refuge Manager position: 1 Wildlife Refuge Manager; and 1 Maintenance Worker.	In addition to the three positions identified in Alternative B, add these three positions for a total of six new positions: 1 Office Assistant, GS-7, to aid with the administrative duties of the refuges and serve as the main receptionist at the Visitor Center; 1 Outdoor Recreation Planner; and 1 Federal Wildlife Officer. Fund and fill the vacant Complex biologist position to oversee and aid in wildlife and habitat management of all seven refuges. Shared positions in the Complex, dual training, and collateral duties or term/contract work may reduce the number of permanent positions needed.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Administrative Resources: Facilities & Equipment[8]	No current refuge operations facilities exist on either refuge. TR – Contains dilapidated structures from when the lands were farmed. Maintain and replace any equipment used on refuges over time (e.g., office computers, vehicles, maintenance tools).	TR – Detailed study and design for the Center would be done prior to construction. Purchase, maintain, and replace (as needed) any equipment used on refuges over time. Consider options for housing volunteers. Build a small storage facility on each refuge for equipment. Build a shared fuel storage facility.	Same as Alternative B. At the time when the refuges are established with a land base that would support traditional refuge operations, build a maintenance compound at each which would include storage for vehicles, equipment, and fuel. Build facilities to enhance public use (trails, observation viewing areas or platforms, information kiosks, boat launch at Coon Bayou etc.).
Administrative Data Base Management and Resource Management[8]	Maintain databases for all refuge resources (e.g., SAMMS, Real Property Inventory, LAPS, etc.).	The proposed Wildlife Refuge Manager position would aid in handling the additional reporting and staff support workloads (e.g., property inventory and management).	An office assistant position is proposed to do all office and staff support duties such as payroll, travel, purchasing, etc.
Partnerships[9]	Maintain partnerships for all areas of management on the refuges to assist refuge staff. See Appendix K for a list of current partners.	Consider or initiate use of prison and trustee crews for refuge maintenance work. Expand Alternative A to also seek new partnerships. See Appendix K for a list of potential partnerships.	Same as Alternative B.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

The alternatives development process under NEPA and the Improvement Act is designed to allow consideration of a wide range of issues and potential management approaches; therefore, different scenarios were considered. The following alternatives were considered, but ultimately not selected, for detailed study in this Draft CCP/EA for the reasons described below.

Alternative D – Fully Developed Refuges – Alternative D presents a management scenario in which the undeveloped refuges are developed to allow for natural resource management, the promotion of cultural heritage, and public use. It provides for full staffing and management capability, particularly in the areas of habitat management and natural resource protection, and for enhanced visitor service opportunities. It would promote all wildlife-dependent public uses on both refuges. To implement this alternative, improvements would need to be made to the refuges to add basic infrastructure and to provide visitor-use facilities, and staff to operate and maintain the refuges. Alternative D depends upon partnerships and the use of a volunteer corps for every refuge program area, but it assumes Service funding well above current levels and proposes additional staffing to provide optimal development of the refuges, resource protection, and management capability. This would require up to 15 new positions if both refuges were fully developed.

The CCP planning team envisioned an alternative to develop the refuges for public use and natural resource management once they accrued sufficient acreage to be managed as traditional refuges. That is, they would have dedicated funding for their staffing and operation. Regional managers felt that this was not an achievable alternative because funding to implement such an alternative is not likely to be forthcoming in the next 15 years. The Southeast Region of the Service has been operating under a workforce reduction plan. Positions have been reduced by 12.5 percent from 800 full-time positions in 2010 to 700 in 2014. Staffing and budgets to manage the region's 129 refuges, and host 12.9 million visitors has also decreased.

This alternative is a scenario that might be fully realized in stronger economic times. The team suggests that such an alternative should be reconsidered at the time that an adopted CCP is scheduled for revision. As of 2015, it is Service policy (602 FW 3) to revise CCPs as needed as set forth in section (b) as follows:

(b) Plan Revision. Revise the CCP when significant new information becomes available, ecological conditions change, major refuge expansion occurs, or when we identify the need to do so during plan review. This should occur every 15 years or sooner, if necessary.

Alternative E – No Visitor Center – Since there is no operating budget for either refuge, the planning team considered and discussed with area supervisors the option of not constructing a Visitor Center with environmental education and interpretive facilities. Congressional funding of $2.6 million for planning, design and construction is available. Operational costs are estimated at $50,000 per year for maintenance, equipment replacement, and utilities. Additionally, positions are needed to run the Visitor Center, create and offer programs, and coordinate a volunteer pool to staff it. These operational costs were not funded. Since the facility was mandated and funded by Congress to be built, Service regional managers gave approval in 2014 for planning and design to initiate site selection and construct the facility.

IV. Environmental Consequences

OVERVIEW

This chapter analyzes and discusses the potential environmental effects or consequences that can be reasonably expected by the implementation of each of the three alternatives described in Chapter III. Conclusions are based on the best available scientific information, internal consultation, peer review, and the professional judgment of the CCP planning team. Appendix B provides an extensive list of references that were reviewed in preparation of this Draft CCP/EA.

The CCP is a programmatic document intended to analyze proposed actions over a 15-year timeframe on a conceptual level to guide management direction and priorities. It should be noted that these are anticipated effects. Due to the conceptual nature of the projects proposed in this plan, any actual effects not anticipated or described in this chapter will be detailed later in NEPA documentation to accompany a step-down management plan or project proposal. These detailed planning documents would involve federal, state, regional and/or local consultation and NEPA compliance.

The Refuge Manager is required to consult with the Service's Ecological Services Office prior to the implementation of any plans or actions identified in the CCP, due to the potential to affect federally listed and candidate species. Specifically, section 7(a)(2) of the Endangered Species Act (ESA) requires all federal agencies to consult with the Service to ensure that the actions they fund, authorize, permit, or otherwise carry out will not jeopardize the continued existence of any listed species or adversely modify designated critical habitats. Section 7(a)(1) of the ESA charges federal agencies to aid in the conservation of listed species. See Appendix G for the Intra-Service Section 7 Biological Consultation prepared for this plan.

Refuge construction projects must also comply with provisions of government permits. The Service will consult with county, state, and federal agencies that have shared management interest and/or jurisdictional authority over affected resources. All applicable federal laws, regulations, and policies will be adhered to.

EFFECTS ON THE PHYSICAL ENVIRONMENT

To assist in this analysis, the impacts on the physical environment were divided into the categories of soils, hydrology, water quality, air quality, noise, aesthetics, and facilities.

SOILS

No proposed actions would significantly degrade the soils in the refuges. The development of a new Visitor Center would require detailed planning and design. See the compatibility determination for the Siting, Operation and Construction of a Visitor Center in Appendix F for a description of the proposed facility. Additional environmental assessment would be done based on specific site plans developed for the proposed building and site prior to construction. Careful site selection would aim to minimize the longer term effects of the buildings' placement and best management (soil and erosion control) practices would be used to prevent or reduce temporary construction effects. The proposed site is an administrative site located off the refuge proper. The facilities (building, well, utility lines, septic system and spray field, parking lot and driveway) would be located on the existing, cleared and scarified area to lessen the effects of construction and use.

For each refuge, Alternative B proposes the installation of fencing and/or boundary posting and basic storage facilities. Alternative C calls for the development of a maintenance shop/compound on each refuge. Any of these developments could affect soils during construction, but as these are small and limited areas of disturbance, minimal and temporary effects are expected. A shared fuel-storage area (Alternative B) located on one of the refuges would meet permitting conditions and have spill prevention measures as a condition of development and consistent with the Complex's Spill Prevention Plan.

In conjunction with the Visitor Center and for both refuges (Alternative C), the establishment of trails is proposed for wildlife observation. Mechanical and hand clearing are proposed as the primary means to achieve the installation of trails. Mechanical equipment displaces and compacts soils. Foot traffic may cause minor rutting and compaction of soils.

Commercial timber harvest operations can cause adverse impacts on habitat values. Restrictions and conditions must be placed on harvesting operations to minimize adverse effects from logging equipment on soils and vegetation quality. Minor, short-term impacts are expected to occur during harvesting operations, including mechanized operation disturbance to wildlife and trampling of the understory vegetation by equipment. However, these impacts are temporary and brief as the understory vegetation usually recovers in one growing season. These operations would be done in dry seasons primarily and under special use permit.

Forest management operations are designed to provide more vertical diversity throughout the overstory, midstory, understory, and ground flora. Favoring trees of varying ages and sizes, including some of the largest dominants within each forest block, will promote the habitat requirements of forest-dwelling birds and other resident wildlife. Forest conditions following timber harvest are more beneficial to wildlife as harvest operations can help restore the functions and values typically associated with bottomland hardwood forests historically occurring throughout the region.

HYDROLOGY

Alternative B proposes a hydrological study and associated work to restore altered areas to a more natural hydrology. The possible implementation of this study under Alternative B would facilitate restorative efforts that would benefit natural wetland processes and enhance waterfowl habitat primarily through reforestation to bottomland hardwood. No construction projects are expected to affect the hydrology.

WATER QUALITY

Under all alternatives, the effects of long-term herbicide use for invasive plant control could result in a slight decrease in water quality in local areas. With proper application under EPA-approved label instructions, no leaching of chemicals into water bodies would be expected. Under all alternatives, since invasive plant infestation areas would be discovered and treated while still relatively small, a reduced amount of herbicide would be needed for treatment, lessening the impact of herbicides and mechanical treatment that may affect local water quality. If Theodore Roosevelt NWR is opened to fishing on Coon Bayou by boat, there could be incidental releases of oil and gasoline into the Bayou. Leakage from boat motors would be occasional and limited by the restriction of allowing access only by small boats with low horsepower motors (trolling motors).

Commercial timber harvest operations can cause adverse impacts on water quality if not carefully controlled and supervised. Restrictions and conditions must be placed on harvesting operations to minimize adverse effects from logging equipment on surface water quality.

At the Visitors Center site a septic system and spray field irrigation are proposed to accommodate visitor use of the site. A deep well would be installed for drinking water. These would be sited to meet environmental permitting standards. There are no water courses immediately adjacent to the site. A graded-gravel driveway and parking area is proposed versus hard-surfaced paving to minimize the amount of impervious surface at the site for stormwater runoff.

AIR QUALITY

The refuges are in rural areas and currently have limited visitation. Effects on air quality from vehicular use and associated carbon emissions are likely to remain low under all three alternatives. Compared to other land uses, all of the alternatives would provide greater protection against degradation of daily ambient air quality over the long term. For all alternatives and under Department policy, the Service will transition its vehicle fleet to alternative fuel models, and incorporate energy conservation measures into renovated and new facilities to reduce emissions and conserve resources, with an expected beneficial impact on local air quality.

NOISE

Occasional and temporary noise and minor traffic increases would result from: 1) timber harvest for forest management or wildfire suppression in which mechanized machinery or trucks are used; and 2) for the construction of the Visitor Center and maintenance of the building, facilities or grounds (e.g., mowing). The Visitor Center would be located off Theodore Roosevelt NWR proper at an administrative site. It is proposed to be along a highway which already has noise from motor vehicles and is not expected to contribute any noticeable noise in normal operations. Invasive plant species control or trail clearing may involve the use of hand chainsaws or a mechanized chipper to cut and mulch vegetation, which would generate temporary increases in noise for all alternatives.

AESTHETICS

Under all alternatives, aesthetics are expected to be positively impacted through the acquisition of lands. Invasive plant control would have temporary, negative aesthetic impacts with easily observable dead and dying vegetation along roadsides. Timber management may have temporary aesthetic effects, but many species return in the growing season and the management would be done for the purpose of improving forest health and diversity. Under all alternatives, these actions would result in a net benefit to aesthetics in the longer term by preventing the establishment of invasive plant monocultures and by restoring native plant diversity.

The construction of the Visitor Center would have a temporary negative effect on aesthetics during the building stage. The completed facility would complement, rather than degrade, the aesthetics. The building would be built to Service standards and conform to applicable building codes.

FACILITIES

Under Alternative A, there are no current facilities. In each alternative, the Visitor Center and enhanced public use facilities would be built. With Alternative B, volunteer housing, two storage facilities, and a shared fuel-storage facility are proposed if funding allows. Under Alternative C, there would also be a maintenance compound for each refuge and some visitor service facilities (e.g., primitive boat launch at Coon Bayou). Enhanced public use facilities (trail improvements, kiosks and interpretive panels) are proposed to be located on for both refuges under Alternative C. These facilities would enhance visitor use opportunities.

EFFECTS ON THE SOCIOECONOMIC ENVIRONMENT

Each of the alternatives is anticipated to positively affect the socioeconomic factors of the community, which was the legislative intent of Congress in establishing the refuges and appropriating funds to build the Visitor Center. Alternative B would promote each of the six priority public uses under the Improvement Act as described in Appendix F, the Compatibility Determinations.

VISITOR SERVICES – PUBLIC USE, ACCESS, AND RECREATION

Hunting

Hunting is the most popular and primary public use in the Complex. Under Alternatives B and C, hunting would be opened on Theodore Roosevelt NWR and expanded on Holt Collier once each refuge's land base is sufficient to support the use. Recreational use fees could be used to install public use facilities on each refuge, such as hunter information stations.

Fishing

Fishing is proposed in Alternatives B and C, which would be a positive public use for the community. Access to fishing would be enhanced by allowing low horsepower motorboat use on Coon Bayou at Theodore Roosevelt NWR. Alternative C proposes a small, primitive boat launch to ease access.

Wildlife Observation and Photography

With the establishment of the Visitor Center in each alternative, some public use facilities may be included in the design of the building and site at Theodore Roosevelt NWR (e.g., boardwalk, trails, observation areas). Under Alternative C, if funding became available, we would seek to establish observation facilities (e.g., platforms, photography blinds and/or trails) on both refuges.

Environmental Education and Interpretation

The establishment of the Visitor Center would greatly enhance the Service's ability to showcase the area and refuges' cultural heritage and natural resources through programs and exhibits. Partnerships and the use of volunteers would be sought to enhance awareness of stewardship of these resources. The hiring of the Refuge Ranger (Visitor Services Specialist) and Outdoor Recreation Planner positions (Alternatives B and C) would allow for the training and use of a volunteer corps to provide educational and interpretive programs and services to refuge users and students.

Other Permitted Activities

Several other public uses will be allowed on the refuges. All alternatives allow for the uses of trapping, timber harvest for habitat management, firewood gathering, commercial photography and research and monitoring. Commercial users and researches will be under special use permits and related conditions. See Appendix F, Compatibility Determinations, for a full description of these uses.

REFUGE REVENUE-SHARING

Although the refuges occupy lands that might provide income to the local tax base, those lost tax revenues are offset by payments to the county governments in which they are based. Revenue sharing is provided in the amount of three-quarters of one percent of the fair market value of the lands. In 2012, the following payments were made to the counties in which the refuges are located (Table 7):

Table 7. Revenue Sharing Payments

COUNTY	REFUGE	FEE ACRES	PAYMENT – August 2014 in U.S. dollars ($)
Holmes	TR NWR	270	978
Humphreys	TR NWR	878	2,446
Leflore	TR NWR	601	366
Sharkey	TR NWR	4,030	13,365
Washington	HC NWR	1,477	5,929
Washington	TR NWR	240	550
Yazoo	TR NWR	278	1,013

Additional benefits to local communities result from enhanced property values on adjacent lands and by improved aesthetics related to conservation lands and open space. Conservation lands require less expenditure of local taxes to fund infrastructure and other services than those required by developed lands.

PUBLIC HEALTH AND SAFETY

Based on the nature of each alternative, the location of the refuge, and current land use, the three alternatives are not anticipated to have any significant or negative impacts on the quality of the human environment, including public health and safety.

EFFECTS COMMON TO ALL ALTERNATIVES

A few potential effects would be similar under each of the alternatives.

ENVIRONMENTAL JUSTICE

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” was signed by President Bill Clinton on February 11, 1994, to focus federal attention 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 or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also 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 relating to human health or the environment.

None of the management alternatives described in this environmental assessment will place any adverse environmental, economic, social, or health impacts on minority and low-income populations. Implementation of any action alternative that includes public use and environmental education is anticipated to provide a benefit to the residents of the surrounding communities, and a historically underserved populace. The Visitor Center is expected to have a positive impact on the local economy and State sales tax revenues.

CULTURAL RESOURCES

The Service is responsible for managing archaeological and historical sites found on refuge lands. Surveys would be conducted prior to any new construction or excavation on refuge lands in order to fully satisfy the provisions of the NEPA and all applicable cultural resource laws and policies. Potentially negative impacts from the construction of trails or facilities would require review by the Service's Regional Archaeologist and consultation with the Mississippi State Historic Preservation Office. Determining whether a particular management action has the potential to affect cultural resources is an ongoing process that would occur throughout the planning and construction stages of each project.

Service acquisition of land with known or potential archaeological or historical sites provides three major types of protection for these resources: protection from private development (e.g., into single-family homes); protection from damage by federal activities; and protection from vandalism or theft. The Service's policy is to preserve these resources in the public trust, avoiding impacts whenever possible. Minimal or no negative impacts are anticipated for any particular cultural resources of the refuge under any of the alternatives. As a whole, positive impacts are expected to the cultural resources due to management and protection of these resources under all of the alternatives. The level of positive impacts to cultural resources varies by alternative.

CLIMATE CHANGE

U.S. Department of the Interior Secretarial Order 3226 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 and decision making." Additionally, it calls for the incorporation of climate change considerations into long-term planning documents such as the CCP. Global atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values determined from ice cores spanning many thousands of years. The global increases in carbon dioxide concentration are due primarily to fossil fuel use and land use changes, while those of methane and nitrous oxide are primarily due to agricultural operations (Bindoff et al. 2007). The increase of carbon dioxide within the earth's atmosphere—from about 280 parts per million (ppm) in the pre-industrial era to about 390 ppm and rising in 2011—has been linked to the gradual rise in surface temperatures commonly referred to as global warming.

In relation to comprehensive planning for national wildlife refuges, carbon sequestration is one of the primary climate-related impacts to be considered in planning. The U.S. Department of Energy's *Carbon Sequestration Research and Development* (U.S. Department of Energy 1999) defines carbon sequestration as "...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere." The land is a tremendous force in carbon sequestration. Terrestrial biomes of all sorts—grasslands, forests, wetlands, tundra, perpetual ice, and desert—are effective both in preventing carbon emissions and in acting as a biological "scrubber" of atmospheric carbon monoxide. The conclusions of the Department of Energy's report noted that ecosystem protection is

important to carbon sequestration and may reduce or prevent the loss of carbon currently stored in the terrestrial biosphere.

The Wildlife Society (TWS) published an informative technical review report in 2004 entitled, *Global Climate Change and Wildlife in North America* (Inkley et al. 2004). It interprets results and details from such publications as the Intergovernmental Panel on Climate Change reports (1996-2002) and describes the potential impacts and implications on wildlife and habitats. It mentions the complexity of predicting climate change effects. For example, there will not just be changing precipitation and temperature patterns to predict, but also their rate of change, as well as the exacerbated effects of other stressors on the ecosystems. Those stressors include: loss of wildlife habitat to urban sprawl and other developed land uses; pollution; ozone depletion; exotic species; disease; and other factors.

Projections over the next 100 years indicate major effects such as extensive warming in most areas, changing patterns of precipitation, and significant acceleration of sea level rise. According to the TWS report, "…other likely components of ongoing climate change include changes in season lengths, decreasing range of night versus daytime temperatures, declining snowpack, and increasing frequency and intensity of severe weather events" (Inkley et al. 2004). The TWS report details known, and possible influences on, habitat and wildlife. These include: changes in primary productivity; plant chemical and nutrient composition; seasonality; and sea level rise. Snow, permafrost, and sea ice are expected to decline. Invasive species, pests and pathogens, and impacts upon major vertebrate groups are expected to increase. The effects of climate change on populations and range distributions of wildlife are expected to be species-specific and highly variable, with some effects considered negative and others considered positive.

Generally, the prediction in North America is that the ranges of habitats and wildlife will generally move upwards in elevation and northward as temperatures rise. Species with small and/or isolated populations and low genetic variability will be least likely to withstand the impacts of climate change. Species with broader habitat ranges, wider niches, and greater genetic diversity should fare better or may even benefit. This will vary depending on specific, local conditions, changing precipitation patterns, and the particular response of individual species to the different components of climate change (Inkley et al. 2004). The TWS report emphasizes that developing precise predictions for local areas is not possible due to the scale and accuracy of current climate models, which is further confounded by the lack of information concerning species-level responses and to ecosystem changes, their interactions with other species, and the impacts from other stressors in the environment. In other words, only imprecise generalizations can be made about the implications to refuge management from regional climate change.

Conserving natural habitat for wildlife is the heart of any long-range plan for national wildlife refuges. All alternatives presented for Theodore Roosevelt and Holt Collier NWRs include protection and management of natural habitats, which help to sequester carbon and minimize climate change impacts. This, in turn, contributes positively to efforts to mitigate human-induced global climate changes.

LAND ACQUISITION

For Theodore Roosevelt NWR, land acquisition within the approved acquisition boundary (AAB) or via expansion of the refuge's AAB would come from donations from conservation and private organizations or via land exchanges. For Holt Collier NWR, any minor or major expansion could include fee or easement through the Migratory Bird or Land and Conservation Trust Fund sources. The Service would seek to acquire these lands only from willing owners.

SUMMARY OF ENVIRONMENTAL EFFECTS

Table 8 summarizes the environmental effects of each of the three alternatives. It follows the same format that was used in Table 1 in Chapter III. Table 8 is also presented in the same order as the five goals identified in Chapter IV of the Draft CCP. Under each goal, each of the corresponding priority issues described in Chapter III of the Draft CCP is addressed.

The purpose of an environmental assessment is to determine if there are any significant effects to a proposed action, which would require the initiation of an Environmental Impact Statement and actions to mitigate adverse effects. Table 8 provides a summary statement of each anticipated environmental effect. The legend for this table is as follows:

Neutral means that there is no observable effect, positive or negative, from implementing a planned action.

Positive means that there would be benefits to the refuges' physical, biological or socioeconomic environments by implementing an action as described in the plan.

Negative means that there would be some adverse impact to implementing a proposed action. Those that are minor, temporary, or mitigated in some way to provide a net benefit or improvement would not be considered a significant, adverse action.

Most means that of the three alternatives, this alternative has the most positive or negative effects.

While typically plans are designed to have net positive benefits under all three alternatives, as we are in a declining budget situation, Alternative A may not contribute net positive benefits with further reductions of Service programs.

