Bogue Chitto National Wildlife Refuge

Comprehensive Conservation Plan

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

October 2011

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COMPREHENSIVE CONSERVATION PLAN

BOGUE CHITTO NATIONAL WILDLIFE REFUGE

St. Tammany and Washington Parishes, Louisiana, and
Pearl River County, Mississippi

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

Southeast Region
Atlanta, Georgia

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I. Background

This Comprehensive Conservation Plan (CCP) for Bogue Chitto National Wildlife Refuge (NWR) in St. Tammany and Washington Parishes, Louisiana, and Pearl River County, Mississippi, (Figure 1) was prepared to guide management actions and direction for the refuge. Fish and wildlife conservation will receive first priority in refuge management; wildlife-dependent recreation will be allowed and encouraged as long as it is compatible with, and does not detract from, the mission of the refuge or the purposes for which it was established.

A planning team developed a range of alternatives that best met the goals and objectives of the refuge and that could be implemented within the 15-year planning period. This CCP describes the Fish and Wildlife Service's (hereinafter referred to as Service) plan to manage the refuge in the next 15 years. The Draft CCP and Environmental Assessment (Draft CCP/EA) was made available to state and federal government agencies, conservation partners, and the general public for review and comment. Comments from each entity were considered in the development of this final CCP.

PURPOSE AND NEED FOR THE PLAN

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

Specifically, the plan is needed to:

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

FISH AND WILDLIFE SERVICE

The Service traces its roots to 1871 and the establishment of the Commission of Fisheries involved with research and fish culture. The once-independent commission was renamed the Bureau of Fisheries and placed under the Department of Commerce and Labor in 1903.

The Service also dates back to 1886 and the establishment of a Division of Economic Ornithology and Mammalogy in the Department of Agriculture. Research on the relationship of birds and animals to agriculture shifted to delineation of the range of plants and animals so the name was changed to the Division of the Biological Survey in 1896.

Figure 1. Location of Bogue Chitto NWR

The Department of Commerce, Bureau of Fisheries, was combined with the Department of Agriculture, Bureau of Biological Survey, on June 30, 1940, and transferred to the Department of the Interior as the Fish and Wildlife Service. The name was changed to the Bureau of Sport Fisheries and Wildlife in 1956 and finally to the Fish and Wildlife Service in 1974.

The Fish and Wildlife Service, working with others, is responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people through Federal programs relating to migratory birds, endangered species, interjurisdictional fish and marine mammals, and inland sport fisheries (142 DM 1.1).

As part of its mission, the Service manages more than 540 national wildlife refuges covering over 95 million acres. These areas comprise the National Wildlife Refuge System, the world's largest collection of lands set aside specifically for fish and wildlife. The majority of these lands, 77 million acres, is in Alaska. The remaining acres are spread across the other 49 states and several United States territories. In addition to refuges, the Service manages thousands of small wetlands, national fish hatcheries, 64 fishery resource offices, and 78 ecological services field stations. The Service enforces federal wildlife laws, administers the Endangered Species Act, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid program that distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

NATIONAL WILDLIFE REFUGE SYSTEM

The mission of the National Wildlife Refuge System, as defined by the National Wildlife Refuge System Improvement Act of 1997 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 National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) established, for the first time, a clear legislative mission of wildlife conservation for the Refuge System. Actions were initiated in 1997 to comply with the direction of this new legislation, including an effort to complete comprehensive conservation plans for all refuges. These plans, which are completed with full public involvement, help guide the future management of refuges by establishing natural resources and recreation/education programs. Consistent with the Improvement Act, approved plans will serve as the guidelines for refuge management for the next 15 years. 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 requirements of comprehensive conservation plans that are prepared for each unit of the Refuge System;

- Maintain the biological integrity, diversity, and environmental health of the Refuge System; and
- 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 allow refuge managers authority to determine compatible public uses.

The following are just a few examples of your national network of conservation lands. Pelican Island NWR, the first refuge, was established in 1903 for the protection of colonial nesting birds in Florida, such as the snowy egret (*Egretta thula*) and the brown pelican (*Pelecanus occidentalis*). Western refuges were established for American bison (*Bison bison*) (1906), elk (*Cervus canadensis*) (1912), prong-horned antelope (*Antilocapra americana*) (1931), and desert bighorn sheep (*Ovis canadensis nelsoni*) (1936) after over-hunting, competition with cattle, and natural disasters decimated once-abundant herds. The drought conditions of the 1930s Dust Bowl severely depleted breeding populations of ducks and geese. Refuges established during the Great Depression focused on waterfowl production areas (i.e., protection of prairie wetlands in America's heartland). The emphasis on waterfowl continues today but also includes protection of wintering habitat in response to a dramatic loss of bottomland hardwoods. By 1973, the Service had begun to focus on establishing refuges for endangered species.

National wildlife refuges connect visitors to their natural resource heritage and provide them with an understanding and appreciation of fish and wildlife ecology to help them understand their role in the environment. Wildlife-dependent recreation on refuges also generates economic benefits to local communities. According to the report, *Banking on Nature 2006: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation*, approximately 34.8 million people visited national wildlife refuges in fiscal year 2006, generating almost $1.7 billion in total economic activity and creating almost 27,000 private sector jobs producing about $542.8 million in employment income (Carver and Caudill 2007). Additionally, recreational spending on refuges generated nearly $185.3 million in tax revenue at the local, county, state, and federal levels (Carver and Caudill 2007). As the number of visitors grows, significant economic benefits are realized by local communities. In 2006, nearly 71 million people, 16 years and older, fished, hunted, or observed wildlife, spending $45.7 billion and generating $122.6 billion (Leonard 2008).

Volunteers continue to be a major contributor to the success of the Refuge System. In 2005, approximately 38,000 refuge volunteers donated more than 1.4 million hours. The value of their service was more than $25 million.

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

The Improvement Act stipulates that comprehensive conservation plans 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 (every 15 years) of the plans.

All lands of the Refuge System will be managed in accordance with an approved comprehensive conservation plan 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).

LEGAL AND POLICY CONTEXT

Legal Mandates, Administrative and Policy Guidelines, and Other Special Considerations

Administration of national wildlife refuges is guided by the mission and goals of the Refuge System, congressional legislation, residential executive orders, and international treaties. Policies for management options of refuges are further refined by administrative guidelines established by the Secretary of the Interior and by policy guidelines established by the Director of the Fish and Wildlife Service. Select legal summaries of treaties and laws relevant to administration of the Refuge System and management of the Bogue Chitto NWR are provided in Appendix C.

Treaties, laws, administrative guidelines, and policy 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; and provide a framework for cooperation between Bogue Chitto NWR and other partners, such as the Louisiana Department of Wildlife and Fisheries, Louisiana Department of Natural Resources, U.S. Army Corps of Engineers, and private landowners, etc.

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 a use 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 refuge 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 further identifies six priority wildlife-dependent recreational uses. These uses are: hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. As priority public uses of the Refuge System, they receive priority 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 refuge purpose(s) and the Refuge System mission. 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 their refuges' contribution to biological integrity, diversity, and environmental health at multiple landscape scales. Sound professional judgment incorporates field experience, knowledge of refuge resources, and knowledge of the refuge 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

Multiple partnerships have been developed among government and private entities to address the environmental problems affecting regions. There is a large amount of conservation and protection information that defines the role of the refuge at the local, national, international, and ecosystem levels. Conservation initiatives include broad-scale planning and cooperation between affected parties to address declining trends of natural, physical, social, and economic environments. The conservation guidance described below, along with issues, problems, and trends, was reviewed and integrated where appropriate into this CCP.

This CCP supports, among others, the North American Bird Conservation Initiative, the North American Waterfowl Management Plan, the Partners-in-Flight Plan, the Western Hemisphere Shorebird Reserve Network, the North American Waterbird Conservation Plan, and the U.S. Woodcock Plan.

North American Bird Conservation Initiative. Started in 1999, the North American Bird Conservation Initiative (NABCI) is a coalition of government agencies, private organizations, academic institutions, and private 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 an integrated approach to bird conservation to benefit all birds in all habitats. The international and national bird initiatives include the North American Waterfowl Management Plan, Partners in Flight, Waterbird Conservation for the Americas, and the U.S. Shorebird Conservation Plan.

North American Waterfowl Management Plan. The North American Waterfowl Management Plan 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 habitat for the benefit of migratory birds, other wetland-associated species, and people. Plan 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.

Partners in Flight Bird Conservation Plan. Managed as part of the Partners-in-Flight Plan, the West Gulf Coastal Plain physiographic area represents a scientifically based land bird conservation planning effort that ensures long-term maintenance of healthy populations of native land birds, primarily non-game land birds. Non-game land birds have been vastly under-represented in conservation efforts, and many are exhibiting significant declines. This plan is voluntary and non-regulatory, and focuses on relatively common species in areas where conservation actions can be most effective, rather than the frequent local emphasis on rare and peripheral populations.

U.S. Shorebird Conservation Plan. The U.S. Shorebird Conservation Plan is a partnership effort throughout the United States to ensure that stable and self-sustaining populations of shorebird species are restored and protected. The plan was developed by a wide range of agencies,

organizations, and shorebird experts for separate regions of the country, and identifies conservation goals, critical habitat conservation needs, key research needs, and proposed education and outreach programs to increase awareness of shorebirds and the threats they face.

Northern American Waterbird Conservation Plan. This plan provides a framework for the conservation and management of 210 species of waterbirds in 29 nations. Threats to waterbird populations include destruction of inland and coastal wetlands, introduced predators and invasive species, pollutants, mortality from fisheries and industries, disturbance, and conflicts arising from abundant species. Particularly important habitats of the southeast region include pelagic areas, marshes, forested wetlands, and barrier and sea island complexes. Fifteen species of waterbirds are federally listed, including breeding populations of wood storks (*Mycteria americana*), Mississippi sandhill cranes (*Grus canadensis*), whooping cranes (*Grus americana*), interior least terns (*Sternula antillarum*) and gulf coast populations of brown pelicans. A key objective of this plan is the standardization of data collection efforts to better recommend effective conservation measures.

U.S. Woodcock Plan. The U.S. Woodcock Plan was written by the Service in 1990 to "guide the conservation of American woodcock (*Scolopax minor*) in the United States." Although no step-down plans have been written, the plan gives general guidance for habitat and population management at the national level.

RELATIONSHIP TO STATE WILDLIFE AGENCY

A provision of the Improvement Act and subsequent agency policy is that the Service shall ensure timely and effective cooperation and collaboration with other state fish and game agencies and 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 species in the State of Louisiana. Whenever state, federal, and local agencies can work together on common goals and objectives, more efficient outcomes result in more supported realms. This is especially important during times of budget shortfalls and lack of adequate staff, equipment, or resources.

The Louisiana Department of Wildlife and Fisheries (LDWF) is a state-partnering agency with the Service, charged with managing state natural resources and approximately 1.4 million acres of coastal marshes and wildlife management areas. LDWF coordinates the state wildlife conservation program and provides public recreation opportunities on state wildlife management areas. The state's participation and contribution throughout this comprehensive conservation planning process provides for ongoing opportunities and open dialogue to improve the ecological health and diversity of fish and wildlife. A vital part of the comprehensive conservation planning process is integrating common mission objectives where appropriate.

The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) is a state-partnering agency with the Service, charged with enforcement responsibilities for migratory birds and endangered species, as well as with managing the state's natural resources. The total area owned or managed by MDWFP in support of the state's wildlife, recreation, and fisheries is 828,408 acres. This includes 42 state wildlife management areas and 29 state parks encompassing 823,297 acres, and 21 lakes totaling 5,111 acres (Mississippi Department of Wildlife, Fisheries, and Parks, n.d.).

The MDWFP directs the state's wildlife conservation program and provides public recreation opportunities, including an extensive hunting and fishing program, on several wildlife management areas and parks located near the refuge. MDWFP's participation and contribution throughout the refuge's comprehensive conservation planning process has been invaluable. It continues to work

with the Service to provide ongoing opportunities for an open dialogue with the public to improve the ecological sustainability of fish and wildlife in Mississippi. Not only has MDWFP participated in biological reviews, public meetings, and field reviews as part of the planning process, it also is an active partner in the coordination and planning of hunting programs and various wildlife and habitat surveys. A key part of the comprehensive planning process is the integration of common objectives between the Service and the Department, where appropriate.

In 2005, LDWF and MDWFP each published a Comprehensive Wildlife Conservation Strategy (CWCS). The components or steps of both 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.

8. Encourage public participation in the development, revision, and implementation of the conservation strategy.

II. Refuge Overview

INTRODUCTION

On June 30, 1980, President Jimmy Carter signed Public Law 96-288 authorizing the 40,000-acre Bogue Chitto NWR in Washington and St. Tammany Parishes, Louisiana, and Pearl River County, Mississippi. Since that time, the Service has been acquiring bottomland hardwood habitat in the Pearl River Basin. On December 13, 1989, Congress authorized a boundary expansion for Bogue Chitto NWR that included an additional 8,400 acres of bottomland hardwoods in St. Tammany Parish. To date, 36,597 acres have been placed under refuge management (Figure 2). The refuge is still in an acquisition phase.

Established in 1980, Bogue Chitto NWR is one of eight refuges managed as part of the Southeast Louisiana National Wildlife Refuge Complex (Complex). The refuge headquarters is located about 9 miles northeast of Slidell, Louisiana. The 36,597-acre refuge is bisected by the Pearl River with portions of the refuge located in St. Tammany and Washington Parishes in Louisiana and Pearl River County in Mississippi. On the Mississippi side of the river, the refuge is bounded by Old River Wildlife Management Area (15,400 acres) to the north and by the State of Louisiana's Pearl River Wildlife Management Area (35,031) to the south, thereby forming an 87,000-acre block of protected forested wetlands and adjacent uplands within the Pearl River Basin (Figure 3).

Access is primarily by boat on the refuge's Louisiana side, and road access is available on the refuge's Mississippi side. There are three road access points that travel through the refuge; one from Interstate 59 at the Louisiana/Mississippi border, on Pine Grove Road across the Hobolochitto Creek drainage, and one west of Mississippi Highway 43 near Dumas Wise Road. The roads provide access to a very limited amount of the refuge. Access to most of the refuge is by boat. There are areas to walk across the Pearl River Navigational Canal to get access to the refuge. These access points are at U.S. Army Corps of Engineers (USACE) constructed Locks 1, 2, and 3. In the summer of 2002, the new Holmes Bayou walking trail was unveiled on the Louisiana side of the refuge. This 3/4-mile walking trail offers a unique journey into the interior of Bogue Chitto's majestic habitat. The Pearl River turnaround area is being developed as a site for education and interpretation as well as the site for the annual youth fishing rodeo.

White-tailed deer (*Odocoileus virginianus*), squirrel, turkey, waterfowl, and hog hunting, as well as fishing, are offered to the public. The threatened and endangered species found on the refuge are ringed map turtle (*Graptemys oculifera*), gopher tortoise (*Gopherus polyphemus*), inflated heelsplitter mussel (*Potamilus inflatus*), and gulf sturgeon (*Acipenser oxyrinchus desotoi*). Access is primarily by boat on the refuge's Louisiana side and road access is available on the refuge's Mississippi side. In the summer of 2002, the new Holmes Bayou walking trail was unveiled on the Louisiana side of the refuge. This 3/4-mile walking trail offers a unique journey into the interior of Bogue Chitto's majestic habitat. The Pearl River turnaround area is being developed as a site for education and interpretation as well as the site for the annual youth fishing rodeo.

Figure 2. Bogue Chitto NWR's current fee title lands and acquisition boundary

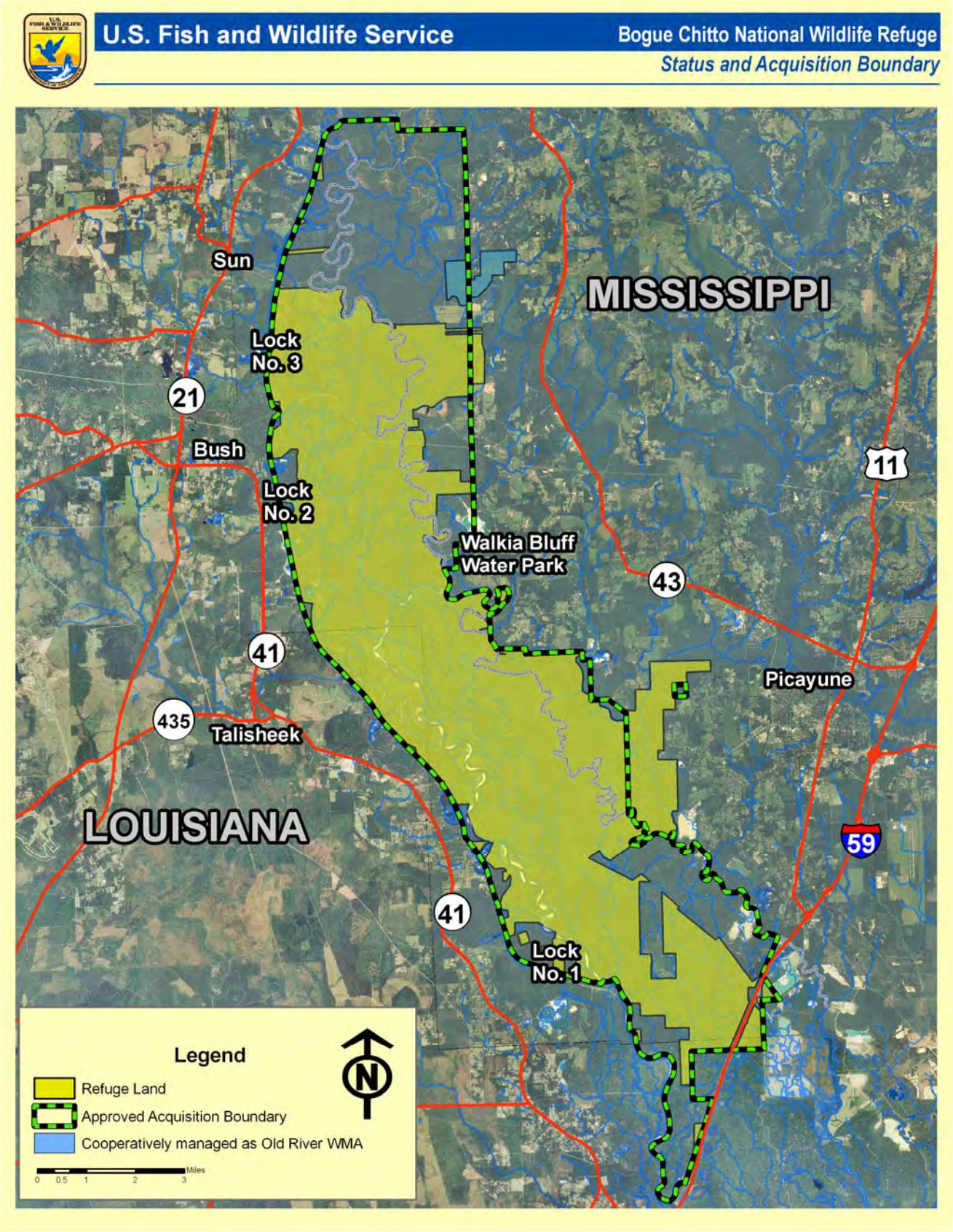


Figure 3. Protected lands within the Lower Pearl River Basin Watershed

BOGUE CHITTO REFUGE HISTORY AND PURPOSE

Bogue Chitto NWR is named for the Choctaw Indian "Big Stream." Located just minutes from Slidell, this pristine cypress swampland has been host to several major motion pictures and countless ecotourists. To the north of the Bogue Chitto NWR is the State of Mississippi's 15,400-acre Old River Wildlife Management Area. To the south is the State of Louisiana's 35,031-acre Pearl River Wildlife Management Area.

The purpose(s) of a refuge, as established by Congress in authorizing legislation and in other public documents, is critical to management of any refuge. This concept is strongly supported in the Improvement Act, which states that "each refuge shall be managed to fulfill the mission of the System as well as the specific purposes for which the refuge was established" and to "ensure that the mission of the System…and the purpose of each refuge are carried out, except that if a conflict exists between the original purposes of a refuge and the mission of the System, the conflict shall be resolved in a manner that first protects the purpose of the refuge, and, to the extent practicable, that also achieves the mission of the System" (October 9, 1997, 111 STAT. 1255). These lands approved under 94 Stat. 604, dated June 28, 1980, state the purpose for which the refuge was established as:

> "Administer all lands, waters, and interests therein, acquired under this act in accordance with the provisions of the National Wildlife Refuge Administration Act, and to utilize such additional statutory authority as may be available for the conservation and development of wildlife and natural resources, the development of outdoor recreation opportunities, and interpretive education as deemed appropriate to carry out the purposes of this Act."

The purposes statement is further defined to include:

- For the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..." 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986);

- For the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. 742f(a)(4) "... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ..." 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956); and

- For conservation, management, and ... restoration of the fish, wildlife, and plant resources and their habitats ... for the benefit of present and future generations of Americans..." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Administration Act).

SPECIAL DESIGNATIONS

The Pearl River/Bogue Chitto River system represents a relatively unaltered system with portions of the river system listed as Scenic Rivers. However, USACE projects (Pearl River Canal and Walkiah Bluff Projects) have resulted in the creation of several water control structures (e.g., locks, dams, sills) that impact river flow regimes and block passage of gulf sturgeon, mussels, and other wildlife species. As such, the refuge's primary role is to identify and where possible protect and restore the hydrologic system and aquatic species from man-induced impacts.

Another potential upstream project, the Two-Lakes Project in Jackson, Mississippi, proposes to create a 4,900-acre reservoir along the Pearl River to control flooding in the Jackson area, which has the potential to influence downstream flows (increased flow and velocity during periods of high water and reduced flow during low water periods) thereby impacting trust resources and habitats on the refuge. As such, the refuge's primary role is to identify and where possible protect and restore the hydrologic system and aquatic species from man-induced impacts. The Ross Barnett Reservoir located in Jackson Mississippi already has provided effects to the refuge similar to those as described in the proposed Two-Lakes Project.

RS 56:1856, the State of Louisiana Scenic Rivers Act, (Acts 1988, No. 947, §1, eff. July 27, 1988) designated rivers on the refuge as part of the Louisiana Natural and Scenic Rivers System because of its unique and diverse free-flowing river which should be preserved, protected, and enhanced for the present and future benefit of Louisiana citizens, and for the purposes of preserving, protecting, developing, reclaiming, and enhancing the wilderness qualities, scenic beauties, and ecological regime of its free-flowing streams or segments thereof. The river's designation is administered by LDWF for the purpose of preserving aesthetic, scenic, recreational, fish, wildlife, ecological, archaeological, geological, botanical, and other natural and physical features and resources found along these streams or segments thereof. With this designation, no activities may be performed on these rivers where the state owns water bottoms that have a potential for significant ecological degradation.

Those rivers on the refuge in this designation include:
West Pearl River
Holmes Bayou
Bradley Slough
Wilson Slough

Natural Areas

The Tom Rhea Phillips Natural Area was established on November 13, 1987, to conserve the 268 acres which contain one of the most important wood duck roosts in southern Mississippi and Louisiana. This area contains a sample of most of the forest cover types found on the refuge including longleaf pine (Pinus palustris), live oak (*Quercus virginiana*), baldcypress (*Taxodium distichum*), tupelo gum (*Nyssa aquatica*), sweetbay (*Magnolia virginiana*), and others. The area was registered with the Nature Conservancy by the original owner Dr. Tom Rhea Phillips prior to refuge acquisition. No forest management activities will be conducted in this area.

If any unique habitats or ecosystems are identified on the refuge, they will be considered for designation or otherwise be protected. In order to meet criteria for a natural area, an area must have some unique or otherwise valuable characteristic which will perpetuate itself. Consequently, old growth forests, while very valuable to particular species of wildlife, are changing and will not maintain present conditions.

The refuge has previously designated a 3- to 5-chain (330 feet) buffer along all banks of primary and secondary streams whereby when active forest management is carried out, consideration is made to minimize effects on these areas to benefit endangered species, environmental education, safety, protection of stream banks from runoff, and to provide an aesthetically pleasing area.

Critical Habitat

The Service has designated critical habitat for the gulf sturgeon. Critical habitat is a term used in the Endangered Species Act (ESA) that refers to specific geographic areas that are essential for the conservation of a threatened or endangered species and that may require special management or protection.

LANDSCAPE CONSERVATION CONTEXT

In the mid-1990s, the Service took an ecosystem approach to conservation of natural resources and had adopted watersheds as the basic unit for ecosystem management. To ensure that the Service is "putting science in the right places," the Directorate determined in April 2009 that the agency needed a national geographic framework for implementing landscape conservation. Just as migratory bird flyways have provided an effective spatial frame of reference to build capacity and partnerships for international, national, state, and local waterfowl conservation, this geographic framework will provide a continental platform upon which the Service can work with partners to connect site-specific efforts to larger biological goals and outcomes. In its meeting on August 4-6, 2009, the Directorate approved a map of the geographic framework developed by a team of Service and U.S. Geological Survey experts from across the country. The map defines geographic areas that provide a spatial frame of reference for building and targeting science capacity that will support the Service and partners in planning and designing conservation strategies at landscape scales. It also allows us to more precisely explain to partners, Congress, and the American public why, where, and how we target conservation resources and how our science-based efforts connect to a greater whole. Based on the new national geographic framework, Bogue Chitto NWR is situated in the Gulf Coastal Plains and Ozarks Landscape Conservation Cooperative.

Bogue Chitto NWR is considered to be in the Lower Mississippi River Ecosystem (LMRE), which includes the alluvial plain of the Mississippi River downstream of its confluence with the Ohio River and the delta plain and associated marshes and swamps created by the meanderings of the Mississippi River and its tributaries (FWS 2002). Louisiana has twelve water quality management basins delineated on the basis of natural drainage patterns of the state's major river basins (Lester et al. 2005). Bogue Chitto NWR is also part of the East Gulf Coastal Plain Bird Conservation Region and the Mississippi Flyway (Figure 4).

The LMRE includes the deltaic plain and associated marshes and swamps created by the meanderings of the Mississippi River and its distributaries. Prior to agricultural development, almost all of the Mississippi Delta was covered with flood plain forests. Today, only about 23 percent remains in forest, and the remaining forest is highly fragmented. The flood plain forests are primarily oak-gum-cypress cover type with co-dominant species of overcup (*Quercus lyrata*) willow oak (*Quercus phellos*), Nuttall oak (*Quercus texana*), swamp chestnut (*Quercus michauxii*), and cherrybark oaks (*Quercus pagoda*), as well as sweetgum (*Liquidambar styraciflua*), water tupelo, water hickory (*Carya aquatica*), cottonwood (*Populus deltoides*), sycamore (*Platanus occidentalis*), sugarberry (*Celtis laevigata*), red maple (*Acer rubrum***)**, box elder (*Acer negundo*), bald cypress (*Taxodium distichum*) and green ash (*Fraxinus pennsylvanica*). Cotton, soybeans, and rice are the most widespread crops but winter wheat, corn, sorghum, and sugar cane are also commonly cultivated.

This area serves as primary wintering habitat for mid-continent waterfowl populations, as well as breeding and migration habitat for migratory songbirds. The expansive flood plain forests of the past are now fragmented bottomland hardwood patches due to conversion from agriculture and flood control projects.

The LMRE developed eight goals that this CCP will continue to consider and promote when establishing refuge goals and objectives to ensure the refuge continues its contribution to ecosystem conservation and integrity.

- Conserve, enhance, protect, and monitor migratory bird populations and their habitats in the LMRE.
- Protect, restore, and manage the wetlands of the LMRE.
- Protect and/or restore imperiled habitats and viable populations of all endangered, threatened, and candidate species and species of concern in the LMRE.
- Protect, restore, and manage the fisheries and other aquatic resources historically associated with the wetlands and waters of the LMRE.
- Restore, manage, and protect national wildlife refuges.
- Increase public awareness and support for LMRE resources and their management.
- Enforce natural resource laws.
- Protect, restore, and enhance water and air quality throughout the LMRE.

In the meantime, the expanding human population within this area is increasing demands on land and water resources to accommodate agriculture, timber production, grazing, transportation, urban expansion, and outdoor recreation pursuits such as bird watching, fishing, hiking, boating, and hunting.

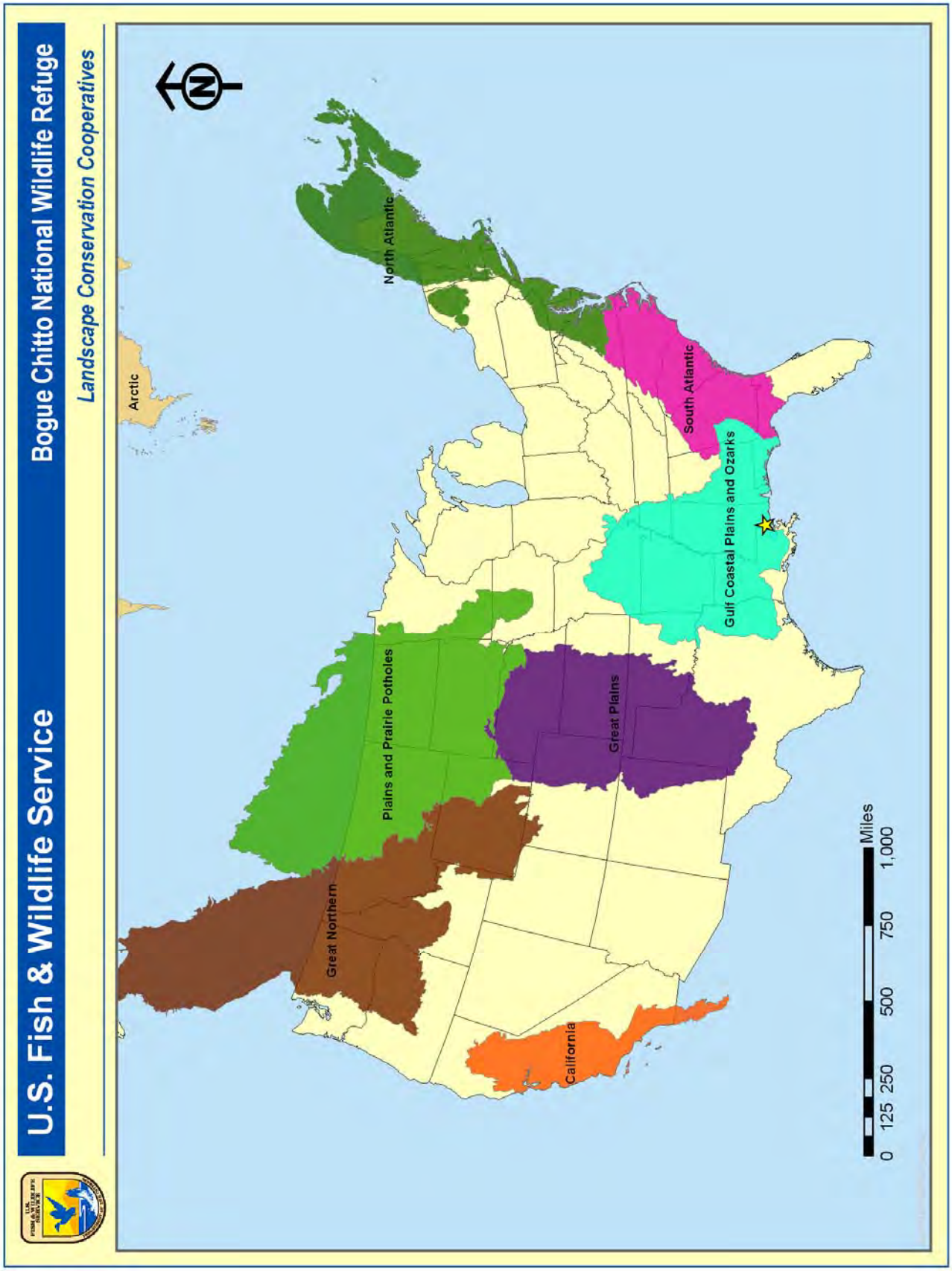
Sustainable communities and species conservation and recovery require the joint efforts of private landowners and local communities as well as state and federal governments. This synergy of federal, state, tribal, and private organizations working together will ensure that the Service not only protects the more important areas, but also reduces redundancy of effort, allowing precious resources to be directed where they are most needed.

REGIONAL CONSERVATION PLANS AND INITIATIVES

There are eight national wildlife refuges in the Southeast Louisiana NWR Complex. These refuges are:

Atchafalaya NWR
Bayou Sauvage NWR
Bayou Teche NWR
Big Branch March NWR
Bogue Chitto NWR
Breton NWR
Delta NWR, and
Mandalay NWR

Figure 4. Bogue Chitto NWR landscape conservation context



The mission of these refuges and the Refuge System is to administer a national network of lands and waters for the conservation, management and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. Comprehensive conservation plans are being prepared to provide each of the refuge managers with a 15-year strategy and broad direction to conserve wildlife and their habitats, to achieve refuge purposes, and to contribute toward the mission of the Refuge System. In addition, the plans identify wildlife-dependent opportunities available to the public, including opportunities for hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. The Big Branch Marsh, Delta, Bayou Sauvage, Mandalay, Bayou Teche, and Breton CCPs are complete and CCPs for the remaining two refuges are in various stages of completion – all with a scheduled completion by 2012.

Conservation priorities for national wildlife refuges in the Lower Mississippi Valley focus on threatened and endangered species, trust species, and species of local concern. The goals and objectives in this CCP are stepped down from the following plans:

- Louisiana Black Bear Recovery Plan
- Black Bear Conservation Committee Restoration Plan
- American Woodcock Management Plan
- Gopher Tortoise Recovery Plan
- Fisheries Vision for the Future
- Louisiana and Mississippi Comprehensive Wildlife Conservation Strategies (Wildlife Action Plans)
- Landscape Conservation Cooperatives
- The Gulf Sturgeon Recovery/Management Plan

Furthermore, the biological and visitor service reviews as well as a summary of all public comments were stepped down to this CCP.

Louisiana Black Bear Recovery Plan. The Louisiana black bear is a "listed" species considered threatened in its range. Recovery plans are prepared by the Service to delineate reasonable actions that are believed to aid in efforts to recover and/or protect listed species. The objective of the Service's recovery plan is the delisting of the Louisiana black bear. The criteria for achieving delisting are: (1) At least two viable subpopulations, one each in the Tensas and Atchafalaya River Basins; (2) establishment of immigration and emigration corridors between the two subpopulations; and, (3) protection of the habitat and interconnecting corridors that support each of the two viable subpopulations used as justification for delisting. Bogue Chitto NWR may one day serve as an important corridor link to support the Louisiana black bear.