Table 8. Summary of environmental effects by alternative for Theodore Roosevelt (TR) and Holt Collier (HC) NWRs.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
WILDLIFE AND POPULATION MANAGEMENT **Priority Resource Issues 1 and 3. See Draft CCP Chapter III for a full description.**			
Goal 1: Wildlife and Population Management **Maintain species representative of the Lower Mississippi River Valley, with special emphasis on waterfowl, other migratory birds, and imperiled species.**			
Inventory and Monitoring (I & M)	Neutral to positive. Continue to approve and support current Special Use Permits (SUPs) for research. The Service's I & M staff are compiling regional survey data. Continue to support data calls.	Neutral to positive. SUPs – Same as Alternative A. Funding is proposed for a project to do a baseline survey of priority and imperiled (pondberry) species with 2 follow-up surveys within 15 years.	Neutral to positive. SUPs – Same as Alternative A. If the Complex Biologist position is filled or with outside assistance, create and implement an Inventory and Monitoring Step-down Plan or survey protocols. With a Complex Biologist, I & M staff, or outside assistance, conduct baseline surveys of native species.
Pondberry Plant[1]	Neutral. No active management; not surveyed to know if plant or suitable habitat exists.	Neutral to positive. As part of the project noted above, conduct a baseline survey of the refuges to see if this plant occurs or is suitable for reestablishment.	Positive. If plant occurs or sites are suitable for reestablishment, seek partnership or biological staff to conduct annual abundance and distribution surveys, and the monitoring of or assistance with reestablishment host sites as applicable.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Louisiana (LA) Black Bear[1]	Positive. Continue to support state research and monitoring efforts.	Most Positive. Continue to support the regional recovery objectives where possible on the local level. Seek partnerships, funding, and donations to obtain quality land acquisition and to conduct reforestation. The aim is to create potential travel corridors or reestablishment sites for bears. TR- With the establishment and staffing of the Visitor Center, the Louisiana black bear could be a theme and focus of its displays and environmental education and interpretive programs.	Most Positive. Same as Alternative B.
Migratory Birds[3]	Positive. Waterfowl are the priority species. Continue to provide sanctuary and seek to aid the Complex in meeting LMVJV foraging resource objectives.	Positive. Seek partnerships to restore agricultural impoundments. Alternative A would be expanded to include migratory species as a group with an objective to provide sanctuary. Initiate small-scale habitat management for migratory species (restore habitat).	Most Positive. If a Complex Biologist or outside assistance was available, more active habitat management (e.g., cooperative farming, moist-soil management) could occur. The emphasis would shift to include other birds besides waterfowl (e.g., shorebirds, waterbirds, and landbirds).

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
HABITAT MANAGEMENT **Priority Resource Issues 2 and 4. See Draft CCP Chapter III for a full description.**			
Goal 2. Habitat Management **Maintain habitats to support waterfowl, other migratory birds, and threatened and endangered species.**			
Habitat Management Plan (HMP)[2 + 4]	Neutral to positive. As resources are available, continue to implement the habitat management objectives as outlined in the Forest HMP.	Neutral to positive. Same as Alternative A.	Positive. Fill the vacant Complex biologist position to help achieve the goals and objectives of the Forest HMP (step-down plan).
Forest Management[4]	Neutral. HC – 90 percent of the former agricultural land has been reforested since the 1990s. No Active Management.	Neutral to positive. Maintain habitat, and as able, manage for wildlife according to the Complex Forest HMP. As practical and applicable, and potentially though the use of partnerships, restore newly acquired lands to forest conditions more reflective of native species that had occurred historically.	Neutral to positive. Same as Alternative B.
Water resources – water quality & quantity[4]	Neutral - No management. The Refuge Manager pursues grant and study funding opportunities as they arise. Currently, no funding is available.	Positive. Pursue partnership or grant funding to initiate a study to discern and evaluate remedial efforts to restore or mimic natural hydrology. Adaptively manage to restore and improve areas in need.	Neutral. While this is a priority issue, it may not be possible to address it fully in the 15-year timeframe of the CCP due to resource and funding limitations.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Land Acquisition[4]	Positive. Continue to build the land base of each refuge up to its approved acquisition boundary acreage.	Positive. Same as Alternative A.	Positive. Same as Alternative A.
Invasive and Nuisance Species[2] - Integrated Damage Control	Neutral to Positive. Feral swine and nuisance species are removed opportunistically by Complex staff and via limited harvest during existing hunts on HC NWR. There was an Interagency Agreement with USDA Wildlife Services for trapping at Yazoo, TR and HC NWRs in 2014.	Positive. Apply for grants or develop partnerships (e.g., USDA or counties) to control nuisance species opportunistically, for example along highways that bisect refuges. Feral swine efforts would be aimed at lessening the negative effects they cause to their prey species and the refuges' habitat. TR- Open the refuge to the public and establish a hunt program for limited harvest of nuisance species and feral swine.	Positive. Same as Alternative B.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
RESOURCE PROTECTION **Priority Resource Issue 5. See Draft CCP Chapter III for a full description.**			
Goal 3. Resource Protection – Protect cultural and historic resources for future generations.			
Cultural Resources[5] **Archaeological and Historical site protection**	Neutral to Positive. Protect all known archaeological sites on the refuge from illegal take or damage. Protection is addressed in refuge operations, by law enforcement patrols, and via consultation with regional archeologist. The TR Complex has a draft Law Enforcement plan (2014), which would cover the two newer refuges.	Neutral to Positive. If the Visitor Center is operational, promote educational awareness to the public by providing an understanding and appreciation of the refuges' ecology and the human influence on the region's ecosystems (visitor service cultural heritage theme). Promote regulations and voluntary compliance to protect sites via interpretive signs, displays and educational programs. Conduct archaeological or cultural heritage surveys as the opportunity arises.	Neutral to Positive. Expand Alternative B. If cultural sites and resources are identified, develop partnerships to aid in the management of them.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
VISITOR SERVICES **Priority Resource Issues 6 and 7. See Draft CCP Chapter III for a full description.**			
Goal 4. Visitor Services – Develop programs for the public which promote wildlife-dependent recreation, environmental education and interpretation, and the cultural heritage of the Delta. Provide and promote public use that leads to enjoyable experiences and a greater understanding of fish, wildlife, and habitat conservation.			
Visitor Center (Center)[7]	Neutral. Funds have been appropriated for a Visitor Center to be located at Theodore Roosevelt NWR and contain interpretation and environmental education facilities.	Positive. TR - We could not operate the Center without obtaining operational funding to maintain and staff it. Funding may have to come from an outside source. A compatibility determination is recommended for approval to site, construct and operate the Center as detailed in Appendix F, #11.	Neutral. Consider alternative sites if one cannot be secured.
Hunting[6]	Negative to Positive. Open TR for hunting and expand hunting opportunities on HC.	Negative to Positive. Same as Alternative B.	Negative to Positive. Same as Alternative B.
Fishing[6]	Negative. Recreational fishing is not currently offered at either refuge.	Positive. Open the refuges to recreational fishing by bank or boat. TR – May have boat-fishing potential at Coon Bayou. HC – bank fishing.	Most Positive. Seek partnerships and funding to create limited fishing opportunities and/or facilities (e.g., primitive boat launch at TR). TR- With the establishment of the Visitor Center, seek or create a small lake or pond for fishing.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Environmental Education (EE)[6]	Neutral. While there are no formal programs on the refuges at present, the Complex staff provide talks opportunistically and/or on request on various themes.	Neutral to positive. Hire a Park Ranger (Visitor Services Specialist) to develop and provide EE programs for the refuges. The Center facility and staff would expand the Service's ability to provide EE programs (e.g., outdoor classrooms, environmental science field classes).	Neutral to positive. Same as Alternative B.
Interpretation[6]	Neutral to positive. Continue to seek and use offsite locations for displays on interpretive themes and/or attend off-site events.	Positive. The Center facility and staff would expand the Service's ability to provide interpretive programs and displays. Key messages would put focus on cultural heritage, LA black bear, etc.	Positive. As refuges are opened and public uses expanded, consider ways to promote these and main themes (e.g., create a station-specific video, add kiosks, welcome station, info panels, use social media).
Wildlife Observation and Photography[6]	Neutral to Positive. TR is closed to public use. HC – No facilities or trails exist. Some opportunities during hunts. Opportunities for both refuges are limited to viewing from roads and highways.	Positive. TR – some opportunities would become available during hunts or may be incorporated with the Center design (trails/viewing areas or platforms). HC – same as Alternative A.	Most Positive. Build facilities on both refuges to enhance viewing such as trails, observation platforms/tower, and/or photo blinds.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Appropriate Use and Compatibility Determinations (CDs)	Neutral to Positive. TR - Complex and Interim compatibility determinations are not in effect due to the refuge being closed to the public. HC has CDs for five priority public uses: hunting, EE, interpretation, wildlife photography, and wildlife observation.	Positive. TR – open the refuge to public use. Update and adopt compatibility determinations for all six wildlife-dependent priority public uses or both refuges. See Appendix F for a full description.	Positive. Same as Alternative B.
Non-Big Six Uses:	Neutral. The Complex Compatibility Determinations from its 2006 CCP (Appendix V, pp. 221-224) describe and allow for these uses on TR & HC refuges: • Firewood Gathering***** • Commercial Photography***** • Timber Harvest for Forest Management***** • Trapping***** • Research. ***** Approved as commercial uses.	Positive. The 4 Complex CDs for commercial use are proposed to be updated for the two refuges. An updated CD for Research and Monitoring is proposed. See Appendix F, Compatibility Determinations, for details of the uses, resource impacts, and stipulations to ensure compatibility.	Positive. Same as Alternative B.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
REFUGE ADMINISTRATION **Priority Resource Issues 8 and 9. See Draft CCP Chapter III for a full description.**			
Goal 5: Refuge Administration **Seek to obtain and provide sufficient infrastructure, staffing, partnerships, and administrative support to meet the refuges' goals and objectives for managing their natural resources.**			
Administrative Resources: Personnel Management[8]	Negative to Neutral. Both refuges are currently unfunded and unmanned.	Positive. Add three permanent positions. The refuges, visiting public, and Center would benefit from having these positions: 1 Wildlife Refuge Manager; 1 Refuge Ranger (Visitor Services Specialist/Volunteer Coordinator); and 1 Maintenance Worker.	Most Positive. Add six permanent positions. In addition to the three positions identified in Alternative B, these 3 positions would be sought: 1 Office Assistant, GS-7, to aid with the administrative duties of the refuges and serve as the main receptionist at the Visitor Center; 1 Facilities Operations Specialist; and 1 Federal Wildlife Officer. Fund and fill the vacant Complex biologist position to oversee and aid in wildlife and habitat management of all seven refuges.

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Administrative Resources: Facilities & Equipment[8]	Negative to Neutral. No current refuge operations facilities exist on either refuge. TR – Contains dilapidated structures from when the lands were farmed. Maintain and replace any equipment used on refuges over time (e.g., office computers, vehicles, maintenance tools).	Positive. TR – Detailed study and design for the Center would be done prior to construction. Purchase, maintain, and replace (as needed) any equipment used on refuges over time. Build a small storage facility on each refuge for equipment. Build a shared fuel storage facility.	Most Positive. Same as Alternative B. At the time when the refuges are established with a land base that would support traditional refuge operations, build a maintenance compound at each which would include storage for vehicles, equipment and fuel. Build facilities to enhance public use (e.g., trails, observation viewing areas or platforms, information kiosks, boat launch at Coon Bayou, etc.).
Administrative Data Base Management and Resource Management[8]	Neutral to positive. All databases for refuge resources are regularly maintained.	Positive. The proposed Wildlife Refuge Manager position would aid in handling the additional reporting and staff support.	Positive. An office assistant position is proposed to do all office and staff support duties such as payroll, travel, purchasing, etc. (dual function as Center receptionist).

Issues	Alternative A (No Action Alternative)	Alternative B (Proposed Alternative)	Alternative C (Optional Alternative)
Partnerships[9]	Positive. Maintain partnerships for research and management of the refuges to assist Complex staff.	Positive. With Wildlife Refuge Manager position, consider or initiate use of prison and trustee crews for refuge maintenance work. Expand Alternative A to also seek new partnerships.	Positive. Same as Alternative B.

UNAVOIDABLE IMPACTS AND MINIMIZATION MEASURES

The following sections describe measures the Service will employ to minimize potential impacts resulting from implementation of the proposed action, Alternative B.

EFFECTS ON WATER QUALITY

Any soil disturbance and siltation due to refuge operations and the construction and maintenance of the Visitor Center and associated facilities are expected to be minor and of short duration. In-roads, driveways and parking areas would be graded and filled with gravel to reduce rutting and soil erosion. To further reduce potential impacts, the Service will use best management practices such as erecting silt fences or establishing native grass over denuded areas to minimize erosion and sedimentation of soils into water bodies. The Visitor Center is being sited on a scarified site without direct waterway access, using grading and gravel to reduce impervious cover, and incorporating spray-field irrigation with the septic system design.

Long-term herbicide use to control invasive plant species outbreaks and infestations could result in a slight, localized degradation of water quality. Through proper application of selected herbicides and adjuvants appropriate to site-specific conditions, herbicidal control of invasive plants seeks to benefit the environmental health and integrity of the refuge. Appropriately used herbicides and adjuvants may have a minimal short-term impact on water quality in the immediate vicinity of the application, where significant and unexpected rain events or high winds may move recently applied and highly mobile herbicides. The use of site-appropriate herbicides is a proven standard methodology to control and manage exotic plant infestations presently degrading native plant and wildlife habitats. Their proper application following label requirements greatly reduces the risks to water quality. Every effort will be employed to ensure proper and appropriate application of herbicides to control noxious weeds throughout the refuge.

WILDLIFE DISTURBANCE

Disturbance to wildlife is an unavoidable consequence of any public use program, regardless of the activity involved. While some activities may be less disturbing than others, all public use activities proposed will be planned to avoid unacceptable levels of impacts. At Theodore Roosevelt and Holt Collier NWRs, the main form of wildlife disturbance would be from hunter access. However, the levels of disturbance from the proposed action are not significantly adverse due to being in localized areas and for the limited duration of hunt seasons. General wildlife observation by the public may result in minimal disturbance to wildlife. Similarly fishing access on Coon Bayou (Theodore Roosevelt NWR) and motorized boat access could cause minor disturbance of waterfowl and other species. But, these would be temporary, limited in area and also minimized by the use of low horsepower motors (e.g., trolling motors). If the Refuge Manager determines that impacts from the expected additional visitor uses are above acceptable levels, those uses will be modified, discontinued, restricted, or rerouted to other less sensitive areas and/or properties to minimize impacts. The Visitor Center will be an administrative site apart from the refuge proper so that it is best situated for public access from major roads. The building, driveway, and parking will be located on lands which are already cleared and altered. Due to the location and site design, minimal to no wildlife disturbance is expected at construction or during operation.

VEGETATION DISTURBANCE

Minor trampling of vegetation can be expected on any refuge lands open to the public and during the construction or maintenance of refuge trails that require clearing of non-sensitive vegetation along

their lengths. The Visitors Center is to be sited on lands already cleared as they are former agricultural lands. Impacts from the maintenance or construction of the Visitor Center are expected to be minor, short-term, and discrete impacts off-site of the refuge proper.

USER GROUP CONFLICTS

As public use increases over time, unanticipated conflicts between different user groups could occur. If this should happen, the Service will adjust its programs on the refuges, as needed, to eliminate or minimize any public use issues. We will use methods that have proven to be effective in reducing or eliminating public use conflicts. These methods include establishing separate use areas, different use periods, and limits on the numbers of users in order to provide safe, quality, appropriate, and compatible wildlife-dependent recreational opportunities.

EFFECTS ON ADJACENT LANDOWNERS

Implementation of the proposed action is not expected to negatively affect owners of private lands adjacent to the refuge. The proposed Visitor Center site would be located in a rural area that border the edge of large agricultural fields. Positive impacts to neighboring refuge lands that would be expected include higher property values, less intrusion of invasive exotic plants, increased aesthetics, and increased opportunities for viewing more diverse wildlife.

However, some negative impacts may occur. To help minimize these potential impacts on adjacent landowners, the Service will work with partners to provide informational signs that clearly mark refuge and partnering agency boundaries. Wildfire suppression would benefit adjacent landowners.

LAND OWNERSHIP AND SITE DEVELOPMENT

Land acquisition efforts by the Service could lead to changes in land use. If additional lands are acquired, they would be restored (reforested) and maintained in a natural state and managed for native wildlife populations in accordance with goals, objectives, and strategies developed in the CCP as funds are available to do so. Additional lands acquired for the refuges would be evaluated for appropriate and compatible wildlife-dependent public uses.

Potential development of any refuge structures or other improvements could lead to minor short-term discrete negative impacts on plants, soils, and some wildlife species. When building structures, efforts would be made to use recycled products and environmentally sensitive treated lumber. All construction activities would comply with all applicable laws, policies, and treaties, including the requirements of Section 404 of the Clean Water Act, the National Historic Preservation Act, and Executive Order 11988, Floodplain Management.

CUMULATIVE IMPACTS

A cumulative impact is defined as an impact on the natural or human environment that results from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency (federal or nonfederal) or person undertakes such other actions (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 canceling out each other’s effect on a resource. But more typically, multiple effects add up, with each new action contributing an incremental impact on the resource. The overall effect can be greater than the sum

of the individual effects. For example, the effect of one more action that contributes to the taking of a single animal or plant, could cross the threshold of reproductive sustainability for that species and threaten to extinguish the population.

The Service is not aware of any past, present, or future planned actions that would result in a significant, negative, cumulative consequence when added to the refuges' proposed management activities, as outlined in the proposed action.

None of the alternatives are expected to significantly, cumulatively, or adversely impact upon hydrology or floodplains. The management activities in the proposed action are intended to maintain or improve the area's biological resources, protecting the biological integrity of the refuges. Benefits are anticipated for waterfowl. Negative impacts associated with exotic, invasive, and nuisance species would be reduced through active habitat management.

The management activities in the proposed action are not anticipated to have significant, adverse effects on climate change. The effects of climate change on populations and range distributions of wildlife are expected to be species-specific and highly variable, with some effects considered negative and others considered positive. Generally, the prediction in North America is that the ranges of habitats and wildlife will generally move upwards in elevation and northward as temperatures rise. Species with small and/or isolated populations and low genetic variability will be least likely to withstand the impacts of climate change. Species with broader habitat ranges, wider niches, and greater genetic diversity should fare better or may even benefit. This will vary depending on specific local conditions, changing precipitation patterns, and the particular response of individual species to the different components of climate change (Inkley et al. 2004).

One measure that the Service is undertaking nationwide is the effort to reduce the carbon footprint of the agency. The Complex will strive to reduce its carbon footprint through a variety of conservation measures that could include alternative energy, energy-saving appliances, energy-efficient vehicles (e.g., hybrid and electric), and recycled and recyclable materials. The proposed management action includes working with partners to understand and ameliorate the impacts of climate change on the natural resources of the refuge and the area.

Further, the management activities in the proposed action are not expected to have significant, adverse effects on the cultural resources of the area; instead, they will provide enhanced protection of these resources on the refuges if any are discovered.

Nor are significant, adverse effects expected from the proposed action regarding the local economy; instead, the proposed management activities are anticipated to support area property values and aesthetics and the Visitor Center should help the local economy and state sales tax revenues.

A few activities in the proposed action are anticipated to have negligible to minor cumulative impacts, including the following:

Cumulative impacts from integrated pest control should be largely beneficial over time if the proposed program is successful. By implementing the CCP proposals, invasive plant infestations should be less problematic than at present. The proposed control of feral swine and other invasive species would reduce habitat destruction, thereby cumulatively improving habitats over time and reducing competition with native fauna.

The proposed invasive plant control activities are not expected to have significant, adverse, cumulative effects. These activities could involve mechanical removal, application of approved herbicides, release of biological control agents, and prescribed burning or a combination of these activities. The herbicides used for exotic plant control are intended only to target specific exotic plants or infestations, are approved for use in natural areas to control exotic plants, and generally do not have long-lasting residual effects to the environment, as their chemical nature provides for a relatively quick breakdown of the product upon application. Further, the use of herbicides is inherently limited based on label rates and approved application practices on refuge lands and natural further minimizing any negative impact. All exotic plant chemical applications would be conducted in accordance with Service policy and under an approved pesticide use permits.

Because of concerns expressed at certain other refuges about the cumulative effects of hunting, the following section analyzes and discusses in some detail the cumulative impacts of the proposed hunting programs on a variety of resources at Theodore Roosevelt and Holt Collier NWRs.

ANTICIPATED IMPACTS ON WILDLIFE SPECIES

Migratory Birds

The Service annually prescribes frameworks, or outer limits, for dates and times when hunting may occur and the number of birds that may be taken and possessed. These frameworks are necessary to allow state selections of season and limits for recreation and sustenance; aid federal, state, and tribal governments in the management of migratory game birds; and permit harvests at levels compatible with population status and habitat conditions. Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the Service annually promulgates regulations (50 CFR Part 20) establishing the frameworks from which states may select season dates, bag limits, shooting hours, and other options for each migratory bird hunting season. The frameworks are essentially permissive in that hunting of migratory birds would not be permitted without them. Thus, in effect, federal annual regulations both allow and limit the hunting of migratory birds.

Migratory game birds are those bird species so designated in conventions between the United States and several foreign nations for the protection and management of these birds. Under the Migratory Bird Treaty Act (16 U.S.C. 703-712), the Secretary of the Interior is authorized to determine when "hunting, taking, capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any ... bird, or any part, nest, or egg" of migratory game birds can take place, and to adopt regulations for this purpose. These regulations are written after giving due regard to "the zones of temperature and to the distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds," and are updated annually (16 U.S.C. 704(a)). This responsibility has been delegated to the U.S. Fish and Wildlife Service as the lead federal agency for managing and conserving migratory birds in the United States. Acknowledging regional differences in hunting conditions, the Service has administratively divided the nation into four flyways for the primary purpose of managing migratory game birds. Each flyway (Atlantic, Mississippi, Central, and Pacific) has a flyway council, a formal organization generally composed of one member from each state and province in that flyway. Theodore Roosevelt and Holt Collier NWRs are within the Mississippi Flyway.