Black Bear Conservation Committee Restoration Plan. This plan is used in conjunction with the Service's Louisiana Black Bear Recovery Plan. The goal of this plan is to restore the Louisiana black bear (*Ursus americanus luteolus*) to suitable habitat within its historical range. The priorities of this plan are to put the resource first, to find common ground for building coalitions while avoiding confrontations, to replace emotion with credible science, and to have a strong commitment to black bear restoration and management.

American Woodcock Management Plan. Woodcock trends in the United States have been declining annually for the last 15 years in spite of actions taken to ensure that hunting does not substantially promote declines, such as reduced bag limits and limited season lengths. An American Woodcock Management Plan initiated in the 1990s points out the need for improved breeding,

migration, and wintering habitat to enhance population growth and survival (USFWS 1990). Much of the decline is thought to be a result of land use changes and the maturing of forest habitats resulting in fewer early successional scrub/shrub habitats preferred by woodcock.

Gopher Tortoise Recovery Plan. The western population of the gopher tortoise is listed as threatened. This population exists west of the Tombigbee and Mobile Rivers in Alabama, across south Mississippi, and including extreme southeastern Louisiana. Threats include habitat alteration and illegal taking. The two objectives of this plan are to prevent this species from becoming endangered and to recover it to the point that it can be delisted.

Fisheries Vision for the Future. In 2001, the Service worked with partners to refocus its Fisheries Program and develop a vision. This vision of the Service and its Fisheries Program *"is working with partners to restore and maintain fish and other aquatic resources at self-sustaining levels and to support Federal mitigation programs for the benefit of the American public."* To achieve the vision, the Fisheries program works with its partners to:

- protect the health of aquatic habitats
- restore fish and other aquatic resources, and
- provide opportunities to enjoy the benefits of healthy aquatic resources.

Together, the group developed a series of goals, objectives, and implementation actions to focus on key needs. Bogue Chitto NWR can contribute to the program's recreational fishing goal to provide quality opportunities for responsible fishing and other related recreational enjoyment of aquatic resources on Service lands.

Louisiana and Mississippi Comprehensive Wildlife Conservation Strategy (Wildlife Action Plan). These wildlife action plans will direct the overall efforts by the LDWF and MDWFP over the next 10 years in assessing the status of and managing where appropriate, the varied habitats and wildlife species. Conservation actions have been developed for each ecoregion in the states in order to address threats to the habitats of these areas. The states will work with a variety of partners in carrying out these recommended conservation actions. These states consider the Service an important partner in this process, and natural resource conservation efforts at the Bogue Chitto NWR to be an important part of actions taken in the Pearl River Basin.

Landscape Conservation Cooperatives. Bogue Chitto NWR is part of the Gulf Coastal Plains and Ozarks Landscape Conservation Cooperative (Figure 4). The Gulf Coastal Plains and Ozarks Landscape Conservation Cooperative will facilitate conservation planning and design across this highly diverse region in southeastern North America that extends for 180 million acres from the mountain tops of the Ozark, Boston, and Ouachita ranges, to the pine savannas and prairies of the West and East Coastal Plains, down into the swamps, bayous, and alluvial bottomlands of the mighty Mississippi River and its tributaries, and along the beachfronts and shorelines of the northeast Gulf Coast. With accelerating climate change threatening to impact wildlife and fisheries, a capability is being developed to test, implement, and monitor conservation strategies responsive to this dynamic landscape. These strategies are model-based and geographically defined, allowing us to effectively apply our emerging climate knowledge to predict habitat and species changes and to target our conservation action.

ECOLOGICAL THREATS AND PROBLEMS

In order to prepare this CCP that will establish goals and objectives on how to manage this refuge over the next 15 years, a number of planning steps were followed. One of those steps was an internal review of known ecological threats and problems that may hinder the ability of refuge personnel to fulfill the objectives of the refuge. That review developed the following list of concerns:

- Forest loss and fragmentation
- Altered hydrology
- Climate change
- Non-point source pollution
- Urbanization
- Proliferation of non-native invasive species

FOREST LOSS AND FRAGMENTATION

Vast areas of bottomland hardwood forests have been reduced to forest fragments, ranging in size from very small tracts of limited functional value to a few large areas that have maintained many of the original functions and values of forested wetlands. This process, which is known as forest fragmentation, has reduced the size and connectivity of forest habitat patches and resulted in the disruption of extensive forest habitats into smaller and smaller isolated patches.

Severe forest fragmentation has resulted in a significant decline in biological diversity and integrity. Species endemic to the area that have become extinct, threatened, or endangered include the red wolf (*Canis lupus rufus*), Florida panther (*Puma concolor*), ivory-billed woodpecker, Bachman's warbler (*Vermivora bachmanii*), and Louisiana black bear. Breeding bird surveys show continuing declines in species and species population numbers. The avian species most adversely affected by forest fragmentation include those that are area-sensitive (i.e., dependent on large continuous blocks of hardwood forest); those that depend on forest interiors; those that have special habitat requirements, such as mature forests or a particular food source; and those that require good water quality. More than 70 species of breeding migratory birds are found in the region. Some of these species, including Swainson's warbler (*Limnothlypis swainsoni*), prothonotary warbler (*Protonotaria citrea*), swallow-tailed kite (*Elanoides forficatus*), and wood thrush (*Hylocichla mustelina*) have declined significantly and need the benefits of large forested blocks to recover and sustain their existence.

Due to fragmentation, the forest edge and the brown-headed cowbird (*Molothrus ater*) (i.e., a seed-eating bird common in agricultural areas) are now closer to the natural nesting sites of many forest interior nesting birds. The brown-headed cowbird is a brood parasite that lays eggs in the nests of other birds, rather than building a nest of its own. Nestling cowbirds often out-compete host species, because the cowbirds are typically larger and more aggressive. This results in poor reproductive success and declining populations of forest interior-nesting species. Fragmentation of bottomland hardwood forests has left many of the remaining forested tracts surrounded by non-forested lands. The loss of connectivity between the remaining forested areas hinders the movement of wildlife between tracts, and reduces the functional values of many remaining smaller forest tracts. The lost connections also result in a loss of gene flow. Restoring the connections to allow gene flow and reestablish travel corridors is particularly important for some wide-ranging species, such as the threatened Louisiana black bear (USFWS 2008)

ALTERATIONS TO HYDROLOGY

There have been significant alterations in the region's hydrology due to locks and weirs, urban development, river channel modifications, and degradation of aquatic systems from excessive erosion, sedimentation, and contaminants.

The ability of the river/floodplain ecosystem to transport and assimilate nutrients and chemicals has also been impaired to the point that state and federal water quality standards are not met in many water bodies. This is compounded by industrial and urban runoff and leaks from oil and gas pipelines. These waste streams enter the refuge mainly through storm water and non-point source runoff.

The Pearl River floodplain has changed markedly over the last 100 years as civilization spread throughout the area. From the 1950s to the 1990s, it has been estimated that 20 million acres of bottomland hardwood forested wetlands have been lost. The greatest changes to the landscape have been in the form of land clearing for agricultural, gravel pit mining, and flood control projects. Although these changes have allowed people to settle and earn a living in the area, they have had a tremendous effect on biological diversity and integrity, and environmental health of the basin.

CLIMATE CHANGE

The culmination of recent findings on world climate has prompted the Service to include information on climate changes and sea level rise as critical issues facing national wildlife refuges, especially those located within coastal zones. According to the Environmental Defense Organization, on February 2, 2007, the international group of experts tasked with evaluating climate science, the Intergovernmental Panel on Climate Change (IPCC), released its summary of the latest findings on global warming. The report summarizes research conducted from about 2001 through the end of 2005 and concludes that "…numerous long-term changes in climate have been observed. These include changes in…the intensity of tropical cyclones." The report also finds that in the North Atlantic fiercer hurricanes are "correlated with increases of tropical sea surface temperatures." Additionally, John Huffman's report, Estimates of Future Sea Level Rise, developed four different scenarios to estimate sea level rise. These scenarios included a "conservative" scenario, which projects a sea level rise of 56.2 cm (22 in) by 2100; a "high" scenario, which projects a rise of 345 cm (11.5 feet) by 2100, and two mid-range scenarios projecting rises of 144 cm (4.8 feet) and 216cm (7 feet). Huffman predicts that the sea level rise at the end of this century is most likely to fall within the mid-range scenarios (~5-7 feet). With the possibility of future habitat degradation due to world climate changes, the Service has invested modeling national wildlife refuges using SLAMM (Sea Level Rise Affects Marshes Model) to predict how climate changes will affect different regions of the county, especially coastal regions. Still, other models have predicted different results from expected sea level rise. At this time the Service is still working to assess probable long-term effects for each refuge, and monitoring the situation is advised until additional information is available.

The IPCC has concluded that "warming of the climate system is unequivocal." Global climate change poses risks not only to human health but also to terrestrial and aquatic ecosystems. Abundance and distribution of wildlife and fish will change, particularly affecting those species already "at risk." Important economic resources such as agriculture, forestry, and water resources also can be affected. Warmer temperatures, more severe droughts and floods, and sea level rise will have a wide range of impacts. All these stresses, added to existing stresses on resources caused by other influences such as population growth, land-use changes, and pollution, pose a significant challenge for fish and wildlife conservation.

According to NOAA and NASA data, the Earth's average surface temperature has increased by about 1.2 to 1.4ºF since 1900. The ten warmest years in the 20th century have all occurred within the past 15 years. Some climate models, based on emissions of greenhouse gases, primarily carbon dioxide, methane, and nitrous oxide, predict that average surface temperatures could increase from 2.5 to 10.4°F by the end of the 21st century. The frequency of extremely hot summer days is expected to increase, along with this general warming trend. Increases in atmospheric CO_2 are attributed largely to human activities, which have grown rapidly since the 1940s. The burning of fossil fuels adds 5.6 billion tons of carbon (and deforestation contributes another 0.4 to 2.5 billion tons of carbon) to the atmosphere each year.

Global warming, resulting in melting of glaciers and ice sheets and the thermal expansion of ocean water, will cause sea levels to rise. Globally, sea level has risen 4 to10 inches during the past century. NASA estimates that yearly, 50 billion tons of ice is melting from the Greenland ice sheet. NASA aerial surveys show that more than 11 cubic miles of ice is disappearing from the ice sheet annually. Considering that land less than 10 meters above sea level contains 2 percent of the world's land surface but 10 percent of its population, major impacts will be felt by large numbers of people living on the lower lying coastlands, particularly the Gulf Coast States. In Louisiana, coastal land subsidence exacerbates the effects of sea level rise. At Grand Isle sea level already is rising by 41 inches per century, and is likely to rise another 55 inches by 2100. A 1- to 3-foot increase in sea level over the next century would submerge about 70 percent of Louisiana's remaining salt marshes as well as convert inland freshwater marshes to brackish or salt marshes. Louisiana currently is losing coastal wetlands at a more rapid rate (~25 to 50 square miles a year) than any other coastal state or region in the United States (EPA 1997). The IPCC lists New Orleans as North America's most vulnerable city to the impacts of climate change.

In addition to the rising seas, the effects of climate change and global warming will be changes in weather/rainfall patterns, decreases in snow and ice cover, rising sea levels, and stressed ecosystems. For the southeastern United States and the Louisiana region this could mean extreme precipitation events; greater likelihood of warmer/dryer summers and wetter/reduced winter cold; and, alterations of ecosystems and habitats due to these changes in weather patterns. For Bogue Chitto NWR, warmer conditions would favor increased densities of vegetation and wetter conditions would favor trees and vegetation that are better adapted to these conditions such as bald cypress and water tupelo in freshwater areas and salt marsh cover in brackish areas. If conditions become drier, the current range and density of forests would be reduced and replaced by grasslands and the probability of wildfires would increase.

A recent study of the effects of climate change on eastern United States' bird species concluded that as many as 78 bird species could decrease by at least 25 percent while as many as 33 species could increase in abundance by at least 25 percent due to climate and habitat changes (Matthews et al. 2004). In short, global warming could increase storm intensity, negatively change ecologically important plant species, alter the spread of invasive species, increase drought-induced fires, transition sub tidal marshes and shift marshes inland, and further imperil already threatened and endangered species.

URBANIZATION

Urban development changes hydrology. Bogue Chitto NWR is located north of New Orleans, a city with a present population of over 250,000 with a metro area population of approximately one million people. The refuge is surrounded on all sides by encroaching urbanization. The towns of Sun and Bush and the outskirts of the city of Bogalusa surround the refuge to the North, the community of Henleyfield and the city of Picayune to the East, the town of Nicholson and the city of Pearl River to the South and the towns of Talisheek and Hickory to the West.

Natural landscapes allow water to slowly and gradually filter into the ground. Rooftops, driveways, roads, and other surfaces associated with urban development are nonporous, causing water to accumulate above the surface and to run off in large volumes and at higher velocities, causing flooding and erosion. Because of the variety of pollutants associated with urban runoff, such as oil and grease from automobiles, nutrients and pesticides from lawns and gardens, sediment from construction sites, bacteria from pets and improper sewage disposal, household debris, etc. these pollutants results in decreased water quality. Nearby factories provide impurities and other water pollution that provides mercury in the refuge's waters as well as other contaminants. However, the largest problem is increased fluctuations of water flow because of dams to the north and pollution form gravel pit mining all around the refuge.

Gravel pit mining is on the increase. With fewer sources available regionally, the pressure on landowners surrounding the refuge to mine for gravel increases the potential for runoff, to impacting the water turbidity on the refuge.

PROLIFERATION OF INVASIVE PLANTS AND ANIMALS

The introduction of exotic or nonnative plants on the refuge has threatened the natural aquatic vegetation important to aquatic systems, and has choked waterways to a degree that often prevents recreational use. Chinese tallow (*Triadica sebifera*), formerly known as *Sapium sebiferum*, is a tree that grows and spreads rapidly, is difficult to kill, and tends to take over large areas by out-competing native plants. It was introduced from Asia and is planted widely as an ornamental tree. Birds disperse the seeds, which have spread within the refuge where it is a significant threat to woody species. This species has been especially invasive around the natural ridge levee.

Non-native wildlife is an issue of which the refuge administration has struggled with for many years. Animals such as nutria compete with native wildlife for limited resources and feral hogs, have caused extensive habitat damage and alterations. Presently, the refuge has a hunting plan that allows the removal of nuisance hogs, thus reducing damage to habitat and food supplies of native wildlife.

PHYSICAL RESOURCES

CURRENT CLIMATE

Climate in this region is subtropical with mild winters and hot, humid summers. Temperatures average 81.6 degrees F in summer and 54.0 degrees F in winter. Sporadic afternoon thunderstorms occur almost daily in summer with rainfall averages 61.03 inches per year. The maximum 24-hour rainfall for the area is 10.0 to10.5 inches, with a recurrence interval of 25 years. According to a recent Weather Channel special report, the New Orleans area is the most vulnerable in the country when it comes to hurricanes. With the gradual warming of Gulf of Mexico waters due to global climate change, hurricanes and tropical storms from the Gulf are likely to be more severe and more frequent. This leaves the New Orleans area, located just above sea level, extremely vulnerable.

GEOLOGY AND TOPOGRAPHY

The surface of Louisiana is characterized by geologically young sedimentary sequences that were deposited in or adjacent to rivers and deltas in a coastal-plain setting. These deposits indicate that a major river system corresponding to the Mississippi has persisted at least since the Gulf of Mexico began to form. Through time, fluvial, deltaic, and coastal deposits have advanced southward toward the coastline and continue to fill the Gulf of Mexico. Most of Louisiana was formed by these Mississippi River sediment deposits. As sea-level rose and fell over this low-lying region, the Mississippi River carried vast sediment loads and sedimentary rocks from the core of the North American continent and deposited them on the rim of the Gulf of Mexico. Organic matter from highly productive marine waters was deeply buried under the sediments, and through various processes has turned into petroleum. Massive salt deposits, formed by evaporation of sea water during pre-historic dry periods, provide a stable confining layer for the underlying petroleum. Most surface exposures consist of Quaternary (Pleistocene and Holocene) sediment (Figure 6) (Louisiana Geological Survey 2008; Louisiana Department of Environmental Quality et al. 2007a; USFWS 2006a; and Boykin 1990).

Quaternary-Pleistocene
Approximately 20 to 25 percent of the state's surface is occupied by deposits associated with Pleistocene (1.6 to 0.01 million years ago (mya)) terraces in the eastern and western parts of southern Louisiana. These terraces also consist of sand, gravel, and mud, but underlie raised, flat surfaces with varying degrees of tilt and dissection depending on their relative ages. These surfaces are remnants of preexisting floodplains, and form trends along the major rivers in north Louisiana and coast-parallel belts in south Louisiana.

Quaternary-Holocene
Holocene (10,000 years to present) alluvial sediments of the Mississippi, Red, Atchafalaya, and other rivers and smaller tributaries, together with coastal marsh deposits, occupy about 55 percent of Louisiana's surface. The alluvial sediments consist of sandy and gravelly channel deposits mantled by sandy to muddy natural levee deposits, with organic-rich muddy backwater deposits in between; coastal marsh deposits are chiefly fine-grained clay, silt, and organic matter. The coastal region of Louisiana has been formed over just the last 7,500 years.

The geological history of Bogue Chitto NWR dates to the Pleistocene Epoch when coarse, gravelly terraces were fluvially deposited through upland river valleys now occupied by the Tchefuncte and Pearl Rivers, north and east of the refuge. The depositional age of the Pleistocene sediments underlying the refuge is from 35,000 to less than 25,000 years ago.

HYDROLOGY AN D WATER QUALITY

The Pearl River flows through the States of Mississippi and Louisiana. It forms in Winston County, Mississippi, from the confluence of Nanawaya and Tallahaga Creeks. It is 490 miles long. The Yockanookany and Strong Rivers are tributaries. Northeast of Jackson, the Ross Barnett Reservoir is formed by a dam.

West of Picayune, about 50 miles above the mouth, the river forks. The East Pearl River empties into Lake Borgne where the dredged river Channel meets the Gulf Intracoastal Waterway. The discharge flows eastward past Grand Island through St. Joe Pass and into the Mississippi Sound. The West Pearl River, on the other hand, flows into the Rigolets, and then into Lake Borgne. Both discharges eventually reach the Gulf of Mexico.

The Pearl River serves as the 116-mile boundary between Mississippi and Louisiana, in its lower reach near the Gulf of Mexico. The basin of the Pearl River contains 7 million acres and drains an area of 8,760 square miles, draining all or parts of 23 counties in Mississippi and 3 parishes in Louisiana (Figure 3). It is the third largest drainage basin in the State of Mississippi, meandering approximately 421 miles through the central portion of Mississippi and a small part of southeastern Louisiana. More than 2 trillion gallons of water pass along its banks each year.

The USACE has undertaken three significant navigation projects in the Pearl River Basin. In 1880, Congress authorized a 5-foot navigation channel on the West Pearl River from Jackson to the Rigolets. That project was discontinued in 1922. Beginning in 1910, a channel was dredged from the mouth of the East Pearl River into Lake Borgne, a project which is maintained on an irregular basis. In 1935, the West Pearl River Navigation Project was authorized. It provided for a navigation channel from Bogalusa to the mouth of the West Pearl River. The project includes a canal with three locks. The USACE placed the project in "caretaker" status in the 1970s, because of a decline in commercial traffic. Maintenance dredging resumed in December 1988.

In the 1950s, underwater concrete sills were constructed to help maintain water levels in the navigation channel. This has prevented gulf sturgeon and other migratory species from accessing upstream areas. A rock ramp constructed in 2003 helps fish navigate over one of the sills, but environmental groups propose further work to mitigate the effects of the navigation project. The sill on the Bogue Chitto River is a physical impediment which prevents Gulf Sturgeon from reaching their historical nesting areas above the sill across the river. The USACE has provided no plans to use the locks, but also have no plant to remove the sill. Additional rock ramps or other methods of access need to be constructed to allow the Gulf Sturgeon ability to reach critical egg laying habitat north of the sill.

Air Quality

The Clean Air Act (CAA) of 1970 (as amended in 1990 and 1997), required the U.S. Environmental Protection Agency (EPA) to implement air quality standards to protect public health and welfare. National Ambient Air Quality Standards (NAAQS) were set for six pollutants commonly found throughout the United States: lead, ozone, nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), and particulate matter less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$).

The Louisiana Department of Environmental Quality operates National Ambient Monitoring Stations (NAMS) and state and local ambient monitoring stations (SLAMS) to measure ambient concentrations of these pollutants. Areas that meet NAAQS are designated “attainment areas,” while areas not meeting the standards are termed “non-attainment” areas. While no pollutant monitoring data are available for Bogue Chitto NWR, air quality is monitored on a regular basis in the city of New Orleans and vicinity. The monitoring results indicate that all of the New Orleans area qualifies as an attainment area for all monitored pollutants, and that air quality has improved since 1990. Currently, only the Baton Rouge area is in non-attainment of EPA’s 8-hour ozone NAAQS.

Following Hurricane Katrina, the Natural Resources Defense Council collected ambient air samples in Orleans and St. Bernard Parishes in October and November 2005. Samples were analyzed for both mold spores and heavy metals. The level of mold spores found in the flooded areas of New Orleans was very high and posed a health threat to people with allergies, asthma, and other respiratory disease. The most common types of mold detected were *Cladosporium* and *Aspergillus/Penicillium* species. High concentrations of metals (e.g., lead, arsenic, and chromium) in ambient air samples were also found. Thick clouds of dust from drying sediment deposited by the flooding were observed during the sampling. In St. Tammany Parish, lead concentrations in ambient air samples exceeded the EPA national standard of 1.5 g/m_3. Arsenic and chromium concentrations

in ambient air samples collected in Orleans and St. Bernard Parishes were significantly higher than EPA health-based screening levels. The concentrations of all three metals were higher than previous monitoring data collected prior to Hurricane Katrina. It is unknown where and for how long these moldy, dusty conditions persisted (or will persist) and to what extent residents are (or will be) exposed to the mold and dust contamination during cleanup activities.

BIOLOGICAL RESOURCES

HABITAT

Bogue Chitto NWR is primarily composed of bottomland hardwood habitat interlaced by the Bogue Chitto and Pearl River Systems (Figure 5). Numerous sloughs, bayous, and lakes are located on the refuge. Water levels fluctuate by several feet from their low point in the summer to winter/spring flood stage. More than 90 percent of the refuge can be flooded during seasonal high-river periods. The mixed hardwood forest includes water oak, overcup oak, American elm, sweetgum, and swamp red maple on higher elevations and bald cypress, tupelo gum, and swamp blackgum in the wettest areas. Mid-story throughout the hardwood forest includes ironwood, arrowwood, Virginia willow, and reproduction of the overstory species. Typical mid-story plants along the sloughs and bayous are buttonbush, swamp privet, and waterelm.

The abundance and quality of wildlife habitat within forests often depend upon the time, distribution, intensity, and frequency of disturbance. Disturbances in the southeast often include tornadoes, hurricanes, floods, fires, silvicultural treatments, and others. Due to the effects of Hurricane Katrina on Bogue Chitto NWR, active forest management through silvicultural treatments, such as thinnings, group selection, and patch cuts, may be limited in the short term (next 5-10 years). However, through natural succession and the dynamics of bottomland hardwood forests, these stands will continue to change and reach closed canopy conditions. Once this occurs, the majority of the refuge forests will be in a uniform condition, absent further natural disturbance. The closed canopy conditions will result in generally poor horizontal structure, thus limiting habitat diversity. Early successional habitat in these areas will also be limited. Furthermore, the understory is typically deficient in forage and soft mast, as well as cover, which are important elements for the threatened Louisiana black bear and numerous other mammals, particularly white-tailed deer. Vertical structure for wildlife species that utilize the understory and midstory layers, including many neotropical migratory bird species, is generally poor also in the closed-canopy conditions. Therefore, sustaining periodic disturbances through silvicultural treatments in the future will be essential in creating and maintaining favorable habitat conditions that are beneficial to priority wildlife species on Bogue Chitto NWR. Forest management is the single most important tool for the refuge to improve habitat quality for wildlife species.

Current Forest Conditions – Upland Pine

Due to the effects of trees downed from Hurricane Katrina on Bogue Chitto NWR, the pine forest managed for gopher tortoise using preferred habitat through silvicultural treatments such as thinnings, group selection, and patch cuttings were made obsolete by creating conditions of open treeless ridges and forested swales (Figure 6). The area along Dumas Wise Road was recently (2002-2007) planted with longleaf pine seedlings. The Louisiana uplands near Lock 3 were planted in the early 1990s with longleaf pine but many overstory pine trees were also felled by Hurricane Katrina. These areas have been and continue to be prescribe-burned on a 3-year rotation since the late 1980s.

Bogue Chitto NWR has an active prescribed burning program. Prescribed fire is used on pine areas of the refuge is to remove hazardous buildup of fuels which could lead to a catastrophic wildfire, to control undesirable midstory, and to maintain desirable understory. One reason we use prescribed fire is so that

the vegetation can grow back fuller and greener and to get rid of the any undesirable midstory. However, one of the main reasons we use prescribed fire on Bogue Chitto is to provide foraging habitat for the threatened gopher tortoise. The gopher tortoise needs low grassy ground cover to thrive, and prescribed burning accomplishes this. Prescribed burning also provides new nutrient-rich grasses through succession and restores historical habitat conditions for the longleaf pine forests.

Current Forest Conditions – Bottomland Hardwoods

In August 2005, Hurricane Katrina swept through coastal Louisiana and Mississippi significantly affecting forests throughout the region. Bogue Chitto NWR suffered major damages from the storm. The bottomland hardwood forests on the refuge were severely impacted. Approximately 60-70 percent of the overstory canopy trees were destroyed. Therefore, the composition and structure of the forests have been significantly altered. However, the majority of the composition and structure factors of the remaining forest is close to the range given in the desired forest conditions (LMVJV 2007), which include overstory canopy, midstory canopy, basal area, and tree stocking. For example, the average basal area for the remaining forests on the refuge is approximately 40-50 square feet per acre, and the desired stand structure for basal area is 60-70 square feet per acre. Although the average basal area is outside the desired parameters presently, these conditions will change and the forests will grow into these parameters within the next few years, as well as other parameter ranges.

Bogue Chitto NWR is composed primarily of bottomland hardwood habitat with a limited amount of upland pine forests. Forest management is usually at the forefront of our management activities (Figure 6). One way we achieve a vibrant habitat on Bogue Chitto NWR is through forest habitat improvement. This involves thinning out of less desirable species by timber harvest or herbicides. There is also some reforestation of longleaf pine and mixed hardwood species.

WILDLIFE

The refuge is home to hundreds of bird species. The most abundant species are the neotropical migratory birds. Some of the neotropical migratory birds found on the refuge include: prothonotary and Swainson's warblers, flycatchers, yellow-billed cuckoos (*Coccyzus americanus*), and white-eyed vireos (*Vireo griseus*). In smaller numbers found on the refuge are migratory game birds such as woodcock and turkey, wading birds such as egrets and herons, waterfowl such as wood duck (*Aix sponsa*), and raptors such as hawks and owls are found on the refuge.

For Bogue Chitto NWR specifically, the overabundance of understory due to the after-effects of Hurricane Katrina probably supports density of the priority species (Swainson’s Warbler, Kentucky Warbler [*Oporornis formosus*], and Hooded Warbler [*Wilsonia citrina*]) well over the suggested densities. However, the concern will be during the next 10 years as the massive understory moves higher to become a massive midstory whereby densities of the priority species would likely fall well below the values suggested without management action to break up the midstory. The primary need will be to diversify structure in forests that exhibit closed canopied conditions with little vertical and horizontal vegetative structure. At appropriate sites, emphasis should be placed on promoting dense cane thickets.

Figure 5. Habitat on Bogue Chitto NWR

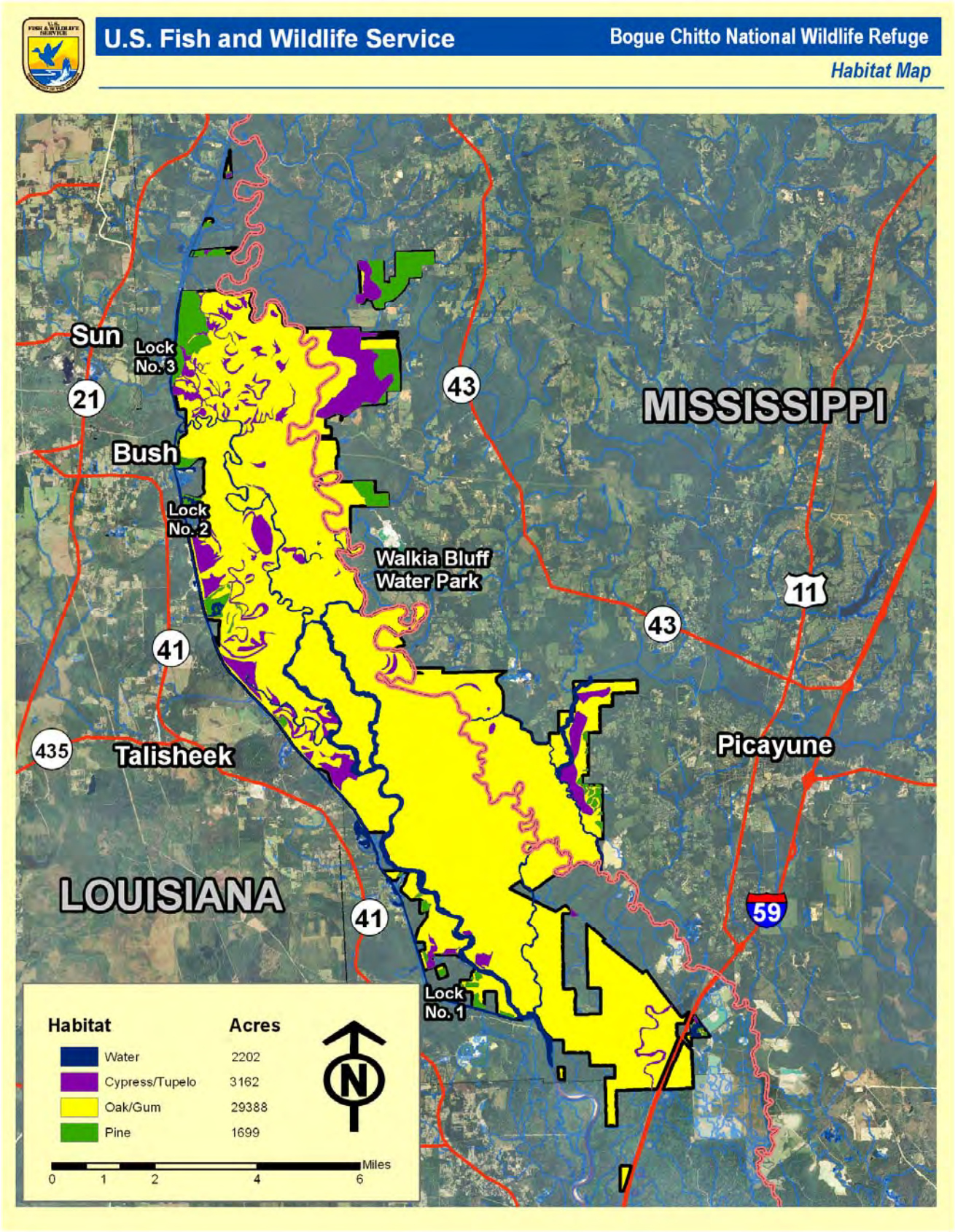
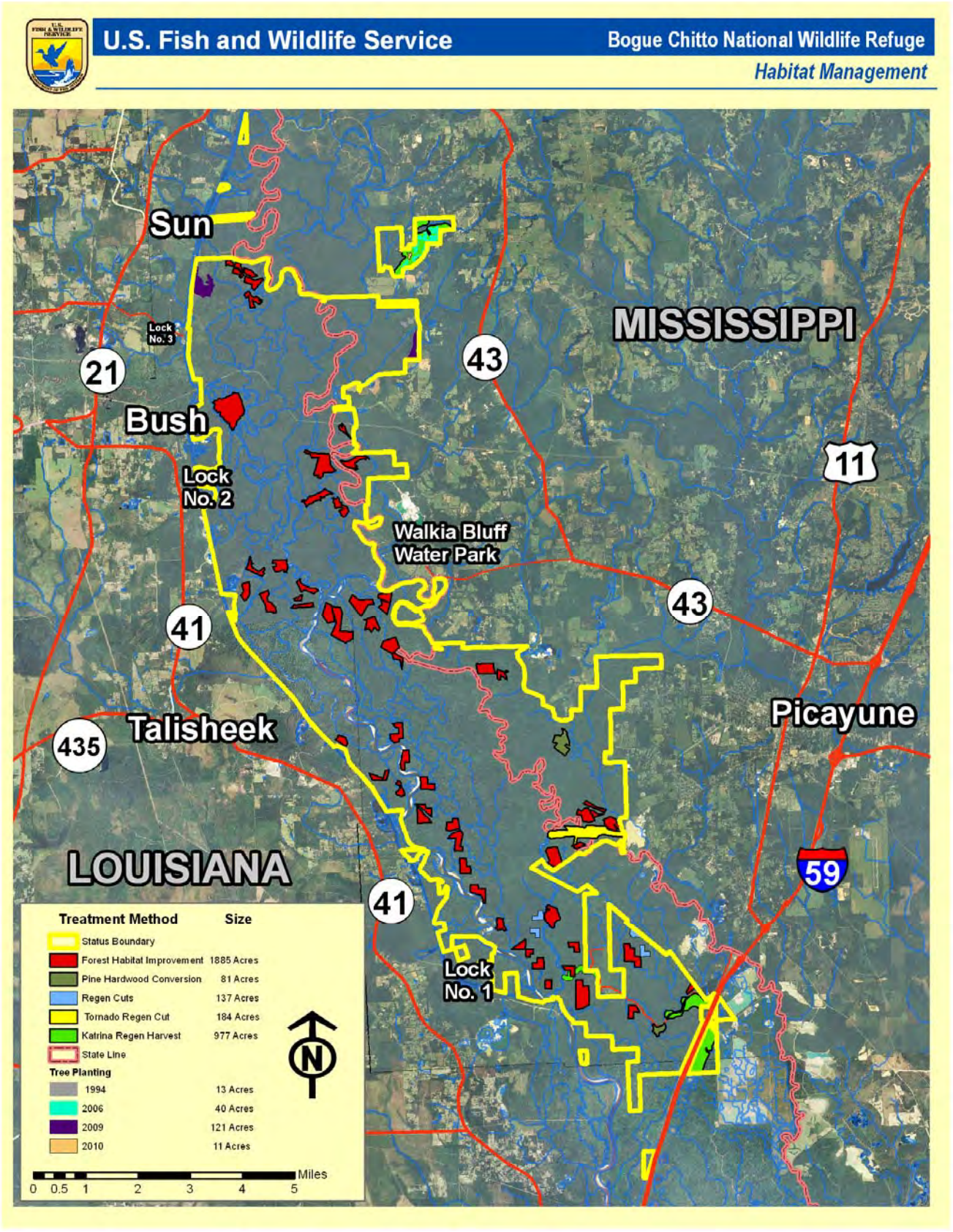


Figure 6. Upland and bottomland hardwood forest management on Bogue Chitto NWR



Other priority avian species utilizing the refuge include the American woodcock (a winter migrant with localized breeding confirmed in Louisiana) and the swallow-tailed kite (a high-priority, local breeder in the Pearl River Basin). Preferred woodcock habitats include alluvial floodplain forests and wetlands with well-developed sapling, shrub, vine, and cane understory mixed with open fields and young forest stands on the uplands. Diurnally, woodcock probe for earthworms and other invertebrates in the moist soils of floodplains and wetlands; while nocturnally using openings, old fields, and newly established forest regeneration areas for courting and display. Regarding the latter, such habitats are currently available on the adjacent uplands on private lands (at least for the time being), and primary focus on managing habitats for breeding songbirds in forested wetlands should also provide excellent habitat conditions for American woodcock.