The process for adopting migratory game bird hunting regulations, located in 50 CFR Part 20, is constrained by three primary factors. Legal and administrative considerations dictate how long the rule-making process will last. Most importantly, however, the biological cycle of migratory game birds controls the timing of data-gathering activities and thus the dates on which these results are available for consideration and deliberation. The process of adopting migratory game bird hunting regulations

includes two separate regulations—development schedules based on "early" and "late" hunting season regulations. Early hunting seasons pertain to all migratory game bird species in Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands; migratory game birds other than waterfowl (e.g., dove, woodcock, etc.); and special early waterfowl seasons, such as those for teal or resident Canada geese. Early hunting seasons generally begin prior to October 1. Late hunting seasons generally start on or after October 1 and include most waterfowl seasons not already established. There are basically no differences in the processes for establishing either early or late hunting seasons. For each cycle, Service biologists and others gather, analyze, and interpret biological survey data and provide this information to all those involved in the process, through a series of published status reports and presentations to flyway councils and other interested parties.

Because the Service is required to take abundance of migratory birds and other factors into consideration, the Service undertakes a number of surveys throughout the year in conjunction with the Canadian Wildlife Service, state and provincial wildlife management agencies, and others. To determine the appropriate frameworks for each species, the Service considers factors such as population size and trend, geographical distribution, annual breeding effort, the condition of breeding and wintering habitat, the number of hunters, and the anticipated harvest. After frameworks are established for season lengths, bag limits, and areas for migratory game bird hunting, migratory game bird management becomes a cooperative effort of state and federal governments. After Service establishment of final frameworks for hunting seasons, the states may select season dates, bag limits, and other regulatory options for the hunting seasons. States may always be more conservative (restrictive) in their selections than the federal frameworks, but never more liberal (less restrictive). Season dates and bag limits for national wildlife refuges open to hunting are never longer or larger than the state regulations. In fact, based upon the findings of an environmental assessment developed when a national wildlife refuge opens a new hunting activity, season dates and bag limits may be more restrictive than the state allows.

NEPA considerations by the Service for hunted migratory game bird species are addressed by the programmatic document, ‘‘Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds” (FSES 88– 14), filed with the Environmental Protection Agency on June 9, 1988. The Service published a Notice of Availability in the *Federal Register* on June 16, 1988 (53 FR 22582), and a Record of Decision on August 18, 1988 (53 FR 31341). Annual NEPA considerations for waterfowl hunting frameworks are covered under separate, tiered environmental assessments. More information may be obtained from: Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, Department of the Interior, MS MBSP-4107-ARLSQ, 1849 C Street, Washington, D.C. 20240.

Resident Big Game

Continuation of deer hunting on Holt Collier refuge lands should not have adverse cumulative impacts on the area’s and state’s deer herd, and may indeed be beneficial both for habitats and the health of individual animals in the herd itself.

Resident Small Game

Currently, small game hunting is offered at Holt Collier NWR. At the time that a sizable land area is accumulated, small game hunting is proposed for Theodore Roosevelt NWR. The open season for resident small game is concurrent with seasons established by the State. Regulations apply for all hunted species, bag and possession limits, and archery, muzzle loading gun, and general gun hunt days. There is no evidence that allowing these hunts is causing negative cumulative impacts on small game populations on the refuge or adjacent properties.

Nongame Wildlife
Nongame or non-hunted wildlife would include non-hunted migratory birds such as songbirds, wading birds, raptors, and woodpeckers; small mammals such as voles, moles, mice, shrews, and bats; reptiles and amphibians such as snakes, skinks, turtles, lizards, salamanders, frogs and toads; and invertebrates such as butterflies, moths, other insects and spiders. Except for migratory birds and some species of migratory bats, butterflies and moths, these species have very limited home ranges and hunting could not affect their populations regionally; thus, only local effects will be discussed.

Disturbance to non-hunted migratory birds could have regional, local, and flyway effects. Regional and flyway effects would not be applicable to species that do not migrate, such as most woodpeckers and some songbirds including cardinals, titmice, wrens, chickadees, etc. The cumulative effects of disturbance to non-hunted migratory birds under the proposed action are expected to be negligible for the following reasons. Long-term future impacts that could occur if reproduction was reduced by hunting are not relevant for this reason. Disturbance to the daily wintering activities of birds, such as feeding and resting, might occur. Disturbance to birds by hunters would probably be commensurate with that caused by non-consumptive users. The cumulative effects of disturbance to non-hunted migratory birds under the proposed action are expected to be small for the above reasons.

With regard to other wildlife, disturbance would be unlikely for the following reasons. Small mammals, including bats, are inactive during winter when hunting season occurs (with the exception of the spring turkey season). These species are also nocturnal. Both of these qualities make hunter interactions with small mammals very rare. Hibernation or torpor by cold-blood reptiles and amphibians also limits their activity during the hunting season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Encounters with reptiles and amphibians in the early fall are few and should not have cumulative negative effects on reptile and amphibian populations. Invertebrates are also not active during cold weather and would have few interactions with hunters during the hunting season. Refuge regulations further mitigate possible disturbance by hunters to non-hunted wildlife. Vehicles are restricted to roads and the harassment or taking of any wildlife other than the game species legal for the season is not permitted.

Over time, the ingestion of lead by fish and non-hunted wildlife could possibly emerge as a cumulative impact. Fishing weights are lead and they could possibly be ingested by alligators or turtles. Small game and deer are the only species hunted with lead shot from lead rifles. No impacts are anticipated for waterfowl or other bird species with the possible exception of scavenger species, such as vultures. Over the life of the CCP and beyond, the Service and refuge management will remain alert for any signs of lead poisoning in nongame and game wildlife.

Threatened and Endangered Species
The only known federally listed species with the potential for occurring on either refuge is the Louisiana black bear. No hunting is or would be allowed for bear. If the endangered pond berry plant (historically found in the area) is found or transplanted to the refuge, it is likely those areas would be posted to limit public access.

An Intra-Service Section 7 evaluation under the Endangered Species Act is included in Appendix G. It concludes that the proposed action would have no effect on the above-listed species. The cumulative adverse impact on listed species would be negligible, comparable to that caused by anglers, boaters and non-consumptive users.

ANTICIPATED IMPACTS ON REFUGE PROGRAMS, FACILITIES, CULTURAL RESOURCES, ENVIRONMENTAL JUSTICE, ENVIRONMENTAL RESOURCES, AND SURROUNDING COMMUNITIES

Wildlife-dependent Recreation
If Theodore Roosevelt NWR is opened to public use and the public use on both refuges increases over time as the refuges' acreages expand to the limits of their approved acquisition boundaries, unanticipated conflicts between user groups may occur. The refuges' visitor use programs would be adjusted as needed to eliminate or minimize each problem and provide quality wildlife-dependent recreational opportunities. Experience on many refuges has proven that time and space zoning (e.g., establishment of separate use areas, use periods, and restrictions on the number of users) is an effective tool in eliminating conflicts between user groups. Overall, the cumulative impact of hunting on other wildlife-dependent recreation at Theodore Roosevelt and Holt Collier NWRs would be negligible to minor.

Refuge Facilities
The Service defines facilities as: real property that serves a particular function(s) such as buildings, roads, utilities, water control structures, raceways, etc. Theodore Roosevelt NWR has no facilities and Holt Collier NWR has only a hunter check station. Overall, the cumulative impact of hunting on the refuges' facilities would be negligible or nil.

Cultural Resources
There are no known archaeological or historic properties on either refuge. Hunting, regardless of method or species targeted, is a consumptive activity that does not generally pose a threat to cultural sites or historic properties on or near the refuge. In fact, hunting meets only one of the two criteria used to identify an "undertaking" that triggers a federal agency's need to comply with Section 106 of the National Historic Preservation Act. These criteria, which are delineated in 36 CFR Part 800, state:

"An undertaking is any project, activity, or program that can alter the character or use of an archaeological or historic site located within the 'area of potential effect;' and the project, activity, or program must also be either funded, sponsored, performed, licensed, or have received assistance from the agency."

Consultation with the pertinent State Historic Preservation Office and federally recognized Native American Indian tribes are, therefore, not required. However, the Service would take precautions to close any areas to public use if resources are discovered and could be compromised by public access.

Environmental Justice
Executive Order 12898, "Federal Actions to address Environmental Justice in Minority Populations and Low-income Populations," was signed by President Bill Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations to achieve environmental protection of all communities. In part, 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 access to public information and participation in matters relating to human health or the environment.

There are low-income and minority populations in the area, but there is no evidence of adverse disproportionate environmental justice issues associated with the refuges existing hunting program or proposed expansion. Any affected populations would generally be affected in the same ways as the regional population as a whole.

Environmental Resources
The Service expects no appreciable adverse impacts of the proposed action on the Theodore Roosevelt and Holt Collier NWR environment, which consists of soils, vegetation, air and water quality. Some disturbance to surface soils and vegetation would occur in areas selected for hunting; however, impacts would be minor and localized. Litter left behind by hunters would also be expected, although unlike the litter associated with fishing, which often concentrates near or at certain heavily fished locations, litter from hunters is likely to be more widely dispersed and therefore less conspicuous. Hunting would be expected to benefit vegetation, since it is used to maintain many resident wildlife populations, particularly deer, in balance with the habitat's carrying capacity. When and where necessary, the Service would also control access or close areas to minimize habitat degradation.

The Service expects impacts to air and water quality to be none to minimal and only due to hunters' automobile emissions to get to the refuges. The effect of these refuge-related activities, as well as other management activities, on overall air and water quality in the region are anticipated to be negligible, compared to the contributions of industrial centers, power plants, and non-refuge vehicle traffic.

Surrounding Communities
Hunting is generally popular in rural Mississippi, but there is always a potential for conflicts with adjacent landowners. The Service would cooperate with state, local, and private partners to minimize adverse impacts on adjacent lands and landowners. The nature of the potential impacts on surrounding communities is less cumulative than it is long-running and persistent.

DIRECT AND INDIRECT EFFECTS

Direct effects are caused by an action and occur at the same time as the action. Indirect effects are caused by an action but are manifested later in time or further removed in distance, but they are still reasonably foreseeable. The actions proposed for implementation under the proposed alternative include the development of a new Visitor Center with environmental education and interpretive facilities; wildlife and population management; habitat management; resource protection; public use; and the operation of the refuges (administrative programs). These actions could likely lead to both direct and indirect effects. Facility development, for example, could lead to increased public use in certain areas, which might have potential indirect effects such as increased traffic, noise, littering, and wildlife disturbance.

Other indirect effects that may result from implementing the proposed action include minor impacts from siltation and ground disturbance during construction of the Visitor Center, maintenance compounds or storage facilities, trails, or observation platforms. None of the direct or indirect impacts are anticipated to be significantly adverse. The refuges' management activities would constantly be adapted as new research, data, and information become available to protect resources and minimize impacts.

SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

The proposed alternative strives to maintain or enhance the long-term productivity and sustainability of natural resources on the refuges including federal trust species and the habitats upon which they depend. The benefits of this plan for long-term productivity far outweigh any impacts from short-term actions such invasive plant control. While invasive plant removal could produce unsightly results for a time, they would also provide long-term wildlife and habitat benefits to the refuges.

The proposed outreach and environmental education programs strive to increase ethical outdoor behavior, minimize impacts from human disturbances, and encourage visitors and participants in refuge programs to be better stewards of the environment. The short-term negative impacts associated with localized public use activities will help produce long-term benefits for the refuges' entire ecosystem and provide an improved visitor experience and understanding of ecological processes. The addition of the Visitor Center with both outdoor and indoor environmental education and interpretive facilities would greatly improve the Services' capability to promote interpretation and environmental education.

The key to protecting and ensuring the refuges' long-term productivity is to find the threshold where public uses do not degrade or interfere with the refuges natural resources through careful monitoring and adaptive management. The activities outlined under the proposed action have been carefully conceived to ensure that the threshold is not passed. Implementing the proposed action would lead to long-term benefits for wildlife protection and land conservation that far outweighs any short-term effects. In summary, all alternatives would contribute positively to maintaining or enhancing the long-term productivity of the refuges environment.

SUMMARY STATEMENT

The management activities in the proposed action are anticipated to maintain or improve the refuges biological resources and protect its biological integrity. Benefits are expected for native wildlife. Benefits are also expected for cultural resources, as well as for the local economy. Neutral to beneficial, but no significantly adverse, effects are expected for the refuges' resources with the implementation of the proposed alternative.

V. Coordination and Consultation

OVERVIEW

The comprehensive planning process for Theodore Roosevelt and Holt Collier NWRs CCP involved a variety of participants, including federal, state, and local governments; Native American tribal liaisons; concerned citizens; and state and national organizations. The list of participants, beyond those individuals and organizations providing comments during the public scoping process, includes the CCP Planning Team which also acted as the Wilderness Review Team. The Draft CCP/EA has been peer reviewed by the Service and its partnering agency before its release to the public.

PLANNING TEAM

The CCP Planning Team met regularly in late 2013 through July 2014. It included representatives from the Service and the State of Mississippi. The team met to determine the priority issues, identify potential solutions or approaches (alternatives), and to develop, draft, review and refine the plan.

U.S. Fish and Wildlife Service (USFWS):

- Mary Morris, Natural Resource Planner and CCP Planning Team Leader
- Justin Sexton, Wildlife Refuge Manager for Yazoo, Holt Collier, and Theodore Roosevelt NWRs
- Mike Rich, Project Leader for Theodore Roosevelt NWR Complex
- Seth Swafford, Deputy Project Leader for Theodore Roosevelt NWR Complex
- Dove Barnes, Park Ranger/Visitor Services Specialist for Theodore Roosevelt NWR Complex
- Lamar Dorris, Forester for Theodore Roosevelt NWR Complex
- Jeremy (Bart) Marble, Federal Wildlife Officer for Yazoo, Holt Collier, and Theodore Roosevelt NWRs.

State of Mississippi Department of Wildlife, Fisheries and Parks (MDWFP):

- James Callicutt, Biologist, Statewide Waterfowl Program.

SECTION C. APPENDICES

Appendix A. Acronyms, Abbreviations, and Glossary

ACRONYMS AND ABBREVIATIONS

BCR	Bird Conservation Region
^{o}C	degrees Celsius
CAA	Clean Air Act
CCP	Comprehensive Conservation Plan
CD	Compatibility Determination
Center	Theodore Roosevelt NWR Complex Visitor Center
cfs	cubic feet per second
CFR	Code of Federal Regulations
Complex	Theodore Roosevelt NWR Complex
CSC	Climate Science Center
EA	Environmental Assessment
EE & I	environmental education and interpretation
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
EO	Executive Order
^{o}F	degrees Fahrenheit
FTE	full-time-equivalent employee
FWS	U.S. Fish and Wildlife Service
FY	fiscal year
GIS	geographic information system
GPS	global positioning system
HC	Holt Collier NWR
HMP	habitat management plan
I & M	inventory and monitoring
IPCC	Intergovernmental Panel on Climate Change
LCC	Landscape Conservation Cooperative
LE	law enforcement
LOOT	Listing of Outlaw Treachery Clearinghouse
LPP	land protection plan
mg/l	milligrams per liter
NABCI	North American Bird Conservation Initiative
NADP	National Atmospheric Deposition Program
NAWCP	North American Waterbird Conservation Plan
NAWMP	North American Waterfowl Management Plan
NBCI	Northern Bobwhite Conservation Initiative
NEPA	National Environmental Policy Act
NPS	National Park Service
NRI	National Resources Inventory
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
NVCS	National Vegetation Classification System
RO	Regional Office, Southeast Region of U.S. Fish and Wildlife Service
SAMMS	Service Asset and Maintenance Management System

Service	U.S. Fish and Wildlife Service
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Officer
TR	Theodore Roosevelt NWR
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
VS	visitor services
VSS	visitor services specialist
WHMSI	Western Hemisphere Migratory Species Initiative
$	U.S. dollars

GLOSSARY

Adaptive Management:	Refers to a process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in a management plan. Analysis of results help managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.
Alternative:	A reasonable way to fix the identified problem or satisfy the stated need (40 CFR 1500.2). Also, alternatives are different sets of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the Refuge System mission, and resolving issues (Service Manual 602 FW 1.6B).
Biological Diversity:	The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (USFWS Manual 052 FW 1. 12B). The System's focus is on indigenous species, biotic communities, and ecological processes. Also referred to as Biodiversity.
Carrying Capacity:	The maximum population of a species able to be supported by a habitat or area.
Categorical Exclusion (CE,CX, CATEX, CATX):	A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4).
Clean Air Act:	Refers to the Clean Air Amendments of 1977 (P.L. 95-95; 91 Stat. 685). The primary objective of the Clean Air Act is to establish Federal standards for various pollutants from both stationary and mobile sources and to provide for the regulation of polluting emissions via state implementation plans. In addition, the amendments are designed to prevent significant deterioration in certain areas where air quality exceeds national standards, and to provide for improved air quality in areas which do not meet Federal standards ("nonattainment" areas).
Compatible Use and Compatibility Determination (CD):	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 National Wildlife Refuge System mission or the purpose(s) of the national wildlife refuge (50 CFR 25.12 (a)). A compatibility determination (CD) supports the selection of compatible uses and identifies stipulations or limits necessary to ensure compatibility.
Comprehensive Conservation Plan (CCP):	A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates (Service Manual 602 FW 1.6 E).

Cultural Resource Inventory:	A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined geographic area. Inventories may involve various levels, including background literature search, comprehensive field examination to identify all exposed physical manifestations of cultural resources, or sample inventory to project site distribution and density over a larger area. Evaluation of identified cultural resources to determine eligibility for the National Register follows the criteria found in 36 CFR 60.4 (Service Manual 614 FW 1.7).
Cultural Resources:	The remains of sites, structures, or objects used by people in the past.
Disturbance:	Significant alteration of habitat structure or composition or wildlife behavior. May be natural (e.g., fire) or human-caused events (e.g., aircraft overflight).
Ecosystem:	A dynamic and interrelating complex of plant and animal communities and their associated non-living environment.
Ecosystem Management:	Management of natural resources using system-wide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and basic ecosystem processes are perpetuated indefinitely.
Endangered Species (Federal):	A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.
Endangered Species (State):	A plant or animal species in danger of becoming extinct or extirpated in the state within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.
Environmental Assessment (EA):	A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).
Environmental Impact Statement (EIS):	A detailed written statement required by section 102(2)(C) of the National Environmental Policy Act, analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).
Extirpation:	When a species can no longer survive in regions that were once part of its range.

Finding of No Significant Impact (FONSI):	A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared (40 CFR 1508.13).
Goal:	Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose. (Service Manual 620 FW 1.6J).
Habitat:	Suite of existing environmental conditions required by an organism for survival and reproduction.
Habitat Restoration:	Management emphasis designed to move ecosystems to desired conditions and processes, and/or to healthy ecosystems.
Improvement Act:	The National Wildlife Refuge System Improvement Act of 1997.
Issue:	Any unsettled matter that requires a management decision, e.g., an initiative, opportunity, resource management problem, threat to the resources of the unit, conflict in uses, public concern, or other presence of an undesirable resource condition (Service Manual 602 FW 1.6K).
Migration:	The seasonal movement from one area to another and back.
Mission Statement:	Succinct statement of the unit's purpose and reason for being.
Monitoring:	The process of collecting information to track changes of selected parameters over time.
National Environmental Policy Act of 1969 (NEPA):	Requires all agencies, including the Service, to examine the environmental effects of its actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (40 CFR 1500).
National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57):	Under the Refuge Improvement Act, the U.S. Fish and Wildlife Service is required to develop 15-year Comprehensive Conservation Plans for all National Wildlife Refuges outside Alaska. The Act also describes the six public uses given priority status within the NWRS (i.e., hunting, fishing, wildlife observation, photography, environmental education, and interpretation).
National Wildlife Refuge System Mission:	The mission 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:	Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction; all lands, waters, and interests therein administered by the Secretary as wildlife refuges; areas for the protection and conservation of fish and wildlife that are threatened with extinction; wildlife ranges; games ranges; wildlife management areas; or waterfowl production areas.
National Wildlife Refuge:	A designated area of land, water, or an interest in land or water within the System.
Native Species:	Species that normally live and thrive in a particular ecosystem.
Notice of Availability (NOA):	A notice that an environmental document is available. Published in the Federal Register.
Notice of Intent (NOI):	A notice published in the Federal Register stating that an environmental document will be prepared and considered (40 CFR 1508.22).
Objective:	A concise statement of what we want to achieve, how much we want to achieve, when and where we want to achieve it, and who is responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring refuge accomplishments, and evaluating the success of strategies. (Service Manual 602 FW 1.6N).
Passerines:	A category of birds that includes medium to small, perching landbirds. Most are territorial singers and migratory. Also called songbirds.
Plant Association:	A classification of plant communities based on the similarity in dominants of all layers of vascular species in a climax community.
Plant Community:	An assemblage of plant species unique in its composition; occurs in particular locations under particular influences; a reflection or integration of the environmental influences on the site such as soils, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community.
Preferred Alternative:	This is the alternative determined to best achieve the Refuge purpose, vision, and goals; contributes to the Refuge System mission, addresses the significant issues; and is consistent with principles of sound fish and wildlife management.
Prescribed Fire:	The application of fire to wildland fuels to achieve identified land use objectives (Service Manual 621 FW 1.7).
Priority Species:	Fish and wildlife species that the Washington Department of Fish and Wildlife believe require protective measures and/or management guidelines to ensure their perpetuation. Priority species include the following: (1) state-listed and candidate species; (2) species or groups of animals susceptible to significant population declines within a specific area or statewide by virtue of their inclination to aggregate (e.g., seabird colonies); and (3) species of recreation, commercial, and/or tribal importance.

Public Involvement:	A process that offers impacted and interested individuals and organizations an opportunity to become informed about, and to express their opinions on Service actions and policies. In the process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.
Public:	Individuals, organizations, and groups; officials of federal, state, and local government agencies; Indian tribes; and foreign nations. It may include anyone outside the core planning team. It includes those who may or may not have indicated an interest in Service issues and those who do or do not realize that Service decisions may affect them.
Purposes of the Refuge:	The purposes 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. For refuges that contain Wilderness, the purposes of the Wilderness Act are additional purposes of the refuge (602 FWS 106).
Record of Decision:	A concise public record of decision prepared by the federal agency, pursuant to NEPA, that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).
Step-down Management Plan:	A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, safety) or groups of related subjects. It describes strategies and implementation schedules for meeting CCP goals and objectives (Service Manual 602 FW 1.6 U).
Strategy:	A specific action, tool, technique, or combination of actions, tools, and techniques used to meet unit objectives (Service Manual 602 FW 1.6 U).
Study Area:	The area reviewed in detail for wildlife, habitat, and public use potential. For purposes of this CCP/EA, the study area includes the lands within the currently approved Refuge boundary and potential Refuge expansion areas.
Threatened Species (Federal):	Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
Threatened Species (State):	A plant or animal species likely to become endangered in the state within the near future if factors contributing to population decline or habitat degradation or loss continue.
U.S. Fish and Wildlife Service Mission:	The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.

Vegetation, Habitat, or Forest Cover Type:	A land classification system based upon the concept of distinct plant associations.
Vision Statement:	A concise statement of what the planning unit should be, or what we hope to do, based primarily upon the Refuge System Mission and specific refuge purposes, and other mandates. We will tie the vision statement for the refuge to the mission of the Refuge System; the purpose(s) of the refuge; the maintenance or restoration of the ecological integrity of each refuge and the Refuge System; and other mandates (Service Manual 602 FW 1.6 Z).
Wilderness Study Areas:	Lands and waters identified through inventory as meeting the definition of Wilderness Area and undergoing evaluation for recommendation for inclusion in the Wilderness System.
Wilderness Area:	An area designated by the U.S Congress to be managed as part of the National Wilderness Preservation System (Draft Service Manual 610 FW 1.5).
Wildfire:	A free-burning fire; all fire other than prescribed fire that occurs on wildlands (Service Manual 621 FW 1.7).

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Appendix C. Relevant Legal Mandates, Executive and Secretarial Orders

NATIONAL WILDLIFE REFUGE SYSTEM AUTHORITIES

The mission of the Fish and Wildlife Service is to conserve, protect, and enhance the nation's fish and wildlife and their habitats for the continuing benefit of the American people. The Service is the primary Federal agency responsible for migratory birds, endangered plants and animals, certain marine mammals, and anadromous fish. This responsibility to conserve our nation's fish and wildlife resources is shared with other federal agencies and state and tribal governments.

As part of this responsibility, the Service manages the National Wildlife Refuge System. The mission of the National Wildlife 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.

The Theodore Roosevelt and Holt Collier National Wildlife Refuges are managed as part of this system in accordance with the Refuge Recreation Act of 1962, the National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, Executive Order 12996 (Management and General Public Use of the National Wildlife Refuge System), and other relevant legislation, executive orders, regulations, and policies.

FEDERAL LAWS AND MANDATES

The following list includes federal laws (statutes), presidential executive orders (EO), and secretarial orders (SO) issued by the Secretary of the Department of the Interior (DOI) that are relevant to the acquisition, administration, and management of national wildlife refuges. The descriptions highlight some aspects of these laws and policies that are relevant to comprehensive conservation planning; however, they are not legal interpretations. The entire act or executive or secretarial orders should be referenced for additional detail. Further information can be obtained from the following websites: *http://www.usa.gov/Topics/Reference-Shelf/Laws.shtml* (laws and EO) and *http://elips.doi.gov/elips/browse.aspx* (SO).

STATUTE	DESCRIPTION
Administrative Procedures Act (1946)	Outlines administrative procedures to be followed by federal agencies with respect to identification of information to be made public; publication of material in the *Federal Register*; maintenance of records; attendance and notification requirements for specific meetings and hearings; issuance of licenses; and review of agency actions.
American Antiquities Act of 1906	Provides penalties for unauthorized collection, excavation, or destruction of historic or prehistoric ruins, monuments or objects of antiquity on lands owned or controlled by the United States. The Act authorizes the President to designate as national monuments objects or areas of historic or scientific interest on lands owned or controlled by the Unites States.
American Indian Religious Freedom Act of 1978	Protects the inherent right of Native Americans to believe, express, and exercise their traditional religions, including access to important sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.
Americans With Disabilities Act of 1990	Intended to prevent discrimination of and make American society more accessible to people with disabilities. The Act requires reasonable accommodations to be made in employment, public services, public accommodations, and telecommunications for persons with disabilities.
Animal Welfare Act	Provides regulatory standards for the maintenance, care, and transportation of captive animals (7 U.S.C. 2131 et seq).
Archaeological Resources Protection Act of 1979, as amended	This act strengthens and expands the protective provisions of the Antiquities Act of 1906 regarding archaeological resources. It also revised the permitting process for archaeological research.
Architectural Barriers Act of 1968	Requires that buildings and facilities designed, constructed, or altered with federal funds, or leased by a federal agency, must comply with standards for physical accessibility.
Bald and Golden Eagle Protection Act of 1940, as amended	Prohibits the possession, sale or transport of any bald or golden eagle, alive or dead, or part, nest, or egg except as permitted by the Secretary of the Interior for scientific or exhibition purposes, or for the religious purposes of Indians.
Clean Air Act of 1970	Regulates air emissions from area, stationary, and mobile sources. This Act and its amendments charge federal land managers with direct responsibility to protect the “air quality and related values” of land under their control. These values include fish, wildlife, and their habitats.

STATUTE	DESCRIPTION
Clean Water Act of 1974, as amended	This Act and its amendments have as its objective the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters. Section 401 of the Act requires that federally permitted activities comply with the Clean Water Act standards, state water quality laws, and any other appropriate state laws. Section 404 charges the U.S. Army Corps of Engineers with regulating discharge of dredge or fill materials into waters of the United States, including wetlands (33 U.S.C. 1251 et seq.).
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Florida – CITES - Secures international cooperation to regulate trade that might threaten the survival of wild plant and animal species (27 U.S.T. 1087 T.I.A.S. No. 8249).
Consolidated Appropriations Act of 2004	Section 145 of PL 108-199 renamed the Central Mississippi NWR Complex as Theodore Roosevelt NWR Complex, renamed the Bogue Phalia unit of Yazoo NWR as Holt Collier NWR, and established Theodore Roosevelt NWR from Service lands formerly belonging to the Farm Service Agency. It also appropriated funding for a Visitor Center/Holt Collier Environmental Education and Interpretation facility. See the end of appendix for full text.
Emergency Wetlands Resources Act of 1986	This Act authorized the purchase of wetlands from Land and Water Conservation Fund moneys, removing a prior prohibition on such acquisitions. The Act requires the Secretary to establish a National Wetlands Priority Conservation Plan, requires the states to include wetlands in their Comprehensive Outdoor Recreation Plans, and transfers to the Migratory Bird Conservation Fund amounts equal to import duties on arms and ammunition. It also established entrance fees at National Wildlife Refuges.
Endangered Species Act of 1973, as amended	Provides for the conservation of threatened and endangered species of fish, wildlife, and plants by federal action and by encouraging the establishment of state programs. It provides for the determination and listing of endangered and threatened species and the designation of critical habitats. Section 7 requires refuge managers to perform internal consultation before initiating projects that affect or may affect endangered species (16U.S.C.1531 et seq.).
Environmental Education Act of 1990	This act established the Office of Environmental Education within the Environmental Protection Agency to develop and administer a federal environmental education program in consultation with other federal natural resource management agencies, including the Fish and Wildlife Service.
Federal Advisory Committee Act (1972), as amended	Governs the establishment of and procedures for committees that provide advice to the federal government. Advisory committees may be established only if they will serve a necessary, non-duplicative function. Committees must be strictly advisory unless otherwise specified and meetings must be open to the public.

STATUTE	DESCRIPTION
Federal-Aid Highways Act of 1968	Established requirements for approval of federal highways through wildlife refuges and other designated areas to preserve the natural beauty of such areas. The Secretary of Transportation is directed to consult with the Secretary of the Interior and other federal agencies before approving any program or project requiring the use of land under their jurisdiction.
Federal Noxious Weed Act of 1990, as amended	The Secretary of Agriculture was given the authority to designate plants as noxious weeds and to cooperate with other federal, state, and local agencies; farmers associations; and private individuals in measures to control, eradicate, prevent, or retard the spread of such weeds. The Act requires each federal land-managing agency including the Fish and Wildlife Service to designate an office or person to coordinate a program to control such plants on the agency's land and implement cooperative agreements with the states including integrated management systems to control undesirable plants. This effort is more currently known as invasive species management.
Fish and Wildlife Act of 1956	Establishes a comprehensive national fish, shellfish, and wildlife resources policy with emphasis on the commercial fishing industry but also includes the inherent right of every citizen and resident to fish for pleasure, enjoyment, and betterment and to maintain and increase public opportunities for recreational use of fish and wildlife resources. Among other things, it authorizes the Secretary of the Interior to take such steps as may be required for the development, advancement, management, conservation and protection of fish and wildlife resources including, but not limited to, research, development of existing facilities, and acquisition by purchase or exchange of land and water or interests therein.
Fish and Wildlife Conservation Act of 1980, as amended	Requires the Service to monitor nongame bird species, identify species of management concern, and implement conservation measures to preclude the need for listing under the Endangered Species Act.
Fish and Wildlife Coordination Act of 1958	Promotes equal consideration and coordination of wildlife conservation with other water resource development programs by requiring consultation with the Fish and Wildlife Service and the state fish and wildlife agencies where the "waters of a stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted…or otherwise controlled or modified" by any agency under federal permit or license.
Fish and Wildlife Improvement Act of 1978	This act was passed to improve the administration of fish and wildlife programs and amends several earlier laws, including the Refuge Recreation Act, the National Wildlife Refuge Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out volunteer programs.

STATUTE	DESCRIPTION
Fishery Conservation and Management Act of 1976	Established Regional Fishery Management Councils comprised of federal and state officials including the Fish and Wildlife Service. It provides for regulation of foreign fishing and vessel fishing permits.
Freedom of Information Act, 1966	Requires all federal agencies to make available to the public for inspection and copying administrative staff manuals and staff instructions, official, published and unpublished policy statements, final orders deciding case adjudication, and other documents. Special exemptions have been reserved for nine categories of privileged material. The act requires the party seeking the information to pay reasonable search and duplication costs.
Lacey Act of 1900, as amended	Originally designed to help states protect their native game animals and to safeguard U.S. crop production from harmful foreign species. This act prohibits interstate and international transport and commerce of fish, wildlife or plant taken in violation of domestic or foreign laws. It regulates the introduction to America of foreign species into new locations.
Land and Water Conservation Fund Act of 1948	This law provides funding through receipts from the sale of surplus federal land, appropriations from oil and gas receipts from the outer continental shelf, and other sources for land acquisition under several authorities. Appropriations from the fund may be used for matching grants to states for outdoor recreation projects and for land acquisition by various federal agencies including the Fish and Wildlife Service.
Migratory Bird Conservation Act of 1929	Established a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds. The role of the Commission was expanded by the North American Wetland Conservation Act to include approving wetlands acquisition, restoration, and enhancement proposals recommended by the North American Wetlands Conservation Council.
Migratory Bird Hunting and Conservation Stamp Act of 1934	Also commonly referred to as the “Duck Stamp Act”, it requires waterfowl hunters 16 years of age or older to possess a valid federal hunting stamp. Receipts from the sale of the stamp are deposited into the Migratory Bird Conservation Fund for the acquisition of migratory bird refuges.
Migratory Bird Treaty Act of 1918, as amended	This act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Except as allowed by special regulations, this Act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, barter, export or import any migratory bird, part, nest, egg or product.

STATUTE	DESCRIPTION
National and Community Service Act of 1990	Authorizes several programs to engage citizens of the U.S. in full-and/or part-time projects designed to combat illiteracy and poverty, provide job skills, enhance educational skills, and fulfill environmental needs. Among other things, this law establishes the American Conservation and Youth Service Corps to engage young adults in approved human and natural resource projects, which will benefit the public or are carried out on federal or Indian lands.
National Environmental Policy Act of 1969 (NEPA)	Requires analysis, public comment, and reporting for environmental impacts of federal actions. It stipulates the factors to be considered in environmental impact statements, and requires that federal agencies employ an interdisciplinary approach in related decision-making and develop means to ensure that unqualified environmental values are given appropriate consideration, along with economic and technical considerations.
National Historic Preservation Act of 1966, as amended	It establishes a National Register of Historic Places and a program of matching grants for preservation of significant historical features. Federal agencies are directed to take into account the effects of their actions on items or sites listed or eligible for listing in the National Register.
National Wildlife Refuge System (NWRS) Administration Act of 1966	Prior to 1966, there was no single federal law that governed the administration of the various wildlife refuges that had been established. This Act defines the NWRS and authorizes the Secretary of the Interior to permit any use of an area provided such use is compatible with the major purposes(s) for which the area was established.
National Wildlife Refuge System Improvement Act of 1997	This Act amends the NWRS Administration Act of 1966. It defines the mission of the NWRS, establishes the legitimacy and appropriateness of six priority wildlife-dependent public uses, establishes a formal process for determining compatible uses of System lands, identifies the Secretary of the Interior as responsible for managing and protecting the System, and requires the development of a comprehensive conservation plan for all refuges outside of Alaska.
Native American Graves Protection and Repatriation Act of 1990	Requires federal agencies and museums to inventory, determine ownership of, and repatriate certain cultural items and human remains under their control or possession. The Act also addresses the repatriation of cultural items inadvertently discovered by construction activities on lands managed by the agency.
Neotropical Migratory Bird Conservation Act of 2000	Establishes a matching grants program to fund projects that promote the conservation of Neotropical migratory birds in the United States, Latin America, and the Caribbean.

STATUTE	DESCRIPTION
North American Wetlands Conservation Act of 1989	Provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on wetlands between Canada, U.S. and Mexico. The North American Wetlands Conservation Council is created to recommend projects to be funded under the Act to the Migratory Bird Conservation Commission.
Omnibus Federal Land Management Act of 2009.	This Act gave National Heritage Area Designation to the Mississippi Delta National Heritage Area. A management plan to implement the designation was signed by the Secretary of the Department of the Interior in 2014 and will be carried out and funded by the National Park Service.
Partnerships for Wildlife Act of 1992	Establishes a Wildlife Conservation and Appreciation Fund, to receive appropriated funds and donations from the National Fish and Wildlife Foundation and other private sources to assist the state fish and game agencies in carrying out their responsibilities for conservation of nongame species.
Refuge Recreation Act of 1962, as amended	This Act authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use, when such uses do not interfere with the area's primary purposes. It authorizes construction and maintenance of recreational facilities and the acquisition of land for incidental fish and wildlife oriented recreational development or protection of natural resources. It also authorizes the charging fees for public uses.
Refuge Revenue Sharing Act of 1935, as amended	Provided for payments to counties in lieu of taxes from areas administered by the Fish and Wildlife Service. Counties are required to pass payments along to other units of local government within the county, which suffer losses in tax revenues due to the establishment of Service areas.
Rehabilitation Act of 1973	Requires nondiscrimination in the employment practices of federal agencies of the executive branch and contractors. It also requires all federally assisted programs, services, and activities to be available to people with disabilities.
Transfer of Certain Real Property for Wildlife Conservation Purposes	This act passed in 1948 provides that upon determination by the Administrator of the General Services Administration, real property no longer needed by a federal agency can be transferred, without reimbursement, to the Secretary of the Interior if the land has particular value for migratory birds, or to a state agency for other wildlife conservation purposes.
Transportation Equity Act for the 21st Century (1998)	Established the Refuge Roads Program, requires transportation planning that includes public involvement, and provides funding for approved public use roads and trails and associated parking lots, comfort stations and bicycle/pedestrian facilities.

STATUTE	DESCRIPTION
Uniform Relocation & Assistance & Real Property Acquisition Policies Act 1970	Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the Service. The Act requires that any purchase offer be no less than the fair market value of the property.
Water Resources Planning Act of 1965	Established Water Resources Council to be composed of Cabinet representatives including the Secretary of the Interior. The Council reviews river basin plans with respect to agricultural, urban, energy, industrial, recreational and fish and wildlife needs. The act also established a grant program to assist states in participating in the development of related comprehensive water and land use plans.
Wilderness Act of 1964, as amended	The Wilderness Act of 1964 directs the Secretary of the Interior to review every roadless area of 5,000 acres (2,023 ha) or more and every roadless island regardless of size within the National Wildlife Refuge System and to recommend suitability of each such area. The Act permits certain activities within designated Wilderness Areas that do not alter natural processes. Wilderness values are preserved through a “minimum tool” management approach, which requires refuge managers to use the least intrusive methods, equipment and facilities necessary for administering the areas.
Youth Conservation Corps Act of 1970	Established youth conservation corps (YCC) programs within the Departments of Interior and Agriculture. Within the Service, YCC participants perform many tasks on refuges, fish hatcheries and research stations.

EXECUTIVE ORDERS (EO)	DESCRIPTIONS
EO 11593, Protection and Enhancement of the Cultural Environment (1971)	States that if the Service proposes any development activities that may affect the archaeological or historic sites, the Service will consult with Federal and State Historic Preservation Officers to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.
EO 11644, Use of Off-road Vehicles on Public Land (1972)	Established policies and procedures to ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.
EO 11988, Floodplain Management (1977)	The purpose of this order is to prevent federal agencies from contributing to the "adverse impacts associated with occupancy and modification of floodplains" and the "…direct or indirect support of floodplain development." In the course of fulfilling their respective authorities, federal agencies "…shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains."
EO 11989 (1977), Amends Section 2 of EO 11644	Directs agencies to close areas negatively impacted by off-road vehicles.
EO 11990, Protection of Wetlands (1977)	Federal agencies are directed to provide leadership and take action to minimize the destruction, loss of degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.
EO 12372, Intergovernmental Review of Federal Programs (1982)	Seeks to foster intergovernmental partnerships by requiring federal agencies to use the state process to determine and address concerns of state and local elected officials with proposed federal assistance and development programs.
EO 12898, Environmental Justice (1994)	Requires federal agencies to identify and address disproportionately high and adverse effects of its programs, policies, and activities on minority and low-income populations.
EO 12906, Coordinating Geographical Data Acquisition and Access (1994), Amended by EO 13286 (2003).	Recommended that the executive branch develop, in cooperation with state, local, and tribal governments, and the private sector, a coordinated National Spatial Data Infrastructure to support public and private sector applications of geospatial data. Of particular importance to comprehensive conservation planning is the National Vegetation Classification System (NVCS), which is the adopted standard for vegetation mapping. Using NVCS facilitates the compilation of regional and national summaries, which in turn, can provide an ecosystem context for individual refuges.
EO 12962, Recreational Fisheries (1995)	Federal agencies are directed to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities in cooperation with states and tribes.

EXECUTIVE ORDERS (EO)	DESCRIPTIONS
EO 13007, Native American Religious Practices (1996)	Provides for access to, and ceremonial use of, Indian sacred sites on federal lands used by Indian religious practitioners and direction to avoid adversely affecting the physical integrity of such sites.
EO 13061, Federal Support of Community Efforts Along American Heritage Rivers (1997)	Established the American Heritage Rivers initiative for the purpose of natural resource and environmental protection, economic revitalization, and historic and cultural preservation. The Act directs Federal agencies to preserve, protect, and restore rivers and their associated resources important to our history, culture, and natural heritage.
EO 13112, Invasive Species (1999)	Federal agencies are directed to prevent the introduction of invasive species, detect and respond rapidly to and control populations of such species in a cost effective and environmentally sound manner, accurately monitor invasive species, provide for restoration of native species and habitat conditions, conduct research to prevent introductions and to control invasive species, and promote public education on invasive species and the means to address them. EO 12112 replaces and rescinds EO 11987, Exotic Organisms (1977).
EO 13084, Consultation and Coordination With Indian Tribal Governments (2000)	Provides a mechanism for establishing regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications.
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (2001)	Instructs federal agencies to conserve migratory birds by several means. One is to incorporate the strategies and recommendations of several bird plans: Partners in Flight Bird Conservation Initiative; North American Waterfowl; North American Waterbird Conservation; and the U.S. Shorebird Conservation into other agency management plans and guidance documents.
EO 13443, Facilitation of Hunting Heritage and Wildlife Conservation (2007)	Directs federal agencies to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitats.

EXECUTIVE ORDERS (EO)	DESCRIPTIONS
EO 13653, Preparing the United States for the Impacts of Climate Change (2013)	Directs federal agencies to inventory and review policies, plans, and programs that could promote the goals of greater climate resilience and carbon sequestration and assess risks. "Adaption Plans" are required that integrate climate change into agency operations and mission objectives. A federal interagency "Council on Climate Preparedness and Resilience" is established to promote climate science within the agencies to address Climate Change. It also establishes a "State, Local and Tribal Leaders' Task Force on Climate Preparedness and Resilience" to make recommendations to the federal government to encourage investments, practices and partnerships to increase resilience to climate impacts including those associated with severe weather.

SECRETARIAL ORDERS	DESCRIPTIONS
3270 – Adaptive Management March 9, 2007	This Order provides policy guidance and procedures for implementing adaptive management. It was superseded by the 522 Department Manual (DM) 1 on February 1, 2008.
3285 – Addressing Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources March 11, 2009	Made the production and transmission of renewable energy on public lands a priority for the Department. The Order establishes a Department-wide approach for applying scientific tools to increase the understanding of climate change and to coordinate an effective response to its impacts on tribes and on the land, water, ocean, fish and wildlife, and cultural heritage resources the Department manages. It also established a Climate Change Response Council within the Office of the Secretary and eight Regional Climate Change Response Centers.
3289A1- Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources Establishment of Landscape Conservation Cooperatives (LCCs) February 22, 2010	This Order provides guidance to bureaus and offices within DOI on how to provide leadership by developing timely responses to emerging climate change issues. It replaces Secretarial Order No. 3226, signed on January 19, 2001, entitled "Evaluating Climate Change Impacts in Management Planning." It is intended to reaffirm efforts within DOI that are ongoing with respect to this important issue. Specific provisions include: 1) Each DOI bureau and office must consider and analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, developing multi-year management plans (CCPs), and making major decisions regarding potential use of resources under the Department's purview. 2) DOI will develop landscape-level strategies for understanding and responding to climate change impacts. Interior bureaus and agencies, guided by the Energy and Climate Change Council, will work to stimulate the development of a network of collaborative "Landscape Conservation Cooperatives." These cooperatives will work interactively with the relevant DOI Climate Science Center(s) and help coordinate adaptation efforts in the regions.
3305 – Ensuring Scientific Integrity Within the Department of Interior (DOI) September 29, 2010	This directs the establishment of Department-wide policy to guide and ensure the integrity of science and scientific products developed and used by DOI in decision making and in the creation of policy related to the conservation and responsible development of our Nation's natural resources, protecting our heritage, and honoring native cultures and tribal communities. This policy has been incorporated in 305 DM 3.
3330 - Improving Mitigation Policies and Practices of the Department of the Interior October 31, 2013	The purpose of this Order is to establish a Department-wide mitigation strategy that will ensure consistency and efficiency in the review and permitting of infrastructure development projects and in conserving our Nation's valuable natural and cultural resources.

Public Law 108-199: Consolidated Appropriations Act, 2004

Signed by President Bush on January 23, 2004.