The swallow-tailed kite is a species of conservation concern whose population underwent a marked decline in the past. The lower Pearl River Basin and the Bogue Chitto NWR, in particular, provide a mostly non-fragmented, forested wetland landscape, ideal for swallow-tailed kite breeding activity in the heart of their United States' breeding range. Swallow-tailed kites are known to currently use the refuge for nesting, roosting, pre-migration roosting, and pre-migration fattening (i.e., foraging). With limited information about breeding habitat requirements, protecting where the kites presently exist is the most prudent strategy, because the species exhibits strong site fidelity and nesting pairs will often reuse the same territory over multiple years. Kites are also highly social raptors and logging a nesting neighborhood may disrupt their social system when they are forced to relocate.

The riverine, slough, and upland mixed-pine and hardwood forests and floodplain forests of the refuge are suitable for numerous species of reptiles and amphibians. Multiple species of snakes, lizards, frogs, toads, salamanders, and turtles occupy the refuge. Commonly seen species include the American alligator (*Alligator mississippiensis*), red-eared slider (*Chrysemys scripta*), water moccasin (*Agkistrodon piscivorus*), eastern mud snake (*Farancia abacura*), five-lined skink (E*umeces fasciatus*), bullfrog (*Rana catesbeian*a), and southern leopard frog (*Rana sphenocephala*). No herpetological surveys have been conducted to date on refuge lands.

The gopher tortoise is a long-lived, native burrowing species of open, fire-maintained longleaf pine ecosystems. Historically, typical gopher tortoise habitat consisted of open, frequently burned longleaf pine or longleaf pine/scrub oak upland sand flatwoods on moderately well drained to xeric soils. The decline of the gopher tortoise has been linked to the decline of these open, fire-maintained and longleaf pine forests. Other causes for decline have included habitat fragmentation, invasion of fire ants (*Solenopsis invicta*), predation, and human-caused mortality resulting from roads and heavy equipment associated with forest site preparation and timber harvest.

Bogue Chitto NWR is within the area occupied by the western population of gopher tortoise (Figure 7). This population lies west of the Tombigbee and Mobile Rivers in Alabama, through south Mississippi and including extreme southeastern Louisiana. This western population of the tortoise is federally listed as threatened. The primary threats to the species on listing were considered to be habitat alteration and conversion, and illegal take. More recently, the primary threats continue to be considered habitat conversion, forest management practices, impact of habitat fragmentation, fire ants, and predation.

On the pine uplands managed for the gopher tortoise (about 1,000 acres), efforts should continue to thin and burn to promote a grassy-herbaceous ground cover. This should suffice to provide adequate habitat conditions for priority open pine woodland associated species.

The ringed map turtle is a small map turtle (4 to 7 inches) which is endemic to the Pearl River system in Louisiana and Mississippi. The ringed map turtle typically utilizes riverine habitat with a moderate current and numerous basking logs, and requires sand and gravel bars for nesting. The species feeds primarily on aquatic snails and other mollusks as well as aquatic insects. Basking logs open to many hours of sunlight daily appears to be an important habitat component and daily basking is a characteristic behavior of this species. Map turtles are habitual baskers and rely on basking sites and branches for temperature regulation, feeding, and nocturnal resting sites. They appear to prefer basking sites which are partially submerged in areas of deepest water and swiftest current. Good water quality, which is necessary for production of snails and mollusks, is also important for turtle productivity.

The species was listed as federally threatened in 1988. At that time, evidence suggested that the species was restricted to the main channels of the Pearl and Bogue Chitto Rivers of Mississippi and Louisiana, and while abundant at some locales was almost extirpated from other river reaches. The ringed map turtle has been threatened by habitat modification for flood control and navigation which contribute to downstream river sedimentation, turbidity, and siltation affecting food resources and removal of habitat components including logs and river bars. Commercial collecting for the pet trade and water quality degradation are also threats to the ringed map turtle. Given the endemic status of the turtle and the compounding threats, the impacts of any contributions of Bogue Chitto NWR to the conservation and improvement of habitat for the ringed map turtle may be significant.

Cultural and Historic ResourcesCultural resources include historic properties as defined in the National Historic Preservation Act (NHPA), cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA), archaeological resources as defined in the Archaeological Resources Protection Act (ARPA), sacred sites as defined in Executive Order 13007, *Protection and Accommodation of Access To "Indian Sacred Sites,"* to which access is provided under the American Indian Religious Freedom Act (AIRFA), and collections. A historic property is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including any artifacts, records, and remains that are related to and located in such properties. The term also includes properties of religious and cultural significance, which are eligible for inclusion in the NRHP as a result of their association with the cultural practices or beliefs of an American Indian tribe.

The rich cultural and geographic history of the Louisiana bayou country can be traced along the route taken by French-Canadian Pierre le Moyne, Sieur d' Iberville, who in 1699 led an expedition to explore the Mississippi River and secure the claim of the Louisiana Territory as a French colony. Le Tour d' Iberville was an official part of the Louisiana Tri-centennial Celebration, known as "FrancoFete '99," a year-long commemoration of the 300th anniversary of the founding of Louisiana by d' Iberville. His route extended from Mobile, Alabama, across the Mississippi Gulf coast, up the Mississippi River to the Houmas Native American Nation settlement at the confluence of the Red River, and across the north shore of Lakes Maurepas and Pontchartrain. On March 28, 1999, the Lacombe Heritage Center celebrated the 300th anniversary of the encampment of Iberville and four Canadians on Goose Point near the mouth of Bayou Lacombe.

The Pearl River Basin, where Bogue Chitto NWR is located, contains a wealth of historical and legendary tradition. Traces of civilizations dating back to 400 B.C. have been found in the southern part of the river near Mulatto Bayou. While the lower Pearl River abounds with tales of river boat pirates, legend proclaims the Great Spirit told the Choctaw Indians to make their home along the banks of the upper portion of what they called “Rock River.”

European civilization came to this region in the 1600s with the Spanish and French explorers. The French explorer D'Iberville renamed the river Pearl after he and his men discovered pearls at the mouth of the river in 1698. The French recognized the Pearl as a potentially important transportation route for settlers and in 1732 had the river explored and mapped. This helped open the entire basin to European settlers. The original survey is still preserved today in the French Archives in Paris.

One of the settlers was a French Canadian named Louis LeFleur who came to the Pearl River in 1792. LeFleur established a trading post in an area that would later become Mississippi's capital city, Jackson.

Mississippi was awarded statehood in 1817 and a search for a state capital ensued. LeFleur's Trading Post was the most attractive site because of its central location, nearness to the Natchez Trace, and the availability of a navigable stream - the Pearl River.

Early journals by explorers describe the immense terrain of this area, which was once covered with vast aquatic prairies, huge cypress swamps, and panoramas of tall pine forests. After defeat in the Civil War, and during Reconstruction, a coalition of civil and military occupying forces plundered the area, including carpetbagger corporations that clear cut huge 1,500-year-old cypresses in the Manchac Swamp and ancient long-needle yellow pine (i.e., longleaf pine) forests. The area was left with a legacy of erosion, subsidence, and drainage problems.

Before the river became a highway of commerce and transportation, it was a route into the wilderness. It opened the way for settlers to move in and to cultivate the fertile bottomlands. With the onset of agricultural and commercial development, the Pearl River served as a water highway to transport tremendous harvests of virgin pine and hardwood timber. Steamboats were common sights as far up river as Edinburg, Mississippi, bringing supplies to the settlers and returning with marketable cargo. Steamboats and keelboats were limited to seasonal travel because of low water levels during the summer months. The river was also narrow and crooked and contained innumerable snags and tree trunks. These conditions and the development of railroads eventually brought an end to the steamboat era.

Today, the river is once again the scene of much activity. In 1964, the Pearl River Basin Development District was created by the Mississippi State Legislature as a special fund agency that would oversee the balanced growth of the water resource potentials of the river.

To protect and restore the natural resources, several parks, preserves, and wildlife refuges have been established in St. Tammany Parish during the 1900s. The Bogue Chitto NWR, which includes 36,597 acres—much of it bottomland hardwoods—is located in Washington and St. Tammany Parishes, Louisiana, and Pearl River County, Mississippi.

By 1999, St. Tammany was the fastest growing parish in Louisiana. Because much of the development has been unplanned, local citizens have organized "Visions 2025" to develop a master plan for the parish.

Although Bogue Chitto NWR has not been subjected to systematic archaeological and historical investigations, the refuge follows these procedures to protect any cultural/historic properties that may potentially occur on the refuge. Prior to any undertaking that has the potential to impact historic properties, the refuge will contact the Service's Regional Historic Preservation Officer (RHPO). The RHPO will determine an appropriate course of action, which can include, but is not limited to, performance of an archaeological survey of the project area and follow-up testing of archaeological sites to evaluate their eligibility for inclusion on the National Register of Historic Properties. Upon completion of the review or submission of a technical report, the RHPO will initiate consultation with the Louisiana State Historic Preservation Office (SHPO) and federally recognized Indian Tribes pursuant to

Section 106 of the National Historic Preservation Act. The SHPO and the Indian Tribes review the information provided by the RHPO and determine whether the steps taken by the refuge to identify historic properties within the project area and the subsequent actions taken to avoid, minimize, or mitigate any potential effects to historic properties are adequate. If cultural resources are encountered during construction, the refuge will cease work at that specific location immediately and contact the RHPO. The RHPO will notify the SHPO and the Indian Tribes of the inadvertent discovery and seek their input on an appropriate course of action. Given the region's settlement during both the prehistoric and historic periods, the likelihood of cultural resources is considered relatively high.

SOCIOECONOMIC ENVIRONMENT

Bogue Chitto NWR is located in southeastern Louisiana in St. Tammany and Washington Parishes and southwestern Mississippi in Pearl River County. The U.S. Census Bureau American Community Survey estimates are used to produce the following facts and are based on data collected over a 3-year time period. The estimates presented below represent the average characteristics of population and housing between January 2005 and December 2007, and do not represent a single point in time. General social, political, and economic information for each parish/county is provided below.

ST. TAMMANY PARISH, LOUISIANA

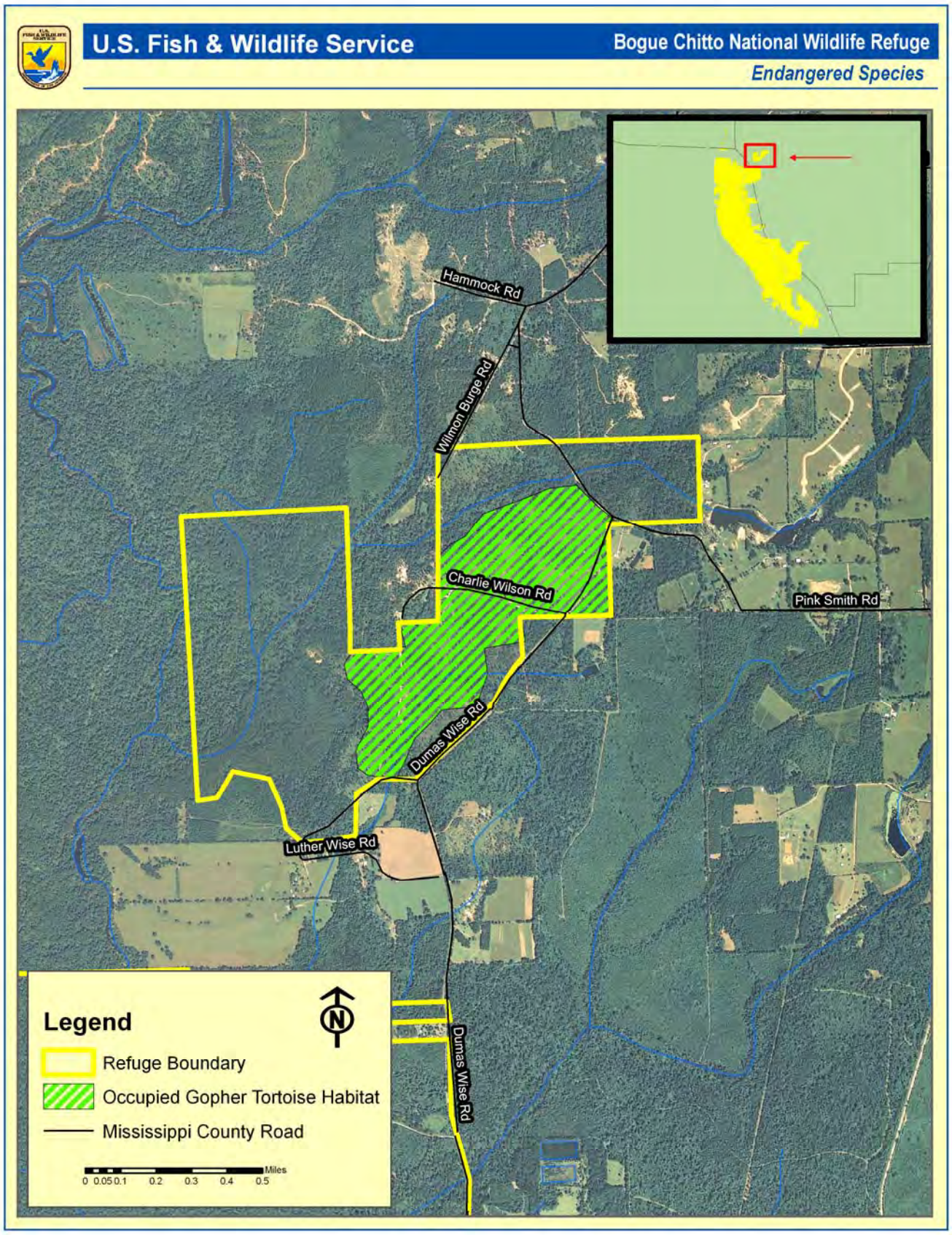
St. Tammany Parish had a total population of 223,000 - 114,000 (51 percent) females and 109,000 (49 percent) males from 2005-2007. The median age was 36.9 years. Twenty-six percent of the population was under 18 years and 11 percent was 65 years and older. For people reporting one race alone, 85 percent was white; 12 percent was black or African-American; less than 0.5 percent was American Indian and Alaska Native; 1 percent was Asian; less than 0.5 percent was Native Hawaiian and Other Pacific Islander, and 1 percent was some other race. Two percent reported two or more races. Three percent of the people in St. Tammany Parish were Hispanic. Eighty-two percent of the people in St. Tammany Parish were white non-Hispanic. People of Hispanic origin may be of any race. The median income of households in St. Tammany Parish was $58,653. Eighty-two percent of the households received earnings and 18 percent received retirement income other than Social Security. Twenty-seven percent of the households received Social Security. The average income from Social Security was $14,704. These income sources are not mutually exclusive; that is, some households received income from more than one source.

Families made up 74 percent of the households in St. Tammany Parish. This figure includes both married-couple families (58 percent) and other families (16 percent). Non-family households made up 26 percent of all households in St. Tammany Parish. Most of the nonfamily households were people living alone, but some were composed of people living in households in which no one was related to the householder.

Three percent of the people living in St. Tammany Parish from 2005-2007 were foreign born. Ninety-seven percent were native, including 70 percent who were born in Louisiana. Among people at least 5 years old living in St. Tammany Parish from 2005-2007, 6 percent spoke a language other than English at home. Of those speaking a language other than English at home, 57 percent spoke Spanish and 43 percent spoke some other language; 31 percent reported that they did not speak English "very well."

From 2005-2007, 87 percent of people 25 years and over had at least graduated from high school and 30 percent had a bachelor's degree or higher. Thirteen percent were dropouts; they were not enrolled in school and had not graduated from high school.