108th Congress
An Act Making appropriations for Agriculture, Rural Development, Food and Drug Administration, and Related Agencies for the fiscal year ending September 30, 2004, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.
This Act may be cited as the ‘‘Consolidated Appropriations Act, 2004’’.

Sources:
https://www.govtrack.us/congress/bills/108/hr2673

SEC. 145. THEODORE ROOSEVELT NATIONAL WILDLIFE REFUGE.
(a) DEFINITIONS.—In this section:
(1) COUNTY.—The term ‘‘county’’ means each of the counties of Leflore, Holmes, Humphreys, Sharkey, Warren, and Washington in the State.
(2) REFUGE.—The term ‘‘Refuge’’ means the Theodore Roosevelt National Wildlife Refuge established under subsection (b).
(3) SECRETARY.—The term ‘‘Secretary’’ means the Secretary of the Interior.
(4) STATE.—The term ‘‘State’’ means the State of Mississippi.
(b) ESTABLISHMENT.—The Secretary shall establish the Theodore Roosevelt National Wildlife Refuge, consisting of approximately 6,600 acres of land that—
(1) as of the date of enactment of this Act, is owned by the United States;
(2) was formerly in the inventory of the United States Department of Agriculture; and
(3) is located in the counties.
(c) MAP.—As soon as practicable after the date of enactment of this Act, the Secretary shall prepare a map depicting the boundaries of the Refuge.
Mississippi.
16 USC 668dd note.
Applicability.
Reports.
117 Stat. 1318.
117 Stat. 1294.
117 Stat. 1319.
16 USC 461 note.
Effective date.

118 STAT. 444 PUBLIC LAW 108–199—JAN. 23, 2004
(d) BOUNDARY REVISION.—The Secretary may revise the boundaries of the Refuge in the counties to—
(1) carry out the purposes of the Refuge; or
(2) facilitate the acquisition or donation of land.
(e) ACQUISITION OF LAND.—Notwithstanding any other provision of law, the Secretary may, for management purposes, exchange Refuge land for land acquired or donated for fee title that is located in the counties.
(f) EDUCATION CENTER.—The Secretary of the Army, acting through the Chief of Engineers, in consultation with the Secretary, shall design and construct a multiagency wildlife and environmental interpretive and education center at a location in the South Delta area of the State to be determined by a site selection and feasibility study conducted by the Secretary of the Army.
(g) DESIGNATION OF REFUGE COMPLEXES.—
(1) HOLT COLLIER NATIONAL WILDLIFE REFUGE.—
(A) DESIGNATION.—The refuge in the State known as the ''Bogue Phalia Unit of the Yazoo National Wildlife Refuge'' shall be known as the ''Holt Collier National Wildlife Refuge''.
(B) REFERENCES.—Any reference in a law, map, regulation, document, paper, or other record of the United States to the refuge referred to in subparagraph (A) shall be deemed to be a reference to the ''Holt Collier National Wildlife Refuge''.
(2) THEODORE ROOSEVELT NATIONAL WILDLIFE REFUGE COMPLEX.—
(A) DESIGNATION.—The refuge complex in the State known as the ''Central Mississippi National Wildlife Refuge Complex'' shall be known as the ''Theodore Roosevelt National Wildlife Refuge Complex''.
(B) REFERENCES.—Any reference in a law, map, regulation, document, paper, or other record of the United States to the refuge complex referred to in subparagraph (A) shall be deemed to be a reference to the ''Theodore Roosevelt National Wildlife Refuge Complex''.
(h) AUTHORIZATION OF APPROPRIATIONS.—
(1) IN GENERAL.—There are authorized to be appropriated such sums as are necessary to carry out this section.
(2) EDUCATION CENTER.—There are authorized to be appropriated to carry out subsection (f) $6,000,000.

PRIMARY STATE WILDLIFE REGULATIONS

The State of Mississippi's primary wildlife laws are found in Title 49, Conservation and Ecology Chapters 1-37, Mississippi Code of 1972. The regulations of the Mississippi Commission on Wildlife, Fisheries, and Parks can be found at Title 40, Mississippi Administrative Code, Parts 1to 6. Proposed and final rules are available online at: http://www.mdwfp.com/administration/rules/rules-(final).aspx.

The MDWFP maintains "Mississippi's Official State List of Endangered Species" pursuant to the requirements of the Nongame and Endangered Species Conservation Act (Section 49-5-101 through 119). This list contains both plant and animal species. For additional information, see http://www.mdwfp.com/seek-study/science-resources/endangered-species.aspx

Appendix D. Public Involvement

SUMMARY OF PUBLIC SCOPING

In accordance with Service and NEPA guidelines, public involvement has been a part of the development of this CCP and the Environmental Assessment for Theodore Roosevelt and Holt Collier NWRs. The plan was written with input from interested citizens, conservation organizations, and representatives of local, regional, state, and federal agencies.

A public notice announcing the Service's intent to develop a CCP for the refuge was published in the *Federal Register* on July 30, 2013. In preparation for the CCP and in accordance with the requirements of the NEPA, public scoping was conducted. An advertised public comment period for the public scoping process was held from July 30 through August 29, 2013. Notices informing the public of the CCP scoping process were published in several local newspapers and sent to 68 persons or entities on the mailing list including radio and tv media and the public libraries.

Three comment letters were received during the public scoping period. These are inserted below.

1)-----Original Message-----
From: jean public Sent: Tuesday, July 30, 2013 2:23 PM
To: justin_sexton@fws.gov; humanelines@hsus.org; info@peta.org; info@cok.net; info@idausa.org; info@farmsanctuary.org
Cc: speakerboehner; INFO; media; info; INFO; info@lohv.org
Subject: Re:PUBLIC COMMENT ON FEDERAL REGISTER decetive title by feds calling it a "refuge" when its a killing field

THERE ARE NO SOUND SCIENTIFIC PRINCIPLES PRACTICED AT THE USFWS, WHICH EMPLOYS ONLY GUN WACKO HUNTERS TO MAKE POLICY. IF YOU BELIEVE IN COMPASSION TO WILDLIFE/BIRDS/REPTILES YOU DONT HAVE A JOB IN THIS MERCILESS, CRUEL, BRUTAL AGENCY. THEY CALL KILLING THE WILDLIFE "RECREATION" AND USE FAKE WORDS TO DESCRIBE WHAT THEY REALLY DO. THE PLAN HERE SHUOLD BE AN EIS NOT AN EA ACCORDING TO NEPA.
YOU HAVE BEEN TAXING THE GENERAL PUBLIC FOR ALL LAND PURCHASES, YET YOU THEN CLOSE THE LAND SO THAT THE TAXPAEYRS WHO HAVE BEEN ASSAULTED FOR THESE TAX DOLLARS CANNOT PASSIVELY USE THE SITE. I DO NOT FAVOR ALLOWING GUN WACKO AND THEIR LEAD SHOT IN THIS SITE, NOR ANY KILLING OF ANY WILDLIFE OR BIRDS. I BELIEVE THE REFUGE WORD MEANS SOMETHING INSTEAD OF THE DISRESPECTFUL WAY THAT WORD IS USED BY THIS LYING AGENCY. PLEASE MAKE SURE I AM ON THE LIST FOR ALL FUTURE ACTIONS OR PLANS ON THIS SITE. I ALSO FAVOR CUTTING THE BUDGET FOR THIS MANAGEMENT, WHICH IS OF THE LOWEST CALIBER AND HAS NO COMPASSION FOR THE TREES OR THE LIFE IN THIS SITE. THIS COMMENT IS FOR THE PUBLIC RECORD. PLEASE AKNOWLEDGE RECEIPT. JEAN PUBLIC

2) **Sent:** Thursday, August 08, 2013 3:05 PM
To: Justin_Sexton@fws.gov
Subject: Theodore Roosevelt Refuge

Dear Mr. Sexton –

I recently saw the notice in the federal register of the intent to prepare a CCP for the Theodore Roosevelt NWR. I along with some family members own property on the Humphreys – Sharkey County line south of Highway 14. I've seen the signs for the federally owned property in Sharkey County north of Delta National Forest. And I've seen some generalized maps of federal property in that area in the CCP for the other refuges in the Complex. But I can't find much specific information about the Theodore Roosevelt Refuge online.

Is there a current map of the Refuge anywhere? Or a specific property description? Do you know when the CCP will be completed?

Any information appreciated. Thanks.

Resident of Jackson, MS

3) Letter to Justin Sexton dated August 19, 2013
from Allen S. Woodward, Attorney for the Sharkey County, MS Board of Supervisors:

Re: Holt Collier Wildlife Interpretation and Education Center

At the request of the Board of Supervisors of Sharkey County, Mississippi, I am writing to respond to the third question contained in the public comment release dated July 26, 2013. The Board would like to see the future hold the construction and operation of the above-referenced center in conjunction with Theodore Roosevelt NWR which it worked diligently for many years to try to bring to reality for citizens of this area, ultimately without success. Due to matters beyond the County's control, the center project never materialized despite the fact that the site for the center was purchased by the U.S. Army Corp[s] of Engineers.

Appendix E. Appropriate Use Determinations

Refuges are closed to public use unless opened for specific uses. An appropriate use determination is the initial decision process a refuge manager undertakes when considering whether or not to allow a proposed use on a refuge. If an existing use is not appropriate, the Refuge Manager will eliminate or modify the use as expeditiously as practicable. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility. Uses that have been administratively determined to be appropriate are:

- The six wildlife-dependent recreational uses - Under the NWRS Improvement Act of 1997 hunting, fishing, wildlife observation, environmental education, wildlife photography and environmental interpretation are determined to be appropriate.
- Take of fish and wildlife under state regulations - States have regulations concerning take of wildlife that includes hunting, fishing, and trapping. The Service considers take of wildlife under such regulations appropriate.

The Refuge Manager will also consider if the use contributes to fulfilling 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. Once a use is determined to be appropriate, then the refuge manager must conduct a second evaluation to determine if the each use is compatible before allowing it on a refuge. The Compatibility Determinations for the refuge are provided in Appendix F.

Appropriate use findings are listed below for the following uses:

1. Research and Monitoring;
2. Commercial Photography;
3. Cooperative Farming;
4. Firewood Gathering;
5. Timber Harvest for Forest Management;
6. Trapping; and
7. Siting, Construction, and Operation of a Visitor Center at Theodore Roosevelt NWR.

Statutory Authorities for this policy include: (for a description, see Appendix C: Legal Mandates)

National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. §668dd-668ee;

Refuge Recreation Act of 1962, 16 U.S.C. 460k;

Executive Orders 11644 and 11989; and

Section 145 of Public Law 108-199 - the Consolidated Appropriations Act of 2004 (established the refuges).

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Names: Theodore Roosevelt and Holt Collier NWRs

Use: **Research and Monitoring**

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. **Yes** _X_ **No** ___

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate_____ **Appropriate**__X__

Refuge Manager:_____ Date:_____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.
If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.
If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:_____ Date:_____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Names: Theodore Roosevelt and Holt Collier NWRs

Use: **Commercial Photography**

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. **Yes** _X_ **No** ___

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate_____ **Appropriate**__X__

Refuge Manager:_____ Date:_____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.
If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.
If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:_____ Date:_____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Names: Theodore Roosevelt and Holt Collier NWRs

Use: **Cooperative Framing**

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. **Yes** _X_ **No** ___

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate_____ **Appropriate**__X__

Refuge Manager:_____ Date:_____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.
If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.
If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:_____ Date:_____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Names: Theodore Roosevelt and Holt Collier NWRs

Use: **Firewood Gathering**

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. **Yes** _X_ **No** ___

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate_____ **Appropriate**__X__

Refuge Manager:_____ Date:_____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.
If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.
If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:_____ Date:_____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Names: Theodore Roosevelt and Holt Collier NWRs

Use: **Timber Harvest for Forest Management**

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. **Yes** _X_ **No** ___

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate_____ **Appropriate**__X__

Refuge Manager:_____ Date:_____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.
If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.
If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:_____ Date:_____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Names: Theodore Roosevelt and Holt Collier NWRs

Use: **Trapping**

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. **Yes** _X_ **No** ___

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate_____ **Appropriate**__X__

Refuge Manager:_____ Date:_____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.
If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.
If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:_____ Date:_____

A compatibility determination is required before the use may be allowed.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Theodore Roosevelt National Wildlife Refuge (NWR).

Use: **Siting, Construction, and Operation of a Visitor Center at Theodore Roosevelt NWR**

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. **Yes** _X_ **No** ___

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate_____ **Appropriate**__X___

Refuge Manager:_____ Date:_____

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.
If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.
If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:_____ Date:_____

A compatibility determination is required before the use may be allowed.

Appendix F. Compatibility Determinations

THEODORE ROOSEVELT AND HOLT COLLIER NATIONAL WILDLIFE REFUGES (NWRs) COMPATIBILITY DETERMINATIONS (CD)

Uses: The following uses were evaluated to determine their compatibility with the mission of the National Wildlife Refuge System and the purposes of the refuges.

1. Environmental Education and Interpretation
2. Wildlife Observation and Photography
3. Recreational Fishing
4. Hunting (Migratory Bird, Large Game, Small Game)
5. Research and Monitoring
6. Commercial Photography
7. Cooperative Farming
8. Firewood Gathering
9. Timber Harvest for Forest Management
10. Trapping
11. Siting, Construction, and Operation of a Visitor Center at Theodore Roosevelt NWR

Refuge Names: Theodore Roosevelt and Holt Collier National Wildlife Refuges

Date Established: January 23, 2004

Establishing and Acquisition Authority: The refuges were established by the authority of the 2004 Consolidated Appropriations Act, Public Law 108-199, Section 145.

Refuges Purposes: Both refuges were established "…for conservation purposes". Holt Collier Refuge having originated from Yazoo NWR has this additional purpose: "... for the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. 742f(a)(4) (Fish and Wildlife Act of 1956).

National Wildlife Refuge System Mission:

The mission of the Refuge System, as defined by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act), 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.

Other Applicable Laws, Regulations, and Policies:

A complete list and summary description of laws, regulations and policies is found in Appendix C of the Draft Comprehensive Conservation Plan for the refuges and includes the following:
Animal Welfare Act of 1966, Public Law 89-544. (7 U.S.C. 2131 et. seq.)
Endangered Species Act of 1973 (16 U.S.C. 1531 et seq; 87 Stat. 884)
Antiquities Act of 1906 (34 Stat. 225)
Migratory Bird Treaty Act of 1918 (15 U.S.C. 703-711; 40 Stat. 755)
Migratory Bird Conservation Act of 1929 (16 U.S.C. 715r; 45 Stat. 1222)

Migratory Bird Hunting Stamp Act of 1934 (16 U.S.C. 718-178h; 48 Stat. 451)
Criminal Code Provisions of 1940 (18 U.S.C. 41)
Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; 54 Stat. 250)
Refuge Trespass Act of June 25, 1948 (18 U.S.C. 41; 62 Stat. 686)
Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat.1119)
Refuge Recreation Act of 1962 (16 U.S.C. 460k-460k-4; 76 Stat. 653)
Refuge Revenue Sharing Act of 1935, as amended in 1978 (16 U.S.C. 715s; 92 Stat. 1319)
Land and Water Conservation Fund Act of 1965
National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.; 80 Stat. 915)
National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd, 668ee; 80 Stat. 927)
National Environmental Policy Act of 1969, NEPA (42 U.S.C. 4321, et seq; 83 Stat. 852)
Refuge Revenue Sharing Act of 1935, as amended in 1978 (16 U.S.C. 715s; 92 Stat. 1319)
National Wildlife Refuge Regulations for the Most Recent Fiscal Year (2010):
(Title 50 Code of Federal Regulations, Chapter I (USFWS), Subchapter C (The National Wildlife Refuge System), Part 32 (Hunting and Fishing), Subpart B (Refuge-Specific Regulations for Hunting and Fishing – A.-D. is for Holt Collier NWR, 32.43 Mississippi
Emergency Wetlands Resources Act of 1986 (S.B. 740)
North American Wetlands Conservation Act of 1990
Food Security Act (Farm Bill) of 1990 as amended (HR 2100)
The Property Clause of the U.S. Constitution Article IV 3, Clause 2
The Commerce Clause of the U.S. Constitution Article 1, Section 8
The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57, USC668dd)
Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System. March 25, 1996
Executive Order 11644, Use of Off-Road Vehicles on Public Lands, as amended by E.O. 10989.
Archaeological Resources Protection Act of 1979
Native American Graves Protection and Repatriation Act of 1990
Consolidated Appropriations Act of 2004 - Section 145 of PL 108-199 (established the refuges).

The compatibility determinations for each use are described separately. For brevity, the preceding "Uses" through "Other Applicable Laws, Regulations and Policies" sections and the succeeding "Approval of Compatibility Determinations" section are only written once within this CCP Appendix. However, they are part of each descriptive use and become part of that compatibility determination if printed and considered separately or apart from this CCP.

At present, Theodore Roosevelt Refuge is not open to public use. Refuges are legally closed unless opened for public use according to the specific, described uses allowed in the compatibility determinations. The CCP for the Theodore Roosevelt NWR Complex included CDs for some uses on both refuges in 2006. These CDs would supersede the 2006 plan, but may not be implemented until funds for staffing and facilities are sufficient to offer and accommodate these public and commercial uses. These CDs are intended to cover all lands that are in the refuges' approved acquisition boundaries. It is expected that the Service would acquire acreage up to the limits of the approved acquisition boundaries during the 15-year period of this CCP.

Description of Use: *Environmental Education and Interpretation*

Environmental education and interpretation include a variety of activities, mediums, and facilities designed to increase the public's knowledge and understanding of wildlife and to promote wildlife conservation practices. These are tools used to inform the public of natural and cultural resource values and issues. Examples of environmental education activities include staff, volunteer or

teacher-led events, student and teacher workshops, nature studies, etc. Interpretive programs and facilities include visitor contacts, special events, on-site and off-site visitor contact stations, displays, brochures, websites, signs, and visitor center displays.

Refuge facilities and lands may be used as outdoor classrooms by groups of students with a teacher and a formalized plan of environmental study, by members of youth groups or non-governmental organizations (NGOs), or by other members of the public. Educational activities may be conducted in areas and at times approved by the Refuge Manager. Refuge environmental resources may be used to demonstrate principles of environmental science.

Environmental education and interpretation activities can occur throughout the year, but many outdoor activities occur in the spring and fall. All environmental education and interpretation activities are conducted with the refuges' primary goals, objectives, and habitat management requirements as the guiding principles and with visitor safety in mind.

Availability of Resources: At present there are no formal programs or facilities on either refuge. The proposed Visitor Center would include places and displays for environmental education and interpretation.

Anticipated Effects of the Use: The use of the refuges for on-site, hands-on, action-oriented activities to accomplish environmental education objectives may impose short-term impacts on the sites used for the activities. Impacts may include temporary disturbance to wildlife species in the immediate use area. Group activities would not be allowed where impacts would be permanent or long-lasting. The interpretive activities that may occur in the Visitor Center (when established), or off the refuge at festival locations in the local community, pose no threat to habitat or wildlife.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

_____ Use is Not Compatible
__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Access is by refuge roads, trails, fields, or other ingress and egress points. Refuge roads prohibited to public access and closed areas are clearly marked with signs. Entry on all or portions of refuge roads and trails may be temporarily suspended by posting upon occasions of unusual or unsafe conditions affecting land, water, vegetation, wildlife populations, or public safety.

Activities would be held where minimal impacts will occur. Periodic evaluation of the sites and program activities would be done to assess if program objectives are being met, resources are being degraded, or wildlife is being disturbed. If adverse impacts become evident, the environmental education and interpretation activities may need to be rotated, moved, reduced, eliminated, or adapted to minimize impacts. Group size may be restricted. Certain areas of the refuge may be restricted from access seasonally to avoid disturbance to wildlife or to protect sensitive habitat.

Justification: Environmental education and interpretation are priority public uses under the Improvement Act. The Service uses environmental education and interpretation to motivate citizens of all ages to support and practice wildlife and wild lands stewardship. Environmental education and interpretation can have positive outcomes, such as instilling preservation ethics in visitors, developing support for the refuge, and lessening disturbance of species. Development of interpretive themes, such as cultural history, would be in-line with the region's Mississippi Delta National Heritage Area designation.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
_____ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

Mandatory 15-year Re-evaluation Date:

Description of Use: *Wildlife Observation and Photography*

Wildlife observation is the viewing of wildlife and plants or their habitats by refuge visitors. Non-consumptive wildlife observation uses include birdwatching and nature photography. Photography is defined as recreational photography, videography, filming, or other recording of sight or sound, the subject matter of which is not for commercial or educational purposes. It assumes refuge visitation for the purpose of photographing natural or cultural resources and/or associated public uses for personal use.

Availability of Resources: At present there are no formal programs or facilities, such as trails, observation towers or photography blinds available at either refuge. Some of these facilities may be incorporated into the proposed Visitor Center's site plan and design if funding allows.

Anticipated Effects of the Use: Some violations of refuge regulations are anticipated, such as littering or wildlife disturbance. Law enforcement is necessary to enforce laws and to curtail potential violations.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

_____ Use is Not Compatible
__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Refuge roads prohibited to public access and closed areas are clearly marked with signs. Entry on all or portions of refuge roads and trails may be temporarily suspended by posting upon occasions of unusual or unsafe conditions affecting land, water, vegetation, wildlife populations, or public safety. Law enforcement patrol of public use areas should continue to minimize violations of refuge regulations. Some areas may be closed to the public seasonally to protect wildlife from disturbance or to protect habitat. A special use permit is required

for commercial, news, or educational photography purposes. See the compatibility determination for commercial photography.

Justification: These are priority public uses under the Improvement Act. They are not in conflict with the purposes for which the refuges were established.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
_____ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

Mandatory 15-year Re-evaluation Date:

Description of Use: *Recreational Fishing*

Recreational fishing refers to fishing with a hook and line or cane pole. It also refers to fishing as allowable under the State of Mississippi's fishing regulations for sport (catch and release) or for personal consumption. Fishing can be done by boat, wading, or from a bank or shoreline.

Availability of Resources: At present neither refuge offers fishing nor has boat access. Theodore Roosevelt NWR may have boat-fishing potential at Coon Bayou. Holt Collier NWR has the potential for bank fishing. Minor funding for primitive facilities would be needed to allow these uses.