Figure 7. Occupied gopher tortoise habitat on Bogue Chitto NWR



From 2005-2007, for the employed population 16 years and older, the leading industries in St. Tammany Parish were educational services, health care, and social assistance, 21 percent; and retail trade, 13 percent.

One of the settlers was a French Canadian named Louis LeFleur who came to the Pearl River in 1792. LeFleur established a trading post in an area that would later become Mississippi's capital city, Jackson.

Mississippi was awarded statehood in 1817 and a search for a state capital ensued. LeFleur's Trading Post was the most attractive site because of its central location, nearness to the Natchez Trace, and the availability of a navigable stream - the Pearl River.

WASHINGTON PARISH

From 2005-2007, Washington Parish had a total population of 44,000 - 23,000 (51 percent) females and 22,000 (49 percent) males. The median age was 36.2 years. Twenty-six percent of the population was under 18 years and 14 percent was 65 years and older. For people reporting one race alone, 67 percent was white; 32 percent was black or African-American; less than 0.5 percent was American Indian and Alaska Native; less than 0.5 percent was Asian; less than 0.5 percent was Native Hawaiian and Other Pacific Islander, and less than 0.5 percent was some other race. One percent reported two or more races. One percent of the people in Washington Parish were Hispanic. Sixty-six percent of the people in Washington Parish were white non-Hispanic. People of Hispanic origin may be of any race. The median income of households in Washington Parish was $31,532. Seventy-one percent of the households received earnings and 17 percent received retirement income other than Social Security. Thirty-five percent of the households received Social Security. The average income from Social Security was $12,289. These income sources are not mutually exclusive; that is, some households received income from more than one source. Families made up 70 percent of the households in Washington Parish. This figure includes both married-couple families (46 percent) and other families (24 percent). Non-family households made up 30 percent of all households in Washington Parish. Most of the non-family households were people living alone, but some were composed of people living in households in which no one was related to the householder.

From 2005-2007, 77 percent of people 25 years and over had at least graduated from high school and 12 percent had a bachelor's degree or higher. Twenty-four percent were dropouts; they were not enrolled in school and had not graduated from high school.

From 2005-2007, from the employed population 16 years and older, the leading industries in Washington Parish were educational services, health care, and social assistance, 22 percent; and construction, 13 percent.

PEARL RIVER COUNTY, MISSISSIPPI

From 2005-2007, Pearl River County had a total population of 55,000 - 28,000 (51 percent) females and 27,000 (49 percent) males. The median age was 36.7 years. Twenty-five percent of the population was under 18 years and 13 percent was 65 years and older.

For people reporting one race alone, 86 percent was white; 13 percent was black or African-American; less than 0.5 percent was American Indian and Alaska Native; less than 0.5 percent was Asian; less than 0.5 percent was Native Hawaiian and Other Pacific Islander and 1 percent was some other race. One percent reported two or more races. Two percent of the people in Pearl River County were Hispanic. Eighty-four percent of the people in Pearl River County were white non-Hispanic. People of Hispanic origin may be of any race.

The median income of households in Pearl River County was $35,817. Seventy-four percent of the households received earnings and 21 percent received retirement income other than Social Security. Thirty-five percent of the households received Social Security. The average income from Social Security was $12,958. These income sources are not mutually exclusive; that is, some households received income from more than one source.

Families made up 70 percent of the households in Pearl River County. This figure includes both married-couple families (54 percent) and other families (16 percent). Non-family households made up 30 percent of all households in Pearl River County. Most of the non-family households were people living alone, but some were composed of people living in households in which no one was related to the householder.

From 2005-2007, 78 percent of people 25 years and over had at least graduated from high school and 15 percent had a bachelor's degree or higher. Twenty-two percent were dropouts; they were not enrolled in school and had not graduated from high school.

From 2005-2007, from the employed population 16 years and older, the leading industries in Pearl River County were construction, 17 percent, and educational services, health care, and social assistance, 17 percent.

REFUGE ADMINISTRATION AND MANAGEMENT

LAND PROTECTION AND CONSERVATION

The refuge acquisition boundary is 48,240 acres. Certain critical inholdings are still needed to meet habitat and public use objectives. These include foraging and sanctuary habitats for waterfowl and bird conservation area forest objectives, as well as providing access to visitors, reducing off-refuge impacts, and protecting unique habitats. Expansion will emphasize those tracts that have the greatest potential to enhance ecological integrity.

Some of the habitats in most danger of being converted out of bottomland hardwoods are along the east side of the refuge in Mississippi and along Honey Island Swamp Road in Louisiana. Many of these lands are being converted into gravel pits or other agricultural uses. In order to protect the integrity of these areas as well as protect the existing refuge from runoff, these areas should be placed in conservation management. Pine lands and pine/hardwood lands on the east side of the refuge are critical zones of influence on the refuge. They provide a unique and important habitat that supports the refuge wildlife in times of high water. Those areas are in danger of housing development and should also be placed in conservation management either through acquisition or perpetual conservation easements.

VISITOR SERVICES

The Improvement Act and E.O. 12996 emphasize the importance of providing compatible wildlife-dependent educational and recreational opportunities on national wildlife refuges. The refuge provides all of the Service's priority wildlife-dependent recreation to the public: hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

Public use on Bogue Chitto NWR consists of all the priority wildlife-dependent recreational activities. Figure 8 shows accessible areas on the refuge for priority public uses. A total of 39,323 recreational visitors came to the refuge in 2009. Of those, 16,990 were hunters, 16,000 were anglers, 500 attended educational or interpretive programs, and 33,200 observed wildlife.

The refuge staff offer a junior refuge management education program which just began that takes place from late spring through early fall on nearby refuges that may take place on Bogue Chitto NWR. There is also an annual youth fishing event on the refuge. The fishing event is always the 1st or 2nd week in June, and it attracts about 300-400 kids and adults for a day of fun and fishing.

Boating and fishing are allowed on most portions of the refuge along the Pearl River and other areas, year-round in accordance with refuge and state regulations. Fishing at the refuge's Pearl River Turnaround site, which has three handicapped-accessible piers, is allowed all year except the months of April, May, and June when the Service prepares and stocks the area for the youth fishing events. The area is opened to the public after the last scheduled June youth fishing event.

The refuge is open to hunting of deer, squirrel, rabbit, raccoon, turkey, waterfowl, woodcock, and hog each fall in accordance with refuge and state regulations. The refuge will be closed to camping and hunting (except waterfowl) when the water level at the Pearl River (Louisiana) Gauge is at 15.5 feet or higher.

The Holmes Bayou trail is a self-guided interpretive tour deep into the interior of Bogue Chitto NWR, and the newly constructed boardwalk and trail at the Turnaround fishing pond puts you into a cypress swamp with just a short walk, both not far away from some surrounding cities. The short boardwalk at the turnaround brings visitors into a typical bottomland cypress swamp.

Wildlife observation and photography are allowed throughout the refuge. Most of the refuge is accessible only by boat. The Holmes Bayou trail and Pearl River Turnaround are two vehicular accessible sites on the Louisiana side of the refuge that offers a great opportunity for wildlife observation and photography. There are also a few vehicular accessible sites on the Mississippi side of the refuge near Dumas Wise and Pine Grove Roads.

PERSONNEL, OPERATIONS, AND MAINTENANCE

Refuge administration refers to the operation and maintenance of refuge programs and facilities, including construction. Five permanent staff positions are assigned to Bogue Chitto NWR. The positions include: refuge manager, wildlife biologist, engineering equipment operator, park ranger (non-law enforcement), and forester. These same five positions are also responsible for management of Big Branch Marsh and Atchafalaya NWRs, and must assist with activities on all eight refuges with Southeast Louisiana NWR Complex. The Complex staff consists of 26 permanent full-time employees (Figure 9). The refuge also benefits from the occasional help of interns and volunteers.

The Complex has a good base of equipment and facilities to support the management of all eight refuges. The staff is responsible for the maintenance and operation of over $3 million in assets including buildings, roads, parking lots, boardwalks, foot trails, and a fleet of heavy equipment, light trucks, boats, and miscellaneous small equipment.

Coordination/Cooperative Programs

The refuge staff coordinates and cooperates extensively with state agencies, tribes, landowners, the public, conservation groups, oil and gas companies, and local agencies and organizations. Bogue Chitto NWR is a component of several important regional or ecosystem planning and management efforts, and works with all levels of government and non-governmental organizations and private citizens to accomplish goals and objectives specific to those efforts.

Figure 8. Current visitor services on Bogue Chitto NWR

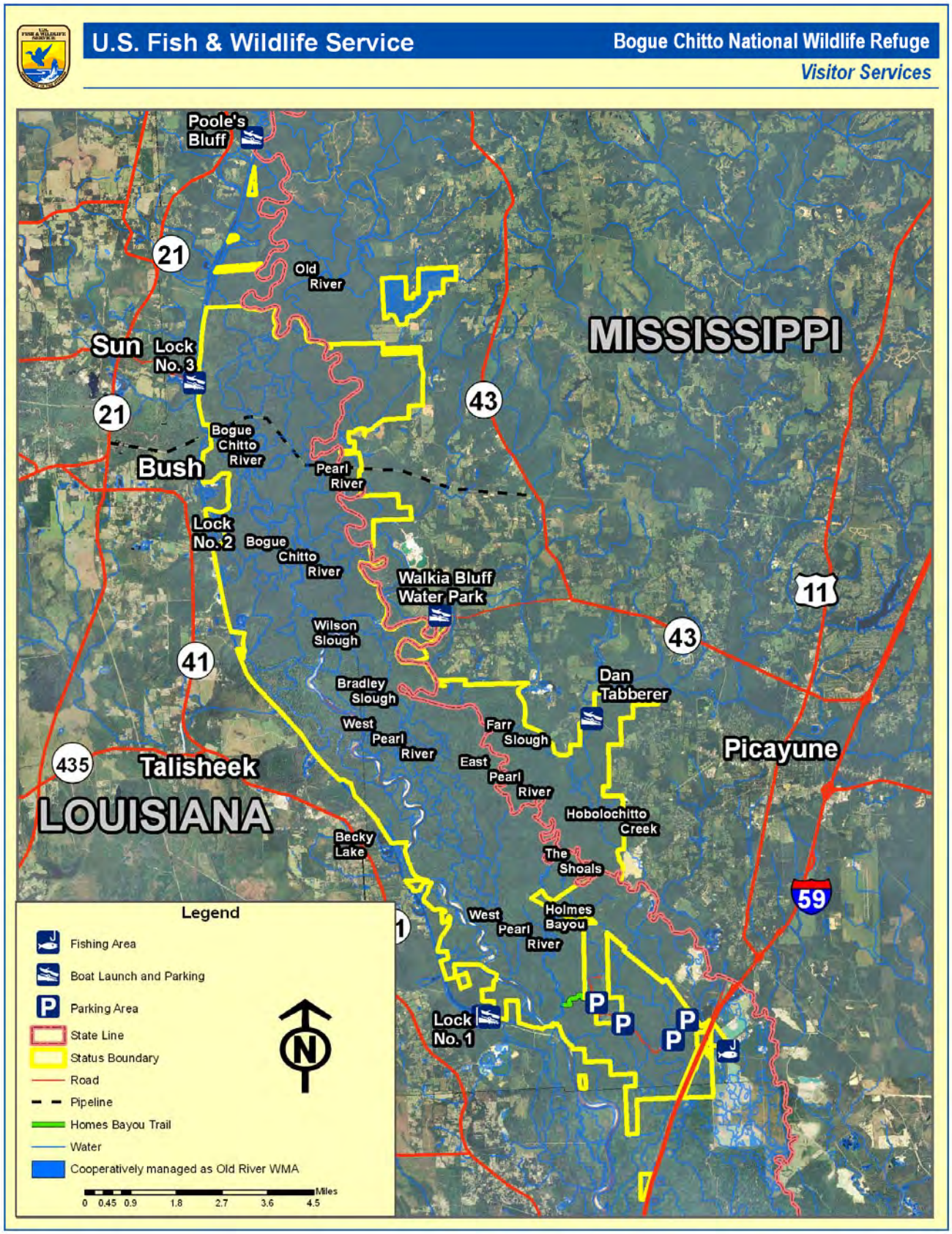
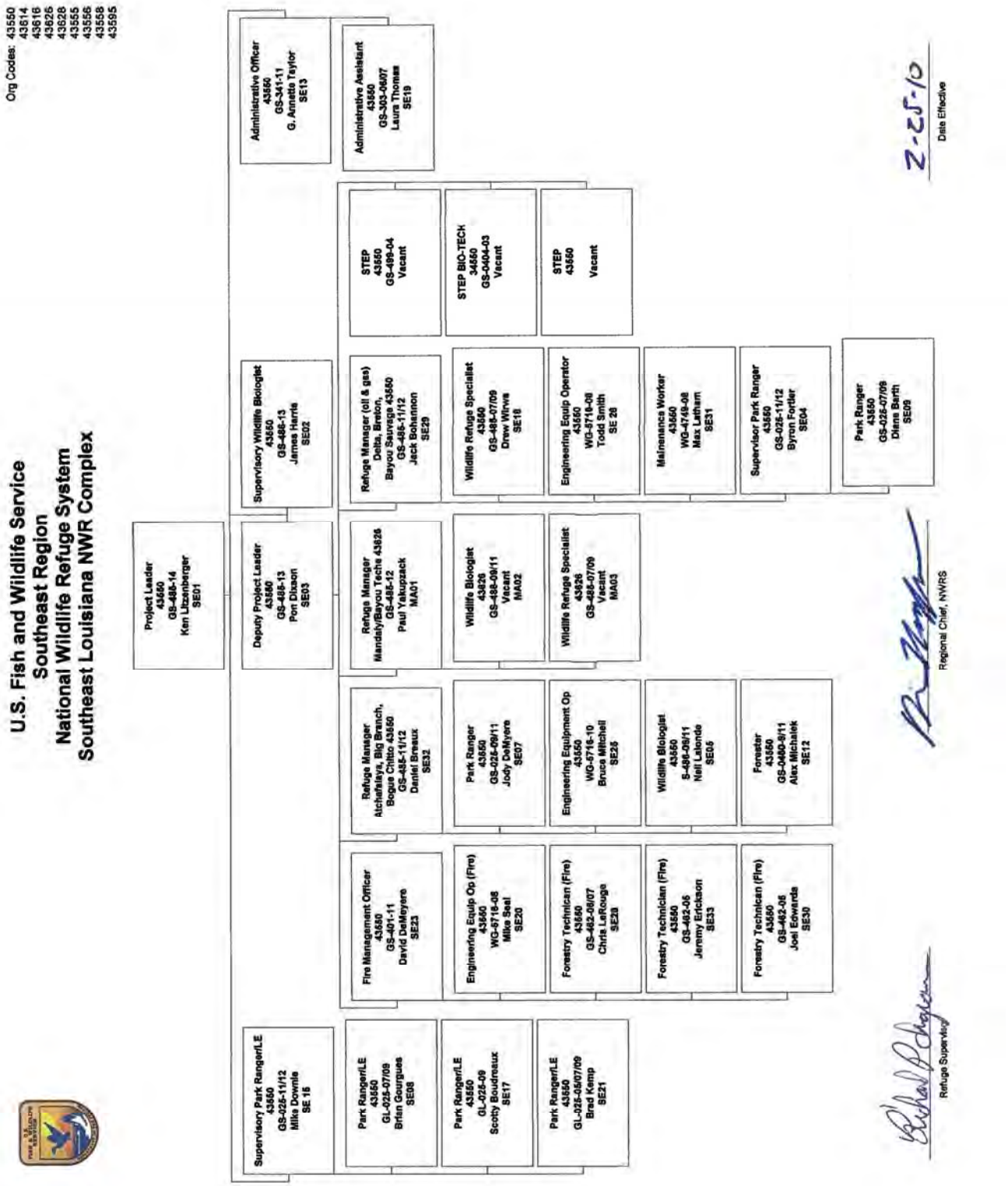


Figure 9. Southeast Louisiana NWR Complex 2010 organizational chart



III. Plan Development

SUMMARY OF ISSUES, CONCERNS, AND OPPORTUNITIES

The planning team identified a number of issues, concerns, and opportunities related to fish and wildlife protection, habitat restoration, recreation, and management of threatened and endangered species. Additionally, the planning team considered federal and state mandates, as well as applicable local ordinances, regulations, and plans. The team also directed the process of obtaining public input through public scoping meetings and personal comments. All public and advisory team comments were considered; however, some issues important to the public fall outside the scope of the decisions to be made within this planning process. The team has considered all issues that arose through this planning process, and has developed a plan that attempts to balance the competing opinions regarding important issues. The team identified those issues that, in the team's best professional judgment, are most significant to the refuge. A summary of the significant issues for Bogue Chitto NWR follows.