Anticipated Effects of the Use: Fishing-related impacts include the disturbance of wildlife and the taking of nontarget fish/frogs or wildlife species, and littering. Discarded fishing line can entangle or snare birds, turtles and other wildlife. Discarded monofilament line, hooks, and other fishing gear can cause wildlife injury or death by entanglement or ingestion. If boating were to be allowed, there may be effects such as water or noise pollution from boat engines and bank erosion from boat wakes or launches. Bank erosion or trampling of vegetation is expected to be temporary and minimal. The introduction of nuisance aquatic weed species or release of non-native species to refuge waters could negatively affect native aquatic systems.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

___ Use is Not Compatible
_X_ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: All fishing activity must adhere to state fishing laws and refuge regulations. The Complex's annual hunting and fishing permit would be required to fish on the refuges. Fishing is subject to regulations established by the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP). Fish and Wildlife Service-specific regulations further prohibit commercial fishing on the refuge and the use of certain fishing methods. All or parts of the refuge

may be closed to fishing at any time if necessary for public safety, to provide wildlife sanctuary, or for administrative reasons. Complex staff would patrol and inspect refuge waters periodically for any signs of invasive aquatic species introduced. Additionally:

- Fishing is permitted during the hours the refuges would be open as posted. All sport fishing activities, including permitted methods of taking, limits, species and open/closed seasons, will be consistent with applicable state regulations. Enforcement efforts will be conducted by Fish and Wildlife Service's refuge law enforcement officers and agents from the MDWFP, when available.
- Commercial fishing is prohibited.
- The possession or use of jugs, seines, nets, hand-grab baskets, traps, or similar devices is prohibited.
- The use of trot lines and limb lines is prohibited.
- Limits on the size or type of boat motors for certain areas will be posted on refuge kiosks and informational boards, and published in Title 50, Code of Federal Regulations.
- A special use general permit (FWS Form 3-1383G) is required to fish waters of the refuges.

Justification: Fishing is a priority public use under the Improvement Act.

NEPA Compliance for Refuge Use Decision: *Place an X in appropriate space*.

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
_____ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

Mandatory 15-year Re-evaluation Date:

Description of Use: *Hunting (Migratory Bird, Small Game, Large Game)*

The Complex's Hunting Plan (USFWS 2009) describes its yearly hunting program and includes these two refuges. Holt Collier NWR offers several hunts yearly. Large game (i.e., turkey and deer) hunts include muzzleloader and archery deer hunts. Small game rabbit hunting is offered with or without dogs. Being closed to the public, no hunt programs are currently offered at Theodore Roosevelt NWR. The Hunting Plan may be revised during the timespan of the Theodore Roosevelt and Holt Collier NWRs CCP. The following hunts might be considered for either or both refuges – migratory birds (e.g., ducks, geese and doves), small game (e.g., squirrels, rabbits, raccoon, quail, etc.), and large game (i.e., deer and turkeys). The small game hunt may also include frogging, a seasonal activity conducted on land at night to harvest frogs. It is generally done with gigs and by hand grabbing, but is also done by use of a gun. The Service would also allow the incidental take of feral swine during certain hunting seasons.

Availability of Resources: The Complex's ability to offer recreational hunting is dependent upon an adequate infrastructure with three key components: (1) staff to administer a hunting program, (2) adequately maintained access roads and/or trails, and (3) an adequate number of law enforcement officers.

Complex employees support the hunt programs on Holt Collier NWR. There is one hunter information/check station available on the refuge. To expand the hunts offered, or to open Theodore

Roosevelt NWR to hunting, sufficient staff resources would need to become available to enforce hunting laws and regulations, ensure public safety, monitor resource impacts, and administer permits. An additional Federal Wildlife Officer position would be requested at the time when public use is expanded to current or additional lands acquired within the refuges' approved acquisition boundaries.

Anticipated Effects of the Use: Hunting provides recreational opportunities and can be used to assist in the management of certain game species. For example, carefully managed deer hunting maintains populations at a level commensurate with available habitat. The harvest of feral swine is beneficial to native wildlife because the swine compete for mast, destroy native plant populations, and prey upon nests, small vertebrates and invertebrates. There may be some limited disturbance to nontarget species of wildlife and some trampling of vegetation; however, this should be short-lived, relatively minor, and is not expected to adversely affect refuge habitats.

Turkey hunting produces little disturbance to waterfowl because the turkey hunting season is in the spring, after waterfowl have already migrated through the region. Hunting for squirrel, rabbit, raccoon, and opossum reduces excess numbers of these species which, without some type of harvest, would tend to experience population peaks and crashes. Hunting reduces fluctuations in the population and the incidence of disease and mortality in years of population surges. Duck hunting can disturb ducks and other waterbirds, prompting their move to other areas for sanctuary. However, this is heavily dependent upon the size of the tract hunted and the density and timing of hunting pressure. This can be managed so that it does not cause birds to leave the area.

Problems associated with littering and violations of game laws and limits would be controlled through law enforcement. All hunts are designed to provide safe and quality user opportunities based on estimated population levels and biolgical parameters. Waterfowl and small game hunters would be restricted to the use of non-toxic shot only.

One law enforcement officer based at Yazoo NWR patrols and conducts surveillance, checks hunter permits, assists with deer check stations, responds to hunter emergencies, enforces laws and regulations, ensures public safety, and protects refuge resources within the Yazoo, Theodore Roosevelt and Holt Collier refuges. This presents challenges to provide coverage on all refuge lands during all peak deer hunting seasons, especially on unstaffed refuges (e.g., Holt Collier). The officer handles incidents or violations each year including: vandalism; suspicious person's reports; weapons violations; and natural resource violations. The officer also responds to requests for assistance to locate lost hunters, attends to hunting accidents, provides support for periodic flooding events that cover roads and trap hunters, and handles violations on refuge managed Farm Service Agency lands. Adequate law enforcement presence is necessary to ensure hunter safety and resource protection.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

_____ Use is Not Compatible
__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Hunters must comply with relevant laws and all rules and regulations in the Theodore Roosevelt National Wildlife Refuge Complex hunting and

fishing regulations. These are detailed in the Service's Hunting and Fishing Regulations brochure and map for Holt Collier NWR, which are available on the Complex and refuge websites.

Waterfowl hunting will be in accordance with the special hunting regulations governing hunting on wildlife refuges, as set forth in Title 50 of the Code of Federal Regulations and applicable state regulations. A refuge hunt permit, state waterfowl permit, and federal duck stamp is required for the hunting of waterfowl on the refuges. The use of non-toxic shot for hunting waterfowl and small game would be required.

The number of hunters, hunting days, areas, timing, and bag limits will be adjusted as needed to minimize the possible effects of overharvest, resource damage, or conflicts with other priority public uses. The projected level of hunting is considered compatible with the purposes of the refuges. Adequate numbers of law enforcement staff are necessary to manage the hunts and to protect refuge resources and the public. The Refuge Manager may close any hunt at any time if he/she determines that there are not enough law enforcement officers to manage the hunts. Vehicular access is limited to road conditions during the hunting season as determined by the Refuge Manager. Times for hunting would be specified in the permit. Raccoon and frog hunting may be permitted after dark. Alligator hunting is prohibited on the refuges.

Justification: Hunting is a priority public use within the National Wildlife Refuge System and the most popular public use in the Complex. Allowing hunters to remove surplus deer reduces the potential for habitat damage and agricultural crop losses and it lessens the expense of having to use refuge employees to control the deer herd. Regulation of season lengths, hunting areas, and hunter quotas ensures balance between deer population levels and herd carrying capacity. The hunting of feral swine during open hunts benefits both habitat and prey species.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
_____ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

Mandatory 15-year Re-evaluation Date:

Description of Use: *Research and Monitoring*

Research and survey activities include scientific research, baseline inventories, long-term monitoring, and scientific collecting conducted by non-refuge personnel on refuge lands. Research at these refuges has been limited, but could include activities such as: radio-tracking; capture for health assessment; disease monitoring of animals; other biological studies (including water quality and quantity monitoring); and vegetation surveys, etc. Research and monitoring are used to increase refuge staff knowledge, understanding, and ability to manage animals, plants, habitats, and ecosystem processes. These activities support short- and long-term research projects by resource agencies, universities, nonprofit organizations, and other research entities. Conclusions derived from research and monitoring allow refuge managers to evaluate management activities and adapt those activities to be more effective.

Availability of Resources: Some refuge resources above general operational costs may be required for this use. The cost of most field studies is borne by the researchers with the exception of staff time to review proposals, issue special use permits (SUPs), provide logistical support, and monitor projects. These are considered regular (routine) duties of biologists and managers. Researchers typically provide all the materials needed.

Anticipated Effects of the Use: Generally, research and monitoring impacts are minimal. There may be slight or temporary disturbances to wildlife or habitats. These impacts are generally not significant or permanent. A small number of individual plants or animals might be collected for further scientific study, but these collections are anticipated to have minimal impact on the populations from which they came. Research project impacts are minimized by applying stipulations on research activities under the SUP evaluated by refuge staff and approved by the Refuge Manager.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

_____ Use is Not Compatible
__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: All researchers are required to obtain special use permits (FWS Form 3-1383R) from the Refuge Manager and to comply with all federal wildlife permitting processes and standards. The special use permit specifies the purpose and duration of the project, location of field work, and any special conditions that the permittee is required to follow. Special use permits include study-specific restrictions applicable to methods, study site(s), and other project elements. These are done on a case-by-case basis. All research proposals are reviewed by refuge staff before approval is given by refuge managers. Refuge personnel regularly monitor the progress of all field work and permittees are required to submit interim reports, an annual report of the work accomplished, and/or a final report of the study. In applying for special use permits, researchers are required to show proof that they have fulfilled all other applicable permitting requirements, such as state collecting permits and endangered species permits.

Justification: Research and monitoring provides the Service with scientific information that can be used to better manage natural resources. Species identification, resource inventories, and monitoring provide valuable data for refuge operations. Access to current and state-of-the art research can aid management decisions and be used in adaptive management strategies to manage resources. Applied research may directly benefit species or habitat.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
_____ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

Mandatory 10-year Re-evaluation Date:

Description of Use: *Commercial Photography*

Commercial photography is the taking of photographs or films (including videography) by an individual or company for commercial gain or profit. Photography classes, television news crews, and photographic production shoots are examples of commercial photography. These activities are varied in their scopes and impacts, ranging from a single individual in a single vehicle to numerous people and associated support vehicles. While recreational photography is an activity that falls under wildlife observation, a priority public use under the Improvement Act, commercial photography is not.

Availability of Resources: There are currently no facilities or programs available on either refuge. To support this use, special use permits would have a fee to cover the administrative costs of staff time to review, process, and monitor these activities to ensure adherence to conditions of the permits.

Anticipated Effects of the Use: Activities associated with commercial photography have shown no measurable environmental impacts to the other refuges in the Complex, their habitats, or wildlife species. The use can cause temporary minor disturbance to waterfowl due to human proximity, particularly in winter, spring, and during the early summer nesting and brood rearing period. As this use is expected to be limited, random in location, and temporary, it should not create more than minor disturbance. Any malicious or unreasonable harassment of wildlife would be grounds for the manager to discontinue or restrict the use to minimize harm. Potential effects include minor trampling of vegetation and disturbance of nesting, foraging, and resting wildlife.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

_____ Use is Not Compatible
__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: All commercial photographers must apply for a commercial special use permit (FWS Form 3-1383 C) to operate on the refuges. Additionally:

- Requests are considered if they demonstrate a means to enhance education, appreciation, and/or understanding of the National Wildlife Refuge System (NWRS);
- Commercial photographers would be managed under special use permits stipulating dates, times, and general locations that can be photographed.
- There will be a fee for the special use permit to cover administrative costs;
- Commercial photographers must supply copies of their work or films for refuge use; and
- Proper credit must be given to the refuge and the Service on any commercial products generated from filming on the refuges.

Justification: Under certain circumstances, commercial photography can support priority public uses of the refuge, including environmental education and interpretation, and wildlife observation. Commercial photography can increase awareness, understanding, and support for the refuges and

their management, natural resources, the NWRS, and the Service. Conditions imposed in required commercial special use permits will help ensure that these activities minimize impacts.

Commercial photography can increase visitors' knowledge and appreciation of fish and wildlife on the refuge, and lead to greater understanding of the NWRS's public stewardship mission. Photographs taken on refuge lands, when provided to refuge staff for outreach and public use program enhancement, complement Service actions and enhance its ability to draw more visitors to the refuge.

NEPA Compliance for Refuge Use Description:

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
_____ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

Mandatory 10-year Re-evaluation Date:

Description of Use: *Cooperative Farming*

Cooperative farming is an arrangement with local farmers that provides refuge land to the farmer in exchange for a portion of the crop. Cooperative farming has long been the most economical method for meeting refuge crop objectives. Certain agricultural crops (e.g., rice, corn, milo) provide the greatest yield of waterfowl food per unit area, supplementing natural foods that contribute energy, protein, and other nutrients. The agricultural lands are scattered throughout the refuges to maintain a diversity of habitats.

While there is currently no use on either refuge, the Service partners with local farmers to produce crops, on a share basis, on other agricultural land within the Complex. In the cooperative farming program the farmer uses his/her own equipment and fuel to prepare the ground, plant the fields, apply herbicide and pesticide, and harvest a percentage (usually 75 percent) of the crop. The remaining crop (25 percent) is left in the field as food for waterfowl and other wildlife. Cooperative farmers also assist with habitat management (i.e., disk moist-soil management areas to control woody vegetation) and refuge maintenance activities (i.e., mowing roads, repairing roads damaged as result of farming operations, mowing turn-rows, etc.), that help maintain refuge resources.

The Service determines where the crops will be left in the field to ensure greatest benefit to waterfowl. Crops taken by farmers generally include rice, corn, soybeans, and winter wheat, while those left for wildlife include rice, corn, milo, and millet. Although the cooperative farming program is intended primarily to provide food for wintering waterfowl, agricultural crops benefit game species as well, including deer, wild turkey, woodcock, raccoon, and bobwhite quail.

Availability of Resources: The cooperative farming program requires an adequate level of staff to ensure that annual agreements are developed and signed, farming activities are monitored to ensure compliance with the annual agreement, and the administrative work associated with the Pesticide Use Permit process is accomplished.

Anticipated Effects of the Use: The cooperative farming program has positive effects on refuge lands by producing vital food and cover for waterfowl and game species during the wintering season.

Farming exposes refuge lands to chemicals, increased erosion, and the resultant runoff into refuge lakes, rivers, and wetlands. Farmers use pesticides and herbicides to control pests and weeds that reduce crop yields. The chemicals can have a variety of direct and indirect effects on wildlife. Therefore, the Service requires that chemicals used on refuge lands be approved for use through the annual Pesticide Use Proposal (PUP) process. The process includes application requirements and varying levels of review depending upon the nature of the chemical and how it is applied. The PUP process ensures that relatively safe pesticides are applied to refuge lands and that threatened and endangered species are not adversely affected.

The Service tries to minimize environmental effects through Cooperative Farming and Special Conditions Agreements. These Agreements are prepared annually with each farmer. The Agreement specifies which crops will be planted, which pesticides have been approved for use on areas they farm, prohibited activities such as applying chemicals aerially without the refuge manager's approval, and best management practices to reduce erosion and surface runoff into refuge lakes, streams, and wetlands. The cooperative farming program is evaluated annually and ongoing monitoring is conducted to ensure that the conditions specified in the Agreement are being met and that the overall condition of the area is not being degraded.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

___ Use is Not Compatible
_X_ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: As per 6 Refuge Manual 4, **c**ooperative farmers are required to sign and comply with an annual Cooperative Farming and Special Conditions Agreement that specifies which crops will be planted, refuge/farmer share, compliance with the PUP process, Best Management Practices (BMPs), and other details. Refuge staff would conduct ongoing monitoring on farming activities to ensure that impacts on refuge lands are minimal and that cooperative farmers comply with the annual Cooperative Farming Agreement.

Justification: Waterfowl expend considerable energy to obtain mates, maintain body temperatures during cold weather, and migrate from area to area in search of food, cover, and water. Having food resources readily available during the wintering season is vital for their survival while benefiting other species of wildlife as well. The cooperative farming program is a critical component of management for migratory waterfowl and supports the objectives of the North American Waterfowl Management Plan by providing food resources and a diversity of wildlife habitat for waterfowl and a suite of additional species. This use would also provide some economic benefit to local farmers and communities.

NEPA Compliance for Refuge Use Decision: *Place an X in appropriate space*.

___ Categorical Exclusion without Environmental Action Statement
___ Categorical Exclusion and Environmental Action Statement
___ Environmental Assessment and Finding of No Significant Impact
___ Environmental Impact Statement and Record of Decision

Mandatory 10-year Re-evaluation Date:

Description of Use: *Firewood Gathering*

Firewood gathering is the cutting and removal of woody material for use by the individual removing the firewood. Firewood gathering is offered to the public following timber stand improvement or forest thinning in small lots or areas, or at times when timber sales are not feasible. In young tree plantations, firewood gathering could be offered in lieu of a commercial timber harvest operation. It may also be permitted when trees that have fallen across roads, trails, or firebreaks and must be removed.

Availability of Resources: Complex staff resources are adequate to allow this use. An administrative fee may be imposed if needed to cover costs.

Anticipated Effects of the Use: The potential exists to directly impact wildlife by displacing animals from local areas due to disturbance, noise, or removal of nesting areas. Direct impacts on wildlife can be avoided by timing the activity so that it is not coincident with the breeding/production season. Avoidance of nesting periods for migratory birds would reduce impacts on populations. Most effects can be avoided by timing of season in accordance with site-specific characteristics. Due to the small scale of firewood gathering on these two refuges, disturbance to wildlife should be negligible.

Large, dead, and downed trees and standing snags are extremely important habitat components that should remain on the refuge unless they pose a danger to the public in concentrated use areas or to refuge operations. The removal of trees along roads, trails, and dikes may be necessary to reduce hazards to users caused by falling trees and limbs.

Impacts to refuge roads and trails due to soil compaction from vehicles, rutting, or root damage are possible, but can be avoided by restricting use to dry ground conditions. Traffic on refuge roads will need to be carefully controlled (i.e., via special use permit) to avoid impacts such as rutting and potholes.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

___ Use is Not Compatible
_X_ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Private individuals are permitted to remove fallen timber or marked standing timber as designated by the Refuge Manager. The scope of the use will be determined by the management objective for the area and by the quantity and quality of available wood. Harvest sites will vary in size from a portion of an acre up to several hundred acres depending on the site and management objectives. Wood removal activities may be authorized throughout the year when ground conditions allow access without damaging refuge roads and resources. The following also apply:

- Chainsaws and axes may be used to harvest firewood. Access may be by car and trailer or pickup truck. Differences in scope and necessary equipment will occur depending on the amount and type of wood available for removal. This activity will only occur where the Service has determined that a management need exists to remove wood.
- Firewood gathering may be regulated by a general special use permit (FWS Form 3-1383 G) so that site-specific impacts can be reduced or eliminated and Service management goals are met. The permit would include stipulations that ensure the practice is allowed only when it benefits refuge operations or habitat conditions, areas and times of use are specified, ingress and egress points controlled, trees to be removed are marked by refuge staff, allowable equipment is identified, and other important conditions are specified.
- The use would be restricted to periods of dry ground conditions to avoid rutting and soil compaction on refuge roads, to the extent practical.
- An administrative fee may be imposed.

Justification: Firewood cutting benefits the public and can be used as a management tool in forested habitats and as a maintenance tool on roads, trails, and grounds. The removal of dead trees reduces litter buildup and the potential for damaging wildfires. With the stipulations above, firewood gathering furthers the habitat management objectives of the refuges and the Theodore Roosevelt National Wildlife Refuge Complex.

NEPA Compliance for Refuge Use Decision: *Place an X in appropriate space*.

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
_____ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

Mandatory 10-year Re-evaluation Date:

Description of Use: *Timber Harvest for Forest Management*

Timber harvest for forest management involves timber stand improvement and commercial timber harvests. Typically, individual forest stands are inventoried, timber harvest prescriptions developed, and timber harvest operations carried out in a manner that will accomplish the forest habitat management objectives for migratory birds, threatened or endangered species, and resident wildlife. Timber marking operations select trees that would be harvested by commercial timber and pulpwood operators. Trees may also be removed through timber stand improvement operations or by permit holders when commercial sales are not feasible.

Commercial timber harvest has not been conducted on either refuge, but it is done on the Complex in accordance with the approved Forest Habitat Management Plan (USFWS 2010). The plan was designed to meet wildlife habitat objectives. Forest Management Policy is also set by the Service under 6 Refuge Manual 3 (3.3 objectives).

Availability of Resources: Current funding and staffing allow only limited timber harvest activities on the Complex. Additional funding and staffing would be required to expand timber harvest to the refuges.

Anticipated Effects of the Use: Commercial timber harvest operations can cause adverse impacts on habitat values and water quality if not carefully controlled and supervised. Restrictions and conditions must be placed on harvesting operations to minimize adverse effects from logging equipment, such as excessive defacement of residual trees and negative impacts on surface water quality. Minor, short-term impacts are expected to occur during harvesting operations, including mechanized operation disturbance to wildlife and trampling of the understory vegetation by equipment. However, these impacts are temporary and brief as the understory vegetation usually recovers in one growing season.

Forest management operations are designed to provide more vertical diversity throughout the overstory, midstory, understory, and ground flora. Favoring trees of varying ages and sizes, including some of the largest dominants within each forest block, will promote the habitat requirements of forest-dwelling birds and other resident wildlife. Forest conditions following timber harvest are more beneficial to wildlife as harvest operations can help restore the functions and values typically associated with bottomland hardwood forests historically occurring throughout the region.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

___ Use is Not Compatible
_X_ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Forest management operations may be conducted throughout the year, but only according to the guidelines detailed in the Complex's Forest Habitat Management Plan (USFWS 2010) and the special conditions section of the special use permit. All harvesting would be conducted by special use permit and carried out in accordance with 6 Refuge Manual 3.

Justification: Timber harvest for forest management would enhance habitats for wildlife populations on the refuges and help reduce the fuel load thus lessening the threat of wildfire.

NEPA Compliance for Refuge Use Decision: *Place an X in appropriate space*.

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
_____ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

Mandatory 10-year Re-evaluation Date:

Description of Use: *Trapping*

Trapping is considered a secondary use employed to: prevent or reduce the loss of federal trust species; prevent refuge habitat losses; and reduce habitat damage. The trapping program within the

Complex targets raccoon, coyote, bobcat, skunks, beaver, and nutria. Cooperative partnerships with commercial trappers have helped reduce populations of beaver, raccoon, nutria, and bobcat.

Skunks and raccoons prey upon nests, often eating the eggs of wood ducks, wild turkey, and other birds. They also prey upon waterfowl and their young. Population numbers of both species have increased on the refuges from the lack of hunting, trapping and natural predators. Nutria damage habitat and impair refuge infrastructure by rooting-up vegetation and digging holes in levees or dikes, sometimes producing significant damage. Beavers cause a considerable amount of damage to refuge infrastructure by burrowing into levees and dikes, plugging water control structures and pipes, destroying timber and crops in agricultural fields, and flooding or undermining roads and bridges. There are few natural predators to keep the population in check, thus beavers can quickly overpopulate an area.