FISH AND WILDLIFE POPULATION MANAGEMENT

- Need baseline data on fish and wildlife populations;
- Trapping – beaver;
- Migratory bird management – migratory songbirds, waterfowl, minimal shorebird habitat;
- Resident species management – deer, turkey;
- Invasive and exotic species control; examples include tallow trees, cogon grass, and feral hogs;

Public Comments:

- Need baseline data on fish and wildlife populations;
- Turkeys gone;
- Possible problems with dredging due to endangered mussel;
- Haven't seen any bob-white quail in 9 years; afraid population is declining - used to see them on refuge;
- Fox will kill off quail;
- Hog population is too high and competing with wildlife;
- Concerned that bull frogs and wood duck populations have decreased in the area;

HABITAT MANAGEMENT

Public Comments:

- Can't cut vegetation which makes it impossible to move through;
- Vegetation is very thick;
- Allow hunters to cut briars and small vegetation to make the refuge accessible;
- Make an effort to inventory, monitor, protect, and enhance habitat for refuge species, particularly with regards to non-native species;
- Conduct controlled burn in order to reduce vegetation loads from Hurricane Katrina and increase access to Bogue Chitto NWR, especially along the Pearl River near Walkiah Bluff;

- Believes the direct hit from a catastrophic hurricane and damage to Bogue Chitto NWR should justify more aggressive habitat management including: (1) Conduct frequent controlled burns, but not during turkey nesting season; (2) relax restrictions on cutting vegetation - let hunters cut trails but only briars and no trees; and (3) bring in heavy equipment to push briars and dead trees into large piles and burn them and then plant fast growing trees of all kinds.

RESOURCE PROTECTION

- Global warming concerns;
- Garbage dumping – (household and construction debris);

Public Comments:

- Move Bogue Chitto NWR closing water level to 16.5 feet at the Pearl River gauge in order to bring in line with the closure level on the adjacent Pearl River WMA.
- Utilize new imagery data to evaluate area flooded on Bogue Chitto NWR at 15.5 and 16.5 feet elevations.
- The Service needs to clear power line rights-of-way.
- The river is stalling on refuge and staying, slows river.
- Concerned with illegal dumping and river pollution;
- Litter caused by inconsiderate refuge users needs to be addressed.
- Would like to see the National Park Service, FWS, and USDA Forest Service purchase every piece of property possible.
- Boundary signs need to be improved. Storm knocked down a lot of signs.
- The problem would be if you were hunting on state land and person is actually hunting on federal land.
- It would be nice to see statistics on what is taken on the refuge annually.
- Pearl River is not a state scenic river. Since it is not, the Pearl River needs to be dredged, clearing out river and adding the dredge to marsh land.
- Is there going to be another reservoir and what would that do to the river flow on the refuge? Ensure involvement in process due to potential effects on the refuge. Work with partners to ensure river around area is not drained or knocked out.
- When river is low the only access is to walk the slough.
- The Nature Conservancy – Pearl River project manager, looking at sediment loads, two lakes reservoir project is in the works, really important to stay in tune.
- Dredging may actually not improve area and in the long term will not start filling in again. Not long-term solution.
- Dredging may make river able to navigate.
- Increase law enforcement presence on refuge. It seems to be absent.
- Concerned about shots heard and boating with spotlights at night.
- Weir at Walkiah Bluff is dangerous. Work with Corps to make it safer.
- The CCP should evaluate all wilderness lands that were previously proposed for wilderness designation so that the public may understand the conservation status of those lands. The CCP should also identify future management actions.
- The CCP must also address management actions for both potential and designated wilderness lands.

- The presence of the federally listed threatened gulf sturgeon and a highly diverse mussel population in the waters of Bogue Chitto NWR make water quality in the refuge a special consideration. The Wilderness Society urges refuge management to carefully review ongoing sand and gravel mining operations.
- Evaluate any other mineral extraction operations occurring in and around Bogue Chitto NWR which could have deleterious effects on refuge inhabitants.
- The CCP should outline the challenges and management requirements associated with all inholdings.
- The CCP should examine acquisition possibilities. In anticipation of changes to the landscape due to outside development, global warming and other factors present new management challenges. The response to these challenges may in some instances require refuge expansion or boundary changes. Timely acquisition can enhance management capability to ease new wildlife population pressures deriving from a warmer, drier climate and resulting habitat perturbations.
- The Service is also required to identify any and all foreseeable land acquisition and expansion plans for the refuge and assess the potential for future impacts to fish, wildlife, and their habitats and wilderness within the refuge. Short-term and cumulative threats to the refuge from potential development must be prohibited.
- We request that the Service assess the implications of climate change in all of the alternatives developed for the CCP. The Service should be proactive in developing management alternatives that account for climate change in management strategies and objectives.
- Bogue Chitto NWR stands in a unique position due to its relationship with The Conservation Fund's Go Zero™ program. Carbon sequestration projects can be used both to reforest current refuge land and acquire and reforest additional lands near the refuge. While this is an opportunity that the refuge should take advantage of, it would also be wise to do some planning. Deciding which lands should be reforested, taking an active approach in determining the species composition, and setting guidelines for how the land will be managed in accordance with the Refuge System's "wildlife first" mandate can help to ensure that the refuge truly benefits from the voluntary carbon market.
- The staff should take special note of how carbon sequestration projects will uniquely affect the refuge. Reforestation from carbon sequestration projects has great potential to mitigate climate change and help wildlife adapt to changing global temperatures.

VISITOR SERVICES

- Friends group-improve growth and membership, very supportive;
- Visitor and staff access;
- Maximize opportunities;
- ATV use only for mobility impaired;
- Fishing access and opportunities limited – river blockage makes opportunities difficult;
- Hunting – keeping program;
- Access for all uses limited on refuge;

Public Scoping Comments:

- Camp at Red Bluff – Prior to storm (Hurricane Katrina), access was possible at river stage 13-14 feet. Currently, when river gets up, access to Big Creek is cut off. They would like to have access to the refuge and Big Creek. Cut out the bayou coming to Big Creek. Clear out feeder bayou.

- Install check station where campers must obtain a permit and have designated numbered camping areas to control littering problems.
- Littering and accessibility to refuge are the most important issues facing the refuge.
- Clearing will help with flood control.
- Hurricane Katrina caused the inability to access boat areas.
- Since Katrina, access is a struggle, oaks are gone, and gum trees are gone. Completely changed causing no access.
- Hog and deer populations are growing because of access and hunting seasons closed due to the river being too high.
- Like idea of making up hunting days.
- Hogs are depredating acorns that deer could eat. Would like to have hog hunting with dogs when seasons close in order to control hog populations.
- Open hog season entire summer.
- Hunt hogs with whatever weapon applicable to the season open.
- Would like one week of hog hunting with guns in February.
- Steel shot requirement is hampering take of squirrels or other small game. Crippling is a problem. Would like to see lead shot for hunting small game.
- Deer management – Do away with doe days during the rifle season. Reduce take of does. Concerned that there are not enough does on Louisiana side.
- Muzzle loader season should start in January to better coincide with rut. Bucks only. No does.
- Could the public participate in cutting some trails or in the bayous?
- Would like to see more hunt days. Access is a problem since the storm, so would like to see more time allowed to hunt deer.
- Horseback riding is a good way to see wildlife up close. Would like to see horseback riding allowed on the refuge. Old logging trails make good horse trails. Don't need to make additional trails since old trails work well.
- Mississippi side of refuge had less hunt days than Louisiana. Want to see more hunt days on Mississippi side.
- Mississippi side got short changed on number of hunt days compared to Louisiana.
- Set primitive hunting days closer to the time of rut.
- Would like to see hunters from Louisiana or Mississippi buy a combined permit, enabling the hunter to utilize both sides of the refuge.
- Would like to see deer hunting season start in November and end in February.
- Need more days to hunt. There are more deer now then there ever has been.
- Would like to see hog season at same time as squirrel season. Would like to see larger take of hogs.
- Hogs are taking over.
- Open up old logging trails on Farr's Island to provide hunter access.
- Open up old logging roads for hunter access. Access is tough due to post-storm conditions.
- Post storm conditions have made access so difficult you need to clear some live vegetation to access your stand and/or retrieve your deer after the kill. Just want to get briars out of the way. Not interested in killing oak trees.
- Turkeys are nesting in late May. Doesn't want to see the area burned then. Hens are nesting before, especially during high flood waters. Would like to see burning in February or after June 1.
- Too many hogs. Need to find a safe way to reduce their populations.

- Would like to have a hog season without dogs. Just hogs, not combined with another season.
- Audubon Society wanted more birding opportunities and make refuge more birder friendly.
- Correlate the public uses on the refuge with their impacts on the wildlife species.
- The CCP should examine and outline a plan for off-road vehicle use.
- TWS requests that the Service identify and analyze in the CCP all non-wildlife dependent activities on the refuge. This includes, but is not limited to, access to the refuge, such as ATV use and proposed roads.

Wilderness Review

Currently, there are no wilderness areas on the refuge. The Wilderness Act of 1964 defines a wilderness area as an area of federal land that retains its primeval character and influence, without permanent improvements or human inhabitation, and is managed so as to preserve its natural conditions and which generally appears to have been influenced primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; has outstanding opportunities for solitude or primitive and unconfined type of recreation; has at least 5,000 contiguous roadless acres, or is of sufficient size to make practicable its preservation and use in an unimpeded condition, or is a roadless island regardless of size; 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; and may contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

Refuge planning policy requires a wilderness review as part of the comprehensive conservation planning process. Lands within the Bogue Chitto NWR were reviewed for their suitability in meeting the criteria for Wilderness areas, as defined by the Wilderness Act of 1964. The results of the wilderness review are included in Appendix H. The area known as Holmes Island is believed to meet these criteria. This area is an island bordered by Wilson Slough, West Pearl River, East Pearl River, and Holmes Bayou and is over 5,000 acres.

IV. Management Direction

INTRODUCTION

The Service manages fish and wildlife habitats considering the needs of all resources in decision-making, but first and foremost, 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. The Service has identified six priority wildlife-dependent public uses. Hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation are therefore emphasized in this CCP.

Described below is the CCP for managing the refuge over the next 15 years. This management direction contains the goals, objectives, and strategies that will be used to achieve the vision of the refuge.

ALTERNATIVES FOR MANAGING BOGUE CHITTO NWR

The three alternatives considered for managing Bogue Chitto NWR are as follows:

A – No Action (Current Management)
B – Resource-focused Management (Preferred Alternative)
C – User-focused Management

Each of these alternatives was described in the Environmental Assessment, which was Section B of the Draft CCP. The Service chose Alternative B as the management direction.

Implementing this alternative will result in the restoration and improvement of refuge resources needed for wildlife and habitat management, while providing opportunities for a variety of additional compatible wildlife-dependent recreation, education, and interpretive activities. This alternative will also allow the refuge to provide law enforcement protection that adequately meets the demands of a suburban environment.

VISION FOR BOGUE CHITTO NWR

Bogue Chitto NWR is managed as an integral component of the Pearl River Basin. Conservation of native systems of lands and waters which provide quality habitat for migratory birds, other wildlife, fisheries, and plants for the benefit and enjoyment of present and future generations are some of the objectives of the Refuge System. Management of wildlife and habitat on the refuge is an active, science-driven, comprehensive endeavor to conserve the natural health and beauty of the land.

Bogue Chitto NWR is also managed to enhance and conserve bottomland hardwood forests. These habitats support a variety of migratory birds, species of special concern, and other associated wildlife and plants. This effort is enhanced and encouraged through both strong partnerships and public support by providing wildlife-dependent recreational opportunities for hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation in order to experience the uniqueness of this national treasure.

GOALS, OBJECTIVES, AND STRATEGIES FOR BOGUE CHITTO NWR

The goals, objectives, and strategies presented for Bogue Chitto NWR are the Service's response to the issues, concerns, and needs expressed by the planning team, the refuge staff and partners, and the public and are presented in hierarchical format. Chapter V identifies the projects associated with the various strategies.

These goals, objectives, and strategies 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 Bogue Chitto NWR. With adequate resources as outlined in Chapter V, the Service intends to accomplish these goals, objectives, and strategies within the next 15 years.

FISH AND WILDLIFE POPULATION MANAGEMENT

Goal A. Fish and Wildlife Population Management. Protect, manage, enhance, and restore healthy and viable populations of migratory birds, resident wildlife, fish, and native plants, including all federal and state threatened and endangered species found within the Pearl River Basin.

Objective A-1. Forest Breeding Birds – Bottomland hardwood associated species: Actively participate in forest bird base-line surveys to support priority forested wetland-associated species by 2025: Swainson's warbler (5 pairs/100 acres), Kentucky warbler (5 pairs/100 acres), hooded warbler (10 pairs/100 acres), wood thrush (10 pairs/100 acres), and American woodcock (non-breeding).

Discussion: The vast majority of forest on the refuge is forested wetland. The regional importance of these forest types dictates that disproportionate attention be directed towards these habitats. For Bogue Chitto NWR specifically, the forest regeneration which followed Hurricane Katrina probably supports populations of the priority bird species (Swainson's warbler, Kentucky warbler, and hooded warbler) well over the suggested densities. Over the next decade, those densities may fall below target levels as a relatively uniform young canopy develops. Therefore, about half way through the planning cycle the primary need will be to diversify structure in forests that exhibit closed canopied conditions with little vertical and horizontal vegetative structure. At appropriate sites, emphasis on promoting dense cane thickets will match well with this objective.

Strategies:

- Conduct baseline bird surveys/inventory in these areas to determine species composition and densities before and after restoration.
- Conduct a vegetation survey to quantify occurrence of forested wetlands that match desired forest conditions as defined in the Lower Mississippi Valley Joint Venture Forest Resource Conservation Working Group (2007) and how much does not.
- Restore historic range of variation in forest structure. The key is replacing vertical and horizontal structure to otherwise structurally simple stands through active forest management.

Objective A-2. Forest Breeding Birds – Open pine woodland associated species: Actively participate in breeding bird base-line surveys to support priority open pine woodland associated species by 2025: Bachman's sparrow (*Aimophila aestivalis*) (5 pairs/100 acres), field sparrow (*Spizella pusilla*), chuck-will's-widow (*Caprimulgus carolinensis*), northern bobwhite (*Colinus virginianus*) (7 coveys/100 acres), prairie warbler (*Dendroica discolor*), brown-headed nuthatch (*Sitta pusilla*) (4.5 pairs/100 acres), and red-headed woodpecker (*Melanerpes erythrocephalus*) 2 pairs/100 acres).

Discussion: On the pine uplands managed for gopher tortoise (about 1,000 acres), efforts should continue to thin and burn to promote a grassy-herbaceous ground cover. This should suffice to provide adequate habitat conditions for priority open pine woodland associated species on lands managed by the refuge. Brown-headed nuthatches (*Sitta pusilla*) were detected during field visits, but presence of the other species (especially northern bobwhite and Bachman's sparrow) should be determined by surveys.

Strategies:

- Conduct baseline surveys/inventories in open pine woodlands to determine species composition and densities of open pine woodland associated species before and after forest management actions.
- Conduct a vegetation survey to quantify occurrence of open pine woodlands that match desired forest conditions as defined in the Lower Mississippi Valley Joint Venture Forest Resource Conservation Working Group (2007) and how much does not.
- Maintain existing acres with fire to reduce midstory and promote a grassy/herbaceous understory with patches of scrub/shrub using a combination of dormant and growing season burning. If burning is not feasible to control midstory regeneration, more aggressive control measures will be used (e.g., brush cutting, herbicides).
- Maintain a sparse canopy and low basal area in mature (over 12 inches in diameter) pine forests (60-80 feet2/acre), except adjacent to floodplain where higher basal area and more hardwood mixed in the stands is preferred.
- Retain snags over 15 inches that are not posing a safety hazard to refuge personnel or visitors for cavity nesting species.
- When forest management decisions are made, establish bird surveys in select stands that will not be managed to track bird responses by 2025.

Objective A-3. Forest Breeding Birds – Swallow-tailed kites: Conduct swallow-tailed kite surveys to determine breeding pairs. The refuge should support 10 nesting areas or approximately 30 breeding pairs of swallow-tailed kites by the year 2025.

Discussion: The swallow-tailed kite is a species of conservation concern whose population underwent a marked decline in the past. The lower Pearl River Basin and the Bogue Chitto NWR, in particular, provide a mostly non-fragmented, forested wetland landscape, ideal for swallow-tailed kites' breeding activities in the heart of their United States breeding range. Swallow-tailed kites are known to currently use the refuge for nesting, roosting, pre-migration roosting, and pre-migration fattening (foraging). Until we have more information on their breeding habitat requirements, protecting known kite habitats and their nests is the most prudent strategy. Protecting where we know kites are now (i.e., centers of kite activity) is important because the species exhibits strong site fidelity and nesting pairs will often reuse the same territory over multiple years. Kites are also highly social raptors and logging a kite nesting area may disrupt the kite social system so that they are forced to relocate.

Strategies:

- Identify swallow-tailed kite nesting areas on Bogue Chitto NWR and protect these areas until kites no longer nest there.
- No timber activity or controlled burns should be conducted near active kite nests, and unless the nesting area has been deserted, it should remain undisturbed after nesting to allow the kites the opportunity to return in following years to reuse the area. The only way to be certain that timber harvest and/or controlled burns will not interfere with nesting kites is to avoid any harvest or controlled burn of what appears to be suitable nesting habitat between March 15 and August 15.
- Survey the forested area to be harvested or burned for breeding activity immediately prior to the harvest or burn. Any timber contract should include language alerting logging crews to the conservation status of swallow-tailed kites and the Service's intention to protect nesting areas on the refuge.
- Manage for stands of mature forest containing some super-emergent (dominant) canopy trees (often used for nesting), particularly along waterways (streams, bayous, rivers) and at the swamp-upland interface. In bottomland hardwood forests, sweetgum may be a preferred nesting tree species.
- Maintain and allow some mature, 10- to 15-acre loblolly pine patches adjacent to forested wetlands as potential swallow-tailed kite nesting areas. Pressure from private development of high ground adjacent to swamps is making this an increasingly rare habitat, and it is a habitat that kites often use for nesting. Retain dead snags tall enough for kites to use as roost trees (i.e., snags of mature trees).
- Retain tall snags and large dead trees near small openings in the forest and also along waterways as pre-migration roost sites.