Availability of Resources: Because the Complex lacks sufficient staff to administer the trapping program, cooperative partnerships with visiting trappers would benefit the refuges' resources. Additional staffing and funding would need to become available to expand the trapping program to these two refuges on a regular and ongoing basis.

Anticipated Effects of the Use: Beaver trappers using the refuges in the winter may cause temporary displacement of waterfowl from specific and limited areas. In the early spring they may disturb waterfowl or wood ducks on occasion. These impacts would be occasional, temporary, and isolated to small geographic areas. There have been no reported conflicts between hunters and trappers elsewhere in the Complex. To avoid contact with other refuge users, traps would not be set in the hunting areas during open seasons. The permit system offers the Refuge Manager the opportunity to specifically target nuisance species and regulate techniques and methods for their removal.

Controlling populations of animals that prey on waterfowl or damage refuge habitat has positive effects on waterfowl populations and refuge resources. Too many nutria can lead to an excessive loss in emergent vegetation on which waterfowl depend. Raccoon prey upon waterfowl at various stages in the production cycle. Beavers build dams that flood and kill forest habitat. Reducing beaver populations minimizes the damage they do to forest habitat, levees and dike infrastructure by burrowing. The capture of animals, such as otters, will occur to some extent during beaver trapping, but trappers are advised to avoid trapping non-target species. Visiting trappers reduce the need to commit Service resources to a trapping program and they produce positive effects for waterfowl and other aquatic wildlife species.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

___ Use is Not Compatible
_X_ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: The following stipulations apply:

- As a commercial activity, all trappers must have a state license for the trapping of furbearers.

- Trapping would be conducted in compliance with a general special use permit (FWS form 3-1318 G or 3-1318 C for commercial trapping).
- Take of non-targeted animals will be minimized by trap set and locations.
- A trapping report including desired species caught and incidental take will be required of the individual named in the special use permit.
- All traps must be tagged and checked daily.

Justification: Trapping is a valuable management tool that is used to prevent predation of federal trust species and to reduce damage to refuge habitat and infrastructure. With the above stipulations, little or no adverse effects to other refuge programs or wildlife species should occur. The use furthers the objectives of the Theodore Roosevelt National Wildlife Refuge Complex.

NEPA Compliance for Refuge Use Decision: *Place an X in appropriate space*.

_____ Categorical Exclusion without Environmental Action Statement
_____ Categorical Exclusion and Environmental Action Statement
_____ Environmental Assessment and Finding of No Significant Impact
_____ Environmental Impact Statement and Record of Decision

Mandatory 10-year Re-evaluation Date:

Description of Use: Siting, Construction, and Operation of a Visitor Center at Theodore Roosevelt NWR.

Construct, operate, and maintain a Visitor Center facility on property adjacent to U.S. Highway 61 in Sharkey County, Mississippi (see Figures 9 and 10 in Section A). The building design is about 4,000 square feet and would not exceed 6,000 square feet in size. It would provide a visitor contact area, exhibit hall, bookstore, and multi-purpose room for the public. The multi-purpose room will serve as the Environmental Education (EE) module and would be about 2000 square feet, suitable for class sizes of 50 students. First-floor elevations would vary from four to ten feet.

The site would be accessed from a turning lane off the highway. It would contain a hard-surfaced (gravel), loop-shaped driveway with 56 parking spaces including 4 each for handicap accessible and buses plus 48 cars. Interpretive outdoor sites and rest areas such as a boardwalk, picnic area, demonstration wetland, and 2 resident worker camping pads/facilities would be included in the site. Ground facilities would include fencing, a septic system and spray field, drinking water well, and lines for electricity, telephone and fiber optics.

Availability of Resources:

Funding in the amount of $2.6 million has been secured for the planning and construction of this facility through the 2004 Consolidated Appropriations Act. The CCP proposes funding two positions to staff the Visitor Center, i.e., an Outdoor Recreation Planner to develop and provide Environmental Education programs and a Park Ranger/Visitor Services Specialist to establish and coordinate a volunteer program. Annual operating costs would total $50,000 with $30,000 yearly needed for building maintenance and utilities and $20,000 for the outdoor facilities.

Anticipated Impacts of the Use:

This is an administrative site containing some native forest; however, the construction of facilities would be on converted farm land. Disturbance to trust species are expected to be minimal. Construction of the facility, and graded-gravel access drive and parking areas will affect small portions of the altered site by adding impervious cover in the construction footprint. The spray field irrigation and septic systems will be sited to minimize effects. There are no immediate waterways adjacent to the property.

The only long-term impact associated with operation and use of the proposed facility includes increased traffic at the site. No federally or state-listed plant or wildlife species currently are known to exist on this project site. Negative impacts associated with increased traffic volume, traffic entering and exiting the site, and staff and visitor activities at the site are not expected to be a significant problem as the Visitor Center will be sited in a rural area.

Public Review and Comment: The compatibility determinations for these refuges were made available for public review and comment during the public review period established for the Theodore Roosevelt and Holt Collier NWRs Draft Comprehensive Conservation Plan and Environmental Assessment.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

All construction activities associated with these projects will be in compliance with any applicable Federal and State laws and regulations pertaining to safety, environmental and cultural resource impacts. The buildings will meet local, State and Federal standards for construction, safety, and energy efficiency. Septic and wastewater discharge, fuel storage, and solid waste disposal will be in compliance with all applicable health and environmental regulations. Any hazardous substances that may be associated with maintenance and equipment operations will be stored, handled, and disposed of in accordance with State and Federal regulations. Offices and visitor reception and use areas within any buildings will be adequately lighted, heated, and ventilated. The facility will be fully accessible. Ongoing assessments of facilities condition, operational capability, and visitor satisfaction will aid in guiding future administrative and operational decisions.

Justification: Construction and operation of the congressionally mandated Visitor Center and environmental education facilities will enable the Complex to achieve objectives of its CCP and that proposed for Theodore Roosevelt and Holt Collier NWRs. It will promote the mission of the National Wildlife Refuge System. The action will not pose significant, adverse effects on trust species or other resources. It will help promote public use, environmental education and interpretation for the Complex of refuges. Positive benefits are expected to the local and state economies, for example, through construction and operation employment, sales, and sales tax revenues from visitors.

NEPA Compliance for Refuge Use Description: Place an X in appropriate space.

_____Categorical Exclusion without Environmental Action Statement
_____Categorical Exclusion and Environmental Action Statement
_____Environmental Assessment and Finding of No Significant Impact

Mandatory 10-Year Re-evaluation Date:

Approval of Compatibility Determinations

The signature of approval is for all compatibility determinations considered within the Comprehensive Conservation Plan for Theodore Roosevelt and Holt Collier National Wildlife Refuges. If one of the descriptive uses is considered for compatibility outside of the comprehensive conservation plan, the approval signature becomes part of that determination.

Refuge Manager: _____
(Signature/Date)

Regional Compatibility Coordinator: _____
(Signature/Date)

Refuge Supervisor: _____
(Signature/Date)

Regional Chief, National Wildlife Refuge System, Southeast Region: _____
(Signature/Date)

Appendix G. Intra-Service Section 7 Biological Evaluation

REGION 4
INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Justin Sexton, Wildlife Refuge Manager
Telephone Number: 662/839-2638 **E-Mail:** Justin_Sexton@fws.gov
Date: May 1, 2014

PROJECT/PLAN NAME: Theodore Roosevelt and Holt Collier National Wildlife Refuges Draft Comprehensive Conservation Plan (CCP) and Environmental Assessment (EA)

I. Service Program:
___ **Ecological Services**
___ **Federal Aid**
___ **Clean Vessel Act**
___ **Coastal Wetlands**
___ **Endangered Species Section 6**
___ **Partners for Fish and Wildlife**
___ **Sport Fish Restoration**
___ **Wildlife Restoration**
___ **Fisheries**
_X_ **Refuges/Wildlife**

II. State/Agency: Mississippi/U.S. Fish and Wildlife Service

III. Station Name: Theodore Roosevelt and Holt Collier National Wildlife Refuges

IV. Description of Proposed Action:

The proposed action would result in the implementation of a Comprehensive Conservation Plan (CCP) for Theodore Roosevelt and Holt Collier National Wildlife Refuges (NWRs). The two refuges have a combined total of 3,907 acres in Sharkey and Washington Counties, Mississippi. They are part of the Theodore Roosevelt NWR Complex, which includes five other refuges. Approval and subsequent implementation of the CCP will direct management actions on the two refuges for the next 15 years. The Draft CCP and Environmental Assessment for these refuges is attached.

V. Pertinent Species and Habitat:

A. Include species/habitat occurrence map:

No documented occurrence on either refuge. Maps for each species are not available. The CCP is attached.

Complete the following table:

SPECIES/CRITICAL HABITAT	STATUS[1]
Louisiana black bear	T
Pondberry	E

[1]*STATUS: E=endangered, T=threatened.*

VI. Location (attach map – see CCP Figures 1, 3 and 4):

A. Ecoregion Number and Name: Ecoregion 27, Lower Mississippi River

B. County and State: Washington and Sharkey Counties, Mississippi

C. Section, township, and range (or latitude and longitude):

Theodore Roosevelt NWR N 32^0 43' 12'' W 90^0 52' 55''
Holt Collier NWR N 33^0 13' 12'' W 90^0 46' 08''

D. Distance (miles) and direction to nearest town:

Theodore Roosevelt NWR 2 miles south of Onward, Mississippi
Holt Collier NWR 4 miles northwest of Hollandale, Mississippi

E. Species/habitat occurrence:

1. **Louisiana black bear** - No Louisiana black bear have been documented on either refuge. They have been documented within the Theodore Roosevelt NWR Complex, particularly on Yazoo NWR since 1996. Bear tracking showed movements across that refuge, but there are no known established territories. They also occur in Delta National Forest which is close to Theodore Roosevelt NWR.
2. **Pondberry plant** – This endangered plant has not been documented on either refuge. The refuges have not been surveyed to see if the plant exists or if suitable habitat exists as host sites for potential reestablishment.

VII. Determination of Effects:

A. Explanation of effects of the action on species and critical habitats in item V. B.:

The proposed action is expected to be beneficial to the listed species.

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Louisiana black bear	The project is not likely to adversely affect the species.

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Pondberry	The project is not likely to adversely affect the species.

Effects of the proposed action are expected to be positive for the two listed species. The Service would continue to implement strategies to support the recovery of these species at the refuge level. A key provision of the plan is to acquire more land for each refuge helping to provide additional, permanent habitat for bears and to increase connectivity of wildlands for them. Over time, these lands would be restored to bottomland hardwood communities. A survey for Pondberry is proposed to determine if the plant occurs on either refuge and if habitat exists that would be suitable for reestablishment. Those sites would be protected.

A. Explanation of actions to be implemented to reduce adverse effects:

SPECIES/ CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS
Louisiana black bear	No actions to mitigate/minimize impacts to the species are needed or planned.
Pondberry	No actions to mitigate/minimize impacts to the species are needed or planned.

No mitigation is required for these species at this stage of the CCP since: 1) they do not occur at present on the refuges; and 2) authorization of the CCP will not adversely affect and may positively affect threatened and endangered species. Prior to implementing CCP actions, Endangered Species Act consultation will occur.

VIII. Effect Determination and Response Requested:

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE[1] REQUESTED
	NE	NA	AA	
Louisiana black bear		X		Concurrence
Pondberry		X		Concurrence

[1]DETERMINATION/RESPONSE REQUESTED:
NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested is optional but a "Concurrence" is recommended for a complete Administrative Record.

NA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response Requested is a "Concurrence".

AA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested for listed species is "Formal Consultation". Response Requested for proposed or candidate species is "Conference".

IX. Reviewing Ecological Services Office Evaluation:

A. Concurrence _____ Nonconcurrence _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

E. Remarks:

_____ _____
Signature (originating station) **Date**

<u>Wildlife Refuge Manager</u>
Title

_____ _____
Signature **Date**

_____ _____
Title **Office**

Appendix H. Wilderness Review

Introduction and Overview

The National Wilderness Preservation System (NWPS) is a network of federally owned areas designated by Congress as wilderness areas and managed by one of four Federal agencies under the Department of Interior: the U.S. Fish and Wildlife Service (USFWS), the Bureau of Land Management, the National Park Service and the Forest Service. Over 71 designated wilderness areas, totaling over 21 million acres, are found on 64 refuges. The USFWS manages about 22 percent of the NWPS.

The Service administers wilderness areas within the National Wildlife Refuge System consistent with refuge purposes and in accordance with the Wilderness Act (16 U.S.C. 1131-1136) and the specific legislation designating a particular wilderness area. The purposes of the Wilderness Act are to secure an enduring resource of wilderness, to protect and preserve the wilderness character of areas within the NWPS, and to administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as wilderness. Wilderness purposes are "within and supplemental" to refuge establishing purposes. They become additional purposes of the area within the refuge designated as wilderness.

All lands and waters of the Refuge System outside of Alaska and not currently designated as wilderness areas are subject to a wilderness review. Wilderness reviews are conducted concurrent with CCP development and a summary of the review is incorporated into the plan. The purpose of the wilderness review is to identify and recommend for congressional designation Refuge System lands and waters that merit inclusion as wilderness areas in the NWPS.

The wilderness review process is conducted in three phases: inventory, study, and recommendation. The inventory phase is a broad look at the planning area to identify lands and waters that meet the minimum criteria for wilderness and that warrant further study for wilderness designation. The evaluation criteria are: size; naturalness; opportunities for solitude or primitive recreation; and supplemental values. Roadless areas or wilderness inventory units that meet these criteria are identified as wilderness study areas (WSAs).

In the study phase, each WSA is evaluated, through careful analysis of alternative management options, to determine its suitability for wilderness designation. The analysis considers all values (e.g., ecological, recreational, cultural, economic, symbolic), resources (e.g., wildlife, water, vegetation, minerals, soils), refuge uses, and refuge management activities within the WSA and includes an evaluation of whether the WSA can be effectively managed to preserve its wilderness character. The findings of the study determine whether a WSA, or portion of a WSA, will be recommended for designation as wilderness in the final CCP. Wilderness recommendations are forwarded or reported from the Director of the Service to the Secretary of Interior and the President to Congress in a wilderness study report.

Summary of Review

On May 7, 2013 the CCP team met to conduct the wilderness review for Theodore Roosevelt and Holt Collier National Wildlife Refuges. The meeting's purpose was to inventory the refuges' lands and to determine whether these lands might qualify as wilderness study areas (WSAs). To do so, they would need to meet the definition and criteria for wilderness.

The wilderness review team included:

- Justin Sexton, Wildlife Refuge Manager;
- Mary Morris, Natural Resource Planner and CCP Planning Team Leader;
- Lamar Dorris, Forester, Theodore Roosevelt NWR Complex;
- Dove Barnes, Visitor Services Specialist, Theodore Roosevelt NWR Complex;
- James Callicutt, Biologist, Statewide Waterfowl Program, Mississippi Department of Wildlife, Fisheries and Parks; and
- Seth Swafford, Deputy Project Leader, Theodore Roosevelt NWR Complex.

The Wilderness Act defines a wilderness area as an area of federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is managed so as to preserve its natural conditions and:
(1) generally appears to have been affected primarily by the forces of nature, with the imprint of human work substantially unnoticeable;
(2) has outstanding opportunities for solitude or primitive and unconfined type of recreation;
(3) has at least 5,000 contiguous roadless acres or is of sufficient size to make practicable its preservation and use in an unimpaired condition;
(4) does not substantially exhibit the effects of logging, farming, grazing, or other extensive development or alteration of the landscape, or its wilderness character could be restored through appropriate management, at the time of review;
(5) is a roadless island; and
(6) may contain ecological, geological, or other features of scientific, education, scenic, or historic value.

During the inventory phase of the wilderness review, the emphasis is on an assessment of wilderness character within the inventory units. Special values (i.e., ecological, geological, scenic, and historical) should be identified. The determination to recommend (or not recommend) a wilderness study area to Congress for wilderness designation is made through the CCP decision-making process.

Wilderness Review Findings

The lands within Theodore Roosevelt and Holt Collier National Wildlife Refuges were reviewed for their suitability in meeting the criteria for wilderness, as defined by the Wilderness Act of 1964. Neither refuge has lands that meet the wilderness criteria, particularly criteria 1 and 4. Both refuges have been altered from their native bottomland hardwood forest and converted to agricultural lands. They have been logged and drained for farming. Because they are of small acreage and bisected by county roads with easements and uncontrolled access to these lands, criterion 3 could not be met. Opportunities for solitude or primitive and unconfined recreation do not exist. At present Theodore Roosevelt NWR is not open to public use. Noise is a factor in that adjacent forested landholdings to these refuges allow hunting, and low-altitude crop-dusting planes are used on nearby agricultural fields. The primary purposes of the two refuges are for conservation and to enhance waterfowl and migratory bird populations. This latter objective typically requires active habitat management to provide waterfowl sanctuaries. Certain habitat management activities, such as moist-soil management or the establishment of impoundments, would conflict with the wilderness objectives of naturalness. The team concluded that no refuge lands met the criteria for wilderness and therefore would not be recommended as wilderness study areas. Service policy is that future additions to the refuge lands will be evaluated via wilderness inventory and review within two years of each acquisition.

Appendix I. Refuge Biota

Theodore Roosevelt and Holt Collier National Wildlife Refuges
Bird List

Seasonal Appearance:
Sp Spring March - May
S Summer June – August
F Fall September - November
W Winter December - February

Seasonal Abundance:
c - common (certain to be seen in suitable habitat)
u - uncommon (present but difficult to find)
o - occasional (seen only a few times in a season)
r - rare (seen at irregular intervals)

[1]**Location:** blank means both refuges; TR only – Theodore Roosevelt NWR

Bird Groups	Location[1]	Seasonal Appearance			
		Sp	S	F	W
Grebes					
Pied-billed Grebe		c	c	c	c
Pelicans and Allies					
American White Pelican		o			o
Double-Crested Cormorant		u	u	u	c
Anhinga		c	c	c	o
Herons, Egrets and Allies					
American Bittern		o		o	o
Great Blue Heron		c	c	c	c
Great Egret		c	c	c	u
Snowy Egret		c	c	c	
Little Blue Heron		c	c	c	o
Tricolored Heron			r	r	
Cattle Egret		c	c	c	u
Green-backed Heron		c	c	c	o
Black-crowned Night-Heron		c	c	c	o
Yellow-crowned Night-Heron		u	u	u	o
Ibises, Spoonbill, and Storks					
Glossy Ibis		o	o	o	r
White Ibis		c	c	c	o
Roseate Spoonbill		r	r	r	
Wood Stork			o	o	
Waterfowl					
Greater White-fronted Goose		u		c	c
Snow Goose		u		c	c
Canada Goose		u	u	c	u
Wood Duck		c	c	c	c
Green-winged Teal		u		c	c

Bird Groups	Location[1]	Seasonal Appearance			
		Sp	S	F	W
American Black Duck		o		o	u
Mallard		c	u	c	c
Northern Pintail		o		c	c
Blue-winged Teal		c	o	c	o
Cinnamon Teal				r	r
Northern Shoveler		c		c	c
Gadwall		c		c	c
American Wigeon		c		c	c
Canvasback		o		o	o
Redhead				o	o
Ring-necked Duck		c		c	c
Greater Scaup					o
Lesser Scaup		u		c	c
Common Goldeneye					o
Bufflehead		c		c	c
Hooded Merganser		c	u	u	c
Common Merganser					r
Ruddy Duck		u		u	c
Osprey		o		r	o
Mississippi Kite		c	c	u	
Bald Eagle		o	o	o	u
Northern Harrier		u		u	c
Sharp-shinned Hawk		u		u	c
Cooper's Hawk		u		u	c
Red-shouldered Hawk		u		u	u
Broad-winged Hawk		u	o	o	
Red-tailed Hawk		c	u	c	c
Golden Eagle				r	o
American Kestrel		c	o	c	c
Merlin				o	u
Gallinaceous birds					
Wild Turkey	TR only	u	u	u	u
Rails, Gallinules and Coots					
American Coot		c	o	c	c
Plovers, Sandpipers and Allies					
Lesser Golden Plover		o		o	
Black-bellied Plover		o		o	
Semipalmated Plover		o	u	u	o
Killdeer		c	c	c	c
Black-necked Stilt		o	c	c	

Bird Groups	Location[1]	Seasonal Appearance			
		Sp	S	F	W
American Avocet			o	r	
Greater Yellowlegs		c	u	c	o
Lesser Yellowlegs		c	c	c	
Solitary Sandpiper		c	c	c	
Spotted Sandpiper		u	c	u	
Upland Sandpiper		o		o	
Semipalmated Sandpiper		c	c	c	
Western Sandpiper		o	o	o	
Least Sandpiper		c	c	c	u
Pectoral Sandpiper		o	c	c	
Common Snipe		c		c	c
Wilson's Phalarope		o	o	r	
American Woodcock		u		u	u
Gulls					
Herring Gull		o		u	u
Doves					
Rock Dove		c	c	c	c
Mourning Dove		c	c	c	c
Eurasian Collared Dove		u	u	u	u
Cuckoos					
Yellow-billed Cuckoo		c	c	c	o
Owls					
Eastern Screech-Owl		c	c	c	c
Great Horned Owl		u	u	u	u
Barred Owl		c	c	c	c
Goatsuckers					
Common Nighthawk		u	u	o	
Chuck-will's-widow		o	o		
Whip-poor-will		o			
Swifts					
Chimney Swift		u	c	u	
Ruby-throated Hummingbird		u	c	c	
Rufous Hummingbird				r	r
Kingfishers					
Belted Kingfisher		u	c	c	u
Woodpeckers					
Red-headed Woodpecker		c	c	c	c
Red-bellied Woodpecker		c	c	c	c
Yellow-bellied Sapsucker		u		u	c
Downy Woodpecker		c	c	c	c

Bird Groups	Location[1]	Seasonal Appearance			
		Sp	S	F	W
Hairy Woodpecker		u	u	u	u
Northern Flicker		c	u	c	c
Pileated Woodpecker		u	u	u	u
Flycatchers					
Eastern Wood-Pewee		c	c	u	
Yellow-bellied Flycatcher				r	
Acadian Flycatcher		u	c	c	
Eastern Phoebe		c	u	c	c
Great Crested Flycatcher		u	u	u	
Eastern Kingbird		u	c	c	o
Larks					
Horned Lark		c	u	u	c
Martins and Swallows					
Purple Martin		c	c	c	
Tree Swallow		c		c	o
Northern Rough-wing Swallow		u	u	u	
Barn Swallow		c	c	c	
Jays and Crows					
Blue Jay		c	c	c	
American Crow		u	u	u	u
Fish Crow		o	o	o	o
Chickadees and Titmice					
Carolina Chickadee		c	c	c	c
Tufted Titmouse		c	u	c	c
Nuthatches					
Red-breasted Nuthatch				o	o
White-breasted Nuthatch		r		r	o
Brown Creeper				o	u
Wrens					
House Wren		o	o	o	o
Winter Wren		u		u	u
Carolina Wren		c	c	c	c
Sedge Wren		o		o	o
Marsh Wren		o		o	u
Kinglets and Gnatcatchers					
Golden-crowned Kinglet		u		u	c
Ruby-crowned Kinglet		u		u	c
Blue-gray Gnatcatcher		u	u	u	o
Bluebirds, Thrushes and Robins					
Eastern Bluebird		c	c	c	u

Bird Groups	Location[1]	Seasonal Appearance			
		Sp	S	F	W
Hermit Thrush		u		u	u
Wood Thrush		c	c	u	
American Robin		c	u	c	c
Mockingbirds, Thrashers and Allies					
Gray Catbird		u	u	o	o
Northern Mockingbird		c	c	c	u
Brown Thrasher		c	c	c	u
Pipits					
American Pipit		u		u	u
Waxwings					
Cedar Waxwing		c		c	c
Shrike					
Loggerhead Shrike		u	u	c	c
Starlings					
European Starling		c	c	c	c
Vireos					
White-eyed Vireo		c	u	u	o
Solitary Vireo		o		o	u
Yellow-throated Vireo		o	u	o	
Warbling Vireo		r	r		
Philadelphia Vireo		o		o	
Red-eyed Vireo		c	c	o	
Warblers					
Blue-winged Warbler		o		o	
Golden-winged Warbler			o	o	
Tennessee Warbler		c		u	
Orange-crowned Warbler					u
Nashville Warbler		u		u	
Northern Parula		c	c	u	
Yellow Warbler		u		u	
Chestnut-sided Warbler		u		u	
Magnolia Warbler		c		u	
Black-throated Blue Warbler		r		r	
Black-and-white Warbler		u		u	u
Yellow-rumped Warbler		u		c	c
Black-throated Green Warbler		c	u		o
Blackburnian Warbler		u		o	
Yellow-throated Warbler		u	u	u	
Pine Warbler		o			u
Bay-breasted Warbler		u		o	

Bird Groups	Location[1]	Seasonal Appearance			
		Sp	S	F	W
Blackpoll Warbler		u		o	
Cerulean Warbler		o			
American Redstart		u	o	u	
Prothonotary Warbler		c	c	u	
Worm-eating Warbler		o			
Ovenbird		u		u	
Northern Waterthrush		r			
Louisiana Waterthrush		u	u	u	
Kentucky Warbler		u	u	u	
Common Yellowthroat		c	c	u	u
Hooded Warbler		u		u	
Wilson's Warbler		o		u	
Canada Warbler		u		u	
Yellow-breasted Chat		c	c		
Tanager					
Summer Tanager		c	c	c	
Scarlet Tanager		u		u	
New World Finches					
Northern Cardinal		c	c	c	c
Rose-breasted Grosbeak		u		o	
Indigo Bunting		c	c	c	
Painted Bunting		u	u	u	
Dickcissel		c	c	c	r
Sparrows					
Rufous-sided Towhee		c	u	u	c
Chipping Sparrow		u		u	u
Field Sparrow		u	u	u	u
White-crowned sparrow		u	u	u	u
Savannah Sparrow		c		u	c
Fox Sparrow		u		u	u
Song Sparrow		c		c	c
Swamp Sparrow		c		c	c
White-throated Sparrow		c		c	c
Dark-eyed Junco		u		u	u
Blackbirds, Grackles, Cowbirds and Orioles					
Bobolink		u		o	
Red-winged Blackbird		c	c	c	c
Eastern Meadowlark		c	c	c	c
Rusty Blackbird		u		u	c
Brewer's Blackbird		u		u	u

Bird Groups	Location[1]	Seasonal Appearance			
		Sp	S	F	W
Common Grackle		c	c	c	c
Brown-headed Cowbird		c	c	c	c
Orchard Oriole		u	c	u	
Northern Oriole		u	c	u	r
Finches					
Purple Finch		u		u	u
House Finch		u	u	u	c
American Goldfinch		u		u	c
Old World Sparrows					
House Sparrow		c	c	c	c

Source: Wildlife Refuge Manager, Justin Sexton, 2014.

Theodore Roosevelt and Holt Collier National Wildlife Refuges
Mammal List

HC = Holt Collier **TR** = Theodore Roosevelt
O - Within the animal's range and contains suitable habitat for occurrence.
X - Presence has been documented.

Common Name	Scientific Name	HC	TR
ORDER MARSUPIALIA (Marsupials) ***Family Didelphidae - Opossums***			
Opossum	*Didelphis marsupialis*	X	X
ORDER INSECTIVORA (Insectivores) ***Family Soricidae - Shrews***			
Short-tailed shrew	*Blarina brevicauda*	O	O
Least shrew	*Cryptotis parva*	O	O
Eastern mole	*Scalopus aquaticus*	O	O
ORDER CHIROPTERA (Bats) ***Family (Various)***			
Little brown myotis	*Myotis lucifugus*	O	O
Southeastern myotis	*Myotis austroriparius*	O	O
Silver-haired bat	*Lasionycteris noctivagans*	O	O
Eastern pipistrelle	*Pipistrellus subflavus*	O	O
Big brown bat	*Eptesicus fuscus*	O	O
Red bat	*Lasiurus borealis*	O	O
Seminole bat	*Lasiurus seminolus*	O	O
Hoary bat	*Lasiurus cinereus*	O	O
Evening bat	*Nycticeius humeralis*	O	O
Eastern big-eared bat	*Plecotus rafinesquei*	O	O
Brazilian free-tailed bat	*Tadarida brasiliensis*	O	O
ORDER EDENTATA ***Family Dasypodidae – Armadillos***			
Nine-banded armadillo	*Dasypus novemcinctus*	X	X
ORDER LAGOMORPHA ***Family Leporidae – Rabbits and Hares***			
Eastern cottontail	*Sylvilagus floridanus*	X	X
Swamp rabbit	*Sylvilagus aquaticus*	X	X
ORDER RODENTIA (Rodents) ***Family Sciuridae – Squirrels***			
Gray squirrel	*Sciurus carolinensis*	X	X
Fox squirrel	*Sciurus niger*	X	X
Southern flying squirrel	*Glaucomys volans*	X	X
Family Castoridae – Beaver			
Beaver	*Castor Canadensis*	X	X

Common Name	Scientific Name	HC	TR
Family Cricetidae – Cricetid Rats and Mice			
Rice rat	*Oryzomys palustris*	O	O
Eastern harvest mouse	*Reithrodontomys humulis*	O	O
White-footed mouse	*Peromyscus leucopus*	O	O
Cotton mouse	*Peromyscus gossypinus*	O	O
Golden mouse	*Peromyscus nuttalli*	O	O
Hispid cotton rat	*Sigmodon hispidus*	O	O
Eastern wood rat	*Neotoma floridana*	O	O
Pine vole	*Microtus pinetorum*	O	O
Muskrat	*Ondatra zibethicus*	X	X
Family Muridae – Old World Rats and Mice			
Black rat	*Rattus rattus*	O	O
Norway rat	*Rattus norvegicus*	O	O
House mouse	*Mus musculus*	O	O
Family Capromyidae – Nutrias and Coypus			
Nutria	*Myocastor coypus*	X	X
ORDER CARNIVORA (Carnivores) Family Ursidae – Bears			
Louisiana black bear	*Ursus americanus louisianensis*	O	O
Family Canidae – Wolves, Dogs and Allies			
Coyote	*Canis latrans*	X	X
Red fox	*Vulpes fulva*	O	O
Gray fox	*Urocyon cinereoargenteus*	X	X
Family Procyonidae – Raccoons and Allies			
Raccoon	*Procyon lotor*	X	X
Family Mustelidae – Weasels, Skunks, and Allies			
Long-tailed weasel	*Mustela frenata*	O	O
Mink	*Mustela vison*	O	O
Eastern spotted skunk	*Spilogale putorius*	O	O
Striped skunk	*Mephitis mephitis*	X	X
River otter	*Lutra canadensis*	X	X
Family Felidae – Cats and Allies			
Bobcat	*Lynx rufus*	X	X
ORDER ARTIODACTYLA (Even-toed Ungulates) Family Cervidae - Deer and Allies			
White-tailed deer	*Odocoileus virginiana*	X	X

Source: Wildlife Refuge Manager, Justin Sexton, 2014.

Theodore Roosevelt and Holt Collier National Wildlife Refuges
Reptiles and Amphibians

HC = Holt Collier **TR** = Theodore Roosevelt
O - Within the animal's range and contains suitable habitat for occurrence.
X - Presence has been documented.

Common Name	Scientific Name	HC	TR
American alligator	*Alligator mississippiensis*	X	X
Snapping turtle	*Chelydra serpentina*	X	X
Alligator snapping turtle	*Macroclemmys temmincki*	X	X
Stinkpot	*Sternotherus odoratus*	X	X
Razor-backed musk turtle	*Sternotherus carinatus*	O	O
False map turtle	*Graptemys pseudogeographica*	O	O
Ouachita map turtle	*Graptemys ouachitensisi*	O	O
Red-eared turtle	*Pseudemys scripta elegans*	X	X
Slider	*Chrysemys concinna heiroglyphica*	O	O
Missouri slider	*Pseudemys floridana hoyi*	O	O
Southern painted turtle	*Chrysemys picta dorsalis*	O	O
Chicken turtle	*Deirochelys reticularia miaria*	O	O
Smooth softshell	*Trionyx muticus*	O	O
Spiny softshell	*Trionyx spinifer sspp.*	O	O
Green anole	*Anolis carolinensis*	X	X
Ground skink	*Scincella laterale*	X	X
Five-lined skink	*Eumeces fasciatus*	O	O
Broad-headed skink	*Eumeces laticeps*	O	O
Southeastern five-lined skink	*Eumeces inexpectatus*	O	O
Slender glass lizard	*Ophisaurus attenuatus*	O	O
Green water snake	*Nerodia cyclopion cyclopion*	X	X
Diamond-backed water snake	*Nerodia rhombifera rhombifera*	X	X
Yellow-bellied water snake	*Nerodia erythrogaster flavigaster*	X	X
Broad-banded water snake	*Nerodia faciata confluens*	X	X
Graham's water snake	*Nerodia grahami*	O	O
Queen snake	*Nerodia septemerittata*	O	O
Midland brown snake	*Storeria dekayi wrightorum*	O	O

Common Name	Scientific Name	HC	TR
Red-bellied snake	*Storeria occipitomaculata*	O	O
Eastern garter snake	*Thamnophis sirtalis sirtalis*	X	X
Western ribbon snake	*Thamnophis proximus proximus*	X	X
Smooth earth snake	*Virginia valeriae*	O	O
Rough earth snake	*Virginia striatula*	O	O
Eastern hognose snake	*Heterodon platyrhinos*	O	O
Mississippi ringneck snake	*Diadophis punctatus stictogenys*	O	O
Mud snake	*Farancia abacura*	X	X
Racer	*Coluber constrictor sspp.*	X	X
Rough green snake	*Opheodrys aestivus*	X	X
Rat Snake	*Elaphe obsoleta sspp.*	X	X
Speckled kingsnake	*Lampropeltis getulus holbrooki*	O	O
Red milk snake	*Lampropeltis triangulum syspila*	O	O
Scarlet snake	*Cemophora coccinea*	O	O
Coral snake	*Micrurus fulvius*	O	O
Southern copperhead	*Agkistrodon contortrix contortrix*	X	X
Cottonmouth	*Agkistrodon piscivorus piscivorus*	X	X
Pygmy rattlesnake	*Sistrurus miliarius streckeri*	O	O
Canebrake rattlesnake	*Crotalus horridus atricaudatus*	X	X
Three-toed amphiuma	*Amphiuma tridactylum*	O	O
Lesser siren	*Siren intermedia*	O	O
Mole salamander	*Ambystoma talpoideum*	O	O
Marbled salamander	*Ambystoma opacum*	O	O
Small-mouthed salamander	*Ambystoma texanum*	O	O
Spotted salamander	*Ambystoma maculatum*	O	O
Central newt	*N.viridescens louisianensis*	O	O
American toad	*Bufo americanus*	X	X
Fowler’s toad	*Bufo woodhousei fowleri*	O	O
Southern cricket frog	*Acris gryllus gryllus*	O	O
Northern cricket frog	*Acris crepitans crepitans*	O	O

Common Name	Scientific Name	HC	TR
Spring peeper	*Hyla crucifer*	O	O
Green treefrog	*Hyla cinerea*	X	X
Barking treefrog	*Hyla gratiosa*	O	O
Gray treefrog	*Hyla versicolor*	O	O
Bird-voiced treefrog	*Hyla avivoca*	O	O
Eastern narrow-mouthed toad	*Gastrophryne carolinensis*	O	O
Bull frog	*Rana catesbeiana*	X	X
Bronze/Green frog	*Rana clamitans*	O	O
Southern leopard frog	*Rana utricularia*	X	X
Pickerel frog	*Rana palustris*	O	O
Crawfish frog	*Rana areolata*	O	O

Source: Wildlife Refuge Manager, Justin Sexton, 2014.

Theodore Roosevelt and Holt Collier National Wildlife Refuges

Fish Species - Presence Documented

Common Name	Scientific Name
Longnose Gar	*Lepisosteus osseus*
Spotted Gar	*Lepisosteus oculaatus*
Alligator Gar	*Lepisosteus spatula*
Shortnose Gar	*Lepisosteus platostomus*
Paddlefish	*Polyodon spatula*
Shovelnose Sturgeon	*Scaphirhynchus platorhynchus*
Bowfin	*Amia calva*
Channel Catfish	*Ictalurus furcatus*
Yellow Bullhead	*Ameiurus natalis*
Flathead Catfish	*Pylodictus olivaris*
Black Bullhead Catfish	*Ameiurus melas*
Brown Bullhead Catfish	*Ameiurus nebulosus*
Blue Catfish	*Ictalurus furcatus*
Bluegill	*Lepomis macrochirus*
Redear Sunfish	*Lepomis microlophus*
Green Sunfish	*Lepomis cyanellus*
Orange-spotted Sunfish	*Lepomis humilis*
Red-spotted Sunfish	*Lepomis miniatus*
Bantam Sunfish	*Lepomis Symmetricus*
Banded Pygmy Sunfish	*Elassoma zonatum*
Longear Sunfish (Delta subspecies)	*Lepomis megalotis*
Black Crappie	*Pomoxis annularis*
Warmouth	*Lepomis gulosus*
Yellow Bass	*Morone mississippiensis*
White Bass	*Morone chrysops*
Largemouth Bass	*Micropterus salmoides*
Common Carp (intro.)	*Cyprinus carpio*
Threadfin Shad	*Dorosoma petenense*
Gizzard Shad	*Donosoma cepedianum*
Smallmouth Buffalo	*Ictiobus bubalus*

Common Name	Scientific Name
Bigmouth Buffalo	*Itiobus cyprinellus*
Black Buffalo	*Ictiobus niger*
Blue Sucker	*Cycleptus elongatus*
Freshwater Drum	*Aplodinotus grunniens*
Grass Pickerel	*Esox americanus*
Blacktail Shiner	*Cyprinella venusta*
Pirate Perch	*Aphredoderus sayanus*
Golden Killifish	*Fundulus chrysotus*
Blackstripe Killifish	*Fundulus notatus*
Blackspotted Killifish	*Fundulus olivaceus*
Western Mosquitofish	*Gambusia affinis*
Brook Silverside	*Labidesthes sicculus*
Flier	*Centrarchus macropterus*
Bluntnose Darter	*Etheostoma chlorosma*
Slough Darter	*Etheostoma gracile*
Freshwater Drum	*Aplodinotus grunniens*

Sources: Wildlife Refuge Manager, Justin Sexton, 2014.
Refuge data files, 2014 and Mike Stigall, Mississippi Museum of Natural Science.

Holt Collier National Wildlife Refuge Plant List

Family	Genus	Species	Common Name
Ebenaceae	*Diospyros*	*virginiana*	Persimmon
Fagaceae	*Quercus*	*falcata var. pagodaefolia*	Cherrybark oak
Fagaceae	*Quercus*	*michauxii*	Swamp chestnut oak
Fagaceae	*Quercus*	*nigra*	Water oak
Fagaceae	*Quercus*	*nuttallii*	Nuttall oak
Fagaceae	*Quercus*	*phellos*	Willow oak
Juglandaceae	*Carya*	*illinoensis*	Pecan
Juglandaceae	*Carya*	*leiodermis*	Swamp hickory
Oleaceae	*Fraxinus*	*pennyslvanica*	Green ash
Taxodiaceae	*Taxodium*	*distichum*	Bald cypress

Source: Wildlife Refuge Manager, Justin Sexton, 2014.

Appendix J. Refuge Budget

Neither refuge currently has an operating budget. The Service's budget requests are contained in the Service Asset and Maintenance Management System (SAMMS) databases that include a wide variety of new and maintenance refuge projects.

The SAMMS list is continually updated and includes priority projects. Please contact the Refuge Manager for the most current SAMMS lists. Refer to Chapter V, Plan Implementation, in the CCP for the key budget requests associated with the proposed projects and staffing.

Appendix K. Partnerships

EXISTING PARTNERSHIPS

Federal Agencies:
United States Department of Agriculture
- Animal and Plant Health Inspection Service, Wildlife Services
- Farm Service Agency
- Forest Service
  - Delta National Forest
  - Southern Hardwoods Laboratory – Stoneville, Mississippi
  - Southern Research Station/Health Unit – Pineville, Louisiana

United States Department of Defense
- Army Corps of Engineers

United States Department of Interior
- National Park Service
- Archaeological Center
- United States Geological Survey
- United States Fish and Wildlife Service

State Agencies:
Mississippi Department of Wildlife, Fisheries and Parks (MDWFP)
Mississippi Department of Environmental Quality
Mississippi Department of Transportation
Mississippi Department of Archives and History
- State Historic Preservation Office (SHPO)

Mississippi Forestry Commission
Mississippi State University
Delta State University

Local Government Agencies:
Sharkey County
- Planning Department
- Visitor Center – Rolling Fork
- Sheriff's Office

Washington County
- Sheriff's Office

***Other Organizations, Programs and Academia*:**
Lower Mississippi Delta Partnership
Lower Mississippi Valley Joint Venture - Forest Resource Conservation Working Group
Lower Mississippi River Conservation Committee
Delta Council
Delta Wildlife
Wildlife Mississippi
Mississippi Wildlife Federation
The Nature Conservancy in Mississippi
The Conservation Fund – Southeast Regional Office

Ducks Unlimited – Southern Regional Office

POTENTIAL PARTNERSHIPS

Sharkey and Washington County School Boards
Mississippi Delta National Heritage Area Partnership
Washington County Chamber of Commerce
Washington County Historical Society
Greenville Area Chamber of Commerce
Mississippi Delta Tourism Association
Choctaw Nation of Oklahoma
Mississippi Band of Choctaw Indians
Jena Band of Choctaw Indians
Tunica-Biloxi Indian Tribe of Louisiana
National Association for Interpretation
North American Association of Environmental Educators (NAAEE)
Mississippi Native Plant Society
National Wildlife Refuge Association
National Wild Turkey Federation
The Trust for Public Land
Jackson Audubon Society

Appendix L. List of Preparers

Writers/Contributors:

U.S. Fish and Wildlife Service:

- Mary Morris, Natural Resource Planner and CCP Planning Team Leader
- Justin Sexton, Wildlife Refuge Manager for Yazoo, Holt Collier, and Theodore Roosevelt NWRs
- Lamar Dorris, Forester, Theodore Roosevelt NWR Complex (TRNWR)
- Dove Barnes, Park Ranger/Visitor Services Specialist, TRNWR Complex
- Mike Rich, Project Leader, TRNWR Complex
- Seth Swafford, Deputy Project Leader, TRNWR Complex
- Mike Dawson, contracted Natural Resource Planner (parts of CCP Chapter 2).

State of Mississippi Department of Wildlife, Fisheries and Parks:

- James Callicutt, Biologist, Statewide Waterfowl Program.

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- Blaine Elliott, GIS Applications Biologist, Lower Mississippi Valley Joint Venture, Vicksburg, Mississippi.
- The Service and MDWFP employees who reviewed the internal (peer) draft or assisted in proofreading and formatting this document.

Appendix M. Consultation and Coordination

This appendix summarizes the consultation and coordination that occurred through the process of identifying the issues, alternatives, and proposed alternative that were presented in the Draft CCP/EA. The comprehensive planning process for Theodore Roosevelt and Holt Collier NWRs involved a variety of participants, including federal, state, and local governments and the individuals and organizations that provided comments during the public scoping. Central to the process was the CCP Planning Team. The document was peer reviewed by Service employees before being presented to the public. A Section 7 biological consultation was conducted on the Draft CCP for approval by the Fish and Wildlife Ecological Services office in Jackson, Mississippi (Appendix G).

PLANNING TEAM

The CCP Planning Team met regularly in 2013 until mid-July in 2014. It included representatives from the Service and the State of Mississippi. The team worked to create the refuges' vision, determine the priority resource issues, identify potential solutions or approaches (alternatives), and to develop, draft, review and refine the plan.

U.S. Fish and Wildlife Service (USFWS)

- Mary Morris, Natural Resource Planner and CCP Planning Team Leader
- Justin Sexton, Wildlife Refuge Manager for Yazoo, Holt Collier, and Theodore Roosevelt NWRs
- Mike Rich, Project Leader for the Theodore Roosevelt NWR Complex (TRNWR)
- Seth Swafford, Deputy Project Leader for the TRNWR Complex
- Dove Barnes, Park Ranger/Visitor Services Specialist for TRNWR Complex
- Lamar Dorris, Forester, for TRNWR Complex
- Jeremy (Bart) Marble, Federal Wildlife Officer for Yazoo, Holt Collier, and Theodore Roosevelt NWRs.

State of Mississippi

- James Callicutt, Biologist, Statewide Waterfowl Program, Mississippi Department of Wildlife, Fisheries and Parks (MDWFP).