Objective A-4. Waterfowl: Evaluate and where appropriate install, provide, maintain, and monitor wood duck nest boxes. Implement a wood duck banding program in coordination with LDWF and the NAWMP.

Discussion: In terms of forested wetland-dependent avian species, the refuge does not support large numbers of migratory waterfowl; however, certain resident species such as wood ducks use the refuge quite heavily and some use by migratory waterfowl does occur. Opportunities to provide habitat for these species while also meeting other management objectives for refuge habitats should be investigated.

Wood ducks are cavity nesters, seeking cavities in trees within a mile of water. Brood survival is higher in situations where nests are close to water. Due to conversion of forest lands to urban sprawl, agriculture, forestry practices, and competition for nest sites from a host of other species, availability of natural cavities has become a limit to reproduction. Nest boxes are commonly used to supplement natural cavities and increase local production of wood ducks. Box programs are not an end to all nesting problems. They require time to clean and repair at least annually. Production can be increased by more frequent checks and cleaning of boxes, but this must be weighed with other time constraints.

A recent publication, *Increasing Wood Duck Productivity: Guidelines for Management and Banding* on USFWS Refuge Lands (USFWS 2003), provides guidelines for the use of wood duck nest boxes that should be used to guide the nest box program on refuge lands. It is critical that nest boxes be spread out so that they are at least 100 yards apart or cannot be seen from another box. The boxes must have a functional predator guard and be checked and repaired annually; otherwise, boxes are considered traps for the hen and her clutch. Conical predator guards should be placed on all of the boxes to more effectively keep rat snakes and raccoons from climbing into the boxes. Some reports

indicate that if rat snakes learn there is a meal of eggs in the nest box, that it is very difficult to exclude them from the boxes, even if boxes have predator guards. If boxes cannot be properly maintained, they should be boarded up until sufficient effort can be put toward operating an effective nest box program. Cleaning the boxes after the initial peak of nesting (about mid-April) will significantly improve annual production if competition for nest sites increases. Continued monitoring of nest boxes is critical to success. If box usage and nest success does not improve, modifications to the current program should be considered.

Brood survival is always a consideration, especially if broods must travel long distances to suitable habitat. McGilvrey (1968) described preferred brood habitat as 30 to 50 percent shrubs, 40 to 70 percent herbaceous emergents, and 25 percent open water. Overhead cover within 1 to 2 feet of the water surface is vital for wood duck broods. Optimum habitat should have 75 percent cover and 25 percent open water, with a minimum of one-third cover to two-thirds' open water. Probable reasons for limited nest box usage should be reviewed periodically and corrected through reasonable management actions.

Strategies:

- Install nest boxes in select locations to provide educational opportunities and facilitate nesting by wood ducks. Boxes should be placed in areas which provide good brood cover and facilitate checking and maintenance.
- During forest habitat improvement and commercial harvest operations, retain cavity containing trees to the greatest extent possible. This will promote continued nesting by wood ducks as well as other cavity-using species.
- During habitat improvement and commercial harvest operations, promote the retention and recruitment of mast-bearing tree species with an emphasis on oaks for acorn production, in addition to other site appropriate tree species. This will benefit both resident and migratory waterfowl which feed on mast.
- Reforestation efforts should include cypress where appropriate for future cavity production and a high component of oaks for future mast production, in addition to other site-appropriate tree species.

Objective A-5. Waterbirds: Conduct heron, egret, and other waterbird rookery surveys and protect from disturbance.

Discussion: Bogue Chitto NWR provides excellent habitat for breeding and wintering colonial wading birds. Shallow water areas found on the refuge provide critical foraging opportunities for long-legged wading birds, including herons, egrets, and ibis. Currently, the refuge only opportunistically surveys waterbird and wading bird populations.

Strategies:

- Conduct flight line counts as appropriate.
- Protect any rookeries from disturbance during nesting season.

Objective A-6. Woodcock: Determine presence of woodcock via nocturnal/late evening surveys on several key open land sites.

Discussion: Another priority avian species utilizing the refuge is the American woodcock (*Scolopax minor)*. Woodcock are winter migrants with localized breeding confirmed in Louisiana. Preferred woodcock habitats include alluvial floodplain forests and wetlands with well-developed sapling, shrub, vine, and cane understories, mixed with open fields and young forest stands on the uplands. Diurnally, woodcock probe for earthworms and other invertebrates in the moist soils of floodplains and wetlands. At night, they use openings, old fields, and newly established forest regeneration areas for courting and display. These nocturnal habitats are currently available on the adjacent uplands on private lands. A primary refuge focus on managing habitats for breeding songbirds in forested wetlands should also provide excellent habitat conditions for the American woodcock.

Strategies:

- Review literature and work with partners to design and implement a valid, feasible American woodcock management protocol.
- Establish protocol to survey American woodcock using fields during winter and spring.

Objective A-7. Game species: Continue to participate in browse and necropsy surveys for white-tailed deer. Also continue to monitor herd health through collections and hunter harvests. Annually monitor other game species through hunter bag checks. Opportunistically conduct turkey poult surveys in coordination with LDWF. Work in coordination with the southeastern branch of the National Wildlife Health Center and improve harvest surveys to better determine population index.

Discussion: The refuge was originally purchased to conserve the area's unique wildlife habitat and protect it from development and mining operations. At that time, a stated goal was to provide the public with traditional recreational uses such as hunting and fishing. Currently, the refuge supports a variety of game species such as turkey (*Meleagris gallopavo*), white-tailed deer, fox squirrels (*Sciurus niger*), and eastern cottontail (*Sylvilagus floridanus*) and swamp rabbits (*Sylvilagus aquaticus*), as well as small mammals such as raccoon (*Procyon lotor*), beaver (*Castor canadensis*), mink (*Mustela vison*), opossum (*Didelphis marsupialis*), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), bobcat (*Felis rufus*), otter (*Lutra canadensis*), muskrat (*Ondatra zibethicus*), nutria (*Myocastor coypus*), and red *Vulpes vulpes*) and gray foxes (*Urocyon cinereoargenteus*).

Hunting has traditionally been one of the most popular uses of the refuge. These hunters seldom influence small game numbers but can influence larger species such as deer and wild turkeys. A key to understanding this influence is having a reliable estimate of hunter numbers and game harvested. Due to user inconvenience and excessive access points, no daily self check-in system has been employed to date. It may be time to revise or modify the current reporting system to include mandatory reporting with penalties for failure to return harvest reports at the end of the season.

White-tailed deer numbers are expected to increase for the next few years until canopy shading diminishes the browse at lower levels. To moderate problems with excessive deer numbers when this occurs, managers should monitor herd health and maintain flexibility in gun season lengths to ensure adequate deer harvest opportunities.

Strategies:

- Implement check-stations or self-clearing stations to gain better insight into number of hunters and harvests.
- Increase harvest of feral hogs to guard against population explosion and possible detrimental effects of feral hogs on natural resources in the aftermath of Hurricane Katrina.
- Increase white-tailed deer harvest to guard against population explosion and possible detrimental effects of white-tailed deer on natural resources in the aftermath of Hurricane Katrina.

Objective A-8. Non-game species: Determine presence and abundance of state-listed priority non-game species of concern through active partnerships with universities, non-governmental organizations, and other agencies.

Discussion: Several non-game mammal species recognized by the States of Louisiana and Mississippi (Lester et. al 2005 and MDWFP 2005) for the Bottomland Hardwood Forest, Cypress-Tupelo-Blackgum Swamp, and Eastern Upland Longleaf Pine Forest habitats are known to, or may, inhabit refuge lands. These include southeastern shrew (*Sorex longirostris*), southeastern myotis (*Myotis austroriparius*), long-tailed weasel (*Mustela frenata*), and eastern spotted skunk (*Spilogale putorius*). Several bat species in addition to those recognized by the State Wildlife Plan are recognized as species of concern throughout the southeast and may be found in the habitats of the refuge. Those include the Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), Seminole bat (*Lasiurus seminolus*), and northern yellow bat (*Lasiurus intermedius*).

Strategies:

- Work with partners to conduct bat and small mammal occurrence surveys as feasible, in order to assess occupancy and use of the refuge by priority species.
- Maintain a diverse and productive bottomland hardwood habitat complex and open upland pine community.
- In bottomland hardwood habitats, incorporate retention of large trees with large cavities and cypress and tupelo in bottomland hardwood forest management within prescriptions designed to address more comprehensive goals of developing appropriate forest composition and structure. Manage to ensure future retention of these species on the refuge. Similarly, retain and manage for large trees with large cavities, regardless of species. These characteristics will address roost needs of bottomland hardwood dwelling, cavity roosting bat species such as southeastern myotis and Rafinesque's big-eared bat.
- In pine and mixed pine/hardwood habitats, management that emphasizes mature stands which undergo thinning, midstory removal, and burning may prove beneficial for multiple bat species. Retention of snags with loose bark and crevices may also be beneficial for multiple crevice roosting bat species, including resident big brown (*Eptesicus fuscus*), evening, (*Nycticeius humeralis*), Seminole, and red bats (*Lasiurus borealis*) and should be incorporated in management as reasonable.
- Refuge structures/facilities planned for closure or removal should be inventoried for use as bat roost sites before closure/removal. If bats are found using such a structure, coordinate with state and/or Service experts to assess the type of use and give a recommendation for action. Depending on the type and extent of use, site-specific recommendations might include simply clearing structures of roosting bats before acting, retention of the structure as a wildlife resource, or replacement of the structure with an alternate artificial roost site.

Objective A-9. Reptiles and amphibians: Conduct a baseline reptile and amphibian survey within 10 years in coordination with partners (e.g., LDWF, MDFW, universities, and others), with special emphasis on pine habitats where many priority species of conservation concern may be found [e.g., black pine snake (*Pituophis melanoleucus lodingi*), and eastern diamond-backed rattlesnake (*Crotalus adamanteus*)].

Discussion: The floodplain, riverine, slough, and upland mixed pine and hardwood forests of the refuge are suitable for numerous species of reptiles and amphibians. Multiple species of snakes, lizards, frogs, toads, salamanders, and turtles occupy the refuge. Commonly seen species include American alligator (*Alligator mississippiensis*), red-eared slider (*Chrysemys scripta*), water moccasin (*Agkistrodon piscivorus*), eastern mud snake (*Farancia abacura*), five-lined skink (E*umeces fasciatus*), bullfrog (*Rana catesbeiana*), and southern leopard frog, (*Rana sphenocephala*). No herpetological surveys have been conducted to date on refuge lands.

In addition to the many common species, the refuge potentially serves as habitat for a great number of reptiles and amphibians of conservation concern. Of most significant note are those listed as threatened under the Endangered Species Act, including the gopher tortoise and ringed map turtle. Several other priority species recognized by the State of Louisiana (Wildlife Action Plan 2005) for the bottomland hardwood forest, cypress-tupelo-blackgum swamp, and eastern upland longleaf pine forest habitats may inhabit refuge lands. These include southern dusky salamander (*Desmognathus auriculatus*), Louisiana slimy salamander (*Plethodon kisatchie*), Strecker's chorus frog (*Pseudacris streckeri*), eastern spadefoot (*Scaphiopus holbrooki*), southern crawfish frog (*Rana areolata*), oak toad (*Bufo quercicus*), alligator snapping turtle (*Macroclemys temminckii*), eastern slender glass lizard (Ophisaurus attenuatus), eastern glass lizard (*Ophisaurus ventralis*), northern scarlet snake (*Cemophora coccinea*), mole kingsnake (*Lampropeltis calligaster*), scarlet kingsnake (*Lampropeltis triangulum*), black pine snake (*Pituophis melanoleucus*), and eastern diamond-backed rattlesnake *(Crotalus adamanteus*). The black pine snake, which might inhabit the pine areas of the refuge, is listed as a Service candidate species.

With the great variety of reptile and amphibian species, it is challenging to address all species with similar recommendations. However, management for species richness within selected habitat cover types can provide benefits for many varied species in this group. Many reptile and amphibian species use multiple habitats for foraging, reproduction, hibernation, or dispersal and require connectivity between habitat types (e.g., riverine and gravel bars, bottomland hardwood forest, cypress brake and floodplain forest, floodplain forest, and adjacent uplands) in order to meet distinct life-cycle habitat needs. Connectivity throughout forested habitats also allows for important migration and dispersal corridors. Construction of barriers to aquatic and terrestrial wildlife such as improved roads should be discouraged and other alternatives such as road underpasses should be sought.

Strategies:

- Maintain connectivity between habitats to allow reptiles and amphibians unrestricted movement between habitats needed for complete life cycles (e.g., turtle access from swamp to upland sites appropriate for nesting).
- Maintain or restore the natural hydrologic system and community structure, minimizing conversion of habitat types and hydrologic function as possible within legislative management constraints. Conversion of loblolly pine to longleaf pine is encouraged when possible, as restoration of a native habitat type.

- Continue to work with partners (LDWF, MDWFP, universities) to conduct a baseline reptile and amphibian survey, with special emphasis on a reptile and amphibian survey in pine habitats where many priority species of conservation concern may be found (e.g., black pine snake and eastern diamond-backed rattlesnake).
- Control invasive plants and animals, particularly aggressive control of feral hogs, with an objective of minimizing the population on the refuge.
- Control incidental and illegal take of reptiles or amphibians. Refuge staff should be alert to potential illegal commercial collection of reptile species for food or pet trades. Although turtle harvest is not specifically allowed on the refuge, staff should be aware of and the public should be educated that unattended/baited fishing lines can cause incidental take of aquatic turtles; such incidental take would be particularly damaging to the alligator snapping turtle, which is a long-lived and slow-growing species. The removal of these native species should be discouraged and the general public should be educated about the ecological values of traditionally feared species, particularly venomous snakes.

Objective A-10. Fisheries: Determine fish species occurrence, relative abundance, and distribution, and analyze data to inform management decisions.

Strategies:

- Implement fish surveys and continue gulf sturgeon projects in the Bogue Chitto and Pearl Rivers to monitor movement, behavior, and habitat-use patterns below and above the Bogue Chitto Sill.
- Maintain appropriate buffer zones along rivers and waterways during forest habitat improvement and harvest operations.
- Work with other agencies and our Ecological Services Office to identify and quantify effects from proposed upstream projects such as dams, channelization, dredging, etc., on refuge trust resources and habitats.
- Work with other agencies and Ecological Services to identify and quantify effects from sand and gravel mining operations on trust resources and habitats from increased siltation and water quality degradation from suspended sediments.
- Work with the Baton Rouge Fisheries Resource Office to identify and inventory fish species occurring within refuge boundaries.

Objective A-11. Mussels: Determine if species of concern or invasive species occur by conducting periodic comprehensive mussel surveys in coordination with partners.

Strategy:

- Conduct strict evaluation of open water and sandy beaches for appropriateness of habitation and use by mussels.

Objective A-12: Species of special concern – gopher tortoise, ringed map turtle, gulf sturgeon, Alabama heelsplitter, Louisiana quillwort, Louisiana black bear, and ivory-billed woodpeckers: Coordinate with LDWF, MDWFP, and our Endangered Species Field Offices to monitor occurrence of species of special concern. Support recovery of species of special concern following recommendations and guidelines established in Service recovery plans and/or other Service guidelines as they are developed.

Discussion:

Gopher Tortoise

The gopher tortoise is a long-lived, native burrowing species of open, fire-maintained longleaf pine ecosystems. Historically, typical gopher tortoise habitat consisted of open, frequently burned longleaf pine or longleaf pine/scrub oak upland sand flatwoods on moderately well-drained to xeric soils. The decline of the gopher tortoise has been linked to the decline of these open, fire-maintained and longleaf pine forests. Other causes for decline have included habitat fragmentation, invasion of fire ants (*Solenopsis invicta*), predation, and human-caused mortality resulting from roads and heavy equipment associated with industrial forest management and site preparation. Vegetation management techniques, such as prescribed fire, midstory control, and intermediate forest stand thinning, are recommended in gopher tortoise conservation areas to reduce stand density. Protective buffers, in which mechanized timber harvest and site preparation are restricted or limited should be retained around burrows. Removal of trees or shrubs in highly active burrowing areas should be done with low disturbance logging.

Bogue Chitto NWR is within the area occupied by the western population of the gopher tortoise. This population lies west of the Tombigbee and Mobile Rivers in Alabama, through south Mississippi and includes extreme southeastern Louisiana. This western population of the tortoise is federally listed as threatened. The primary threats to the species on listing were considered to be habitat alteration/conversion, and illegal take. More recently, the primary threats continue to be considered habitat conversion, highly intensive forest management practices, affects of habitat fragmentation, fire ants, and predation.

Ringed map Turtle

The ringed map turtle is a small map turtle (4 to7 inches) which is endemic to the Pearl River system in Louisiana and Mississippi. The ringed map turtle typically utilizes riverine habitat with a moderate current and numerous basking logs, and requires sand and gravel bars for nesting. The species feeds primarily on aquatic snails and other mollusks as well as aquatic insects. Basking logs open to many hours of sunlight daily appear to be an important habitat component and basking is a characteristic behavior of this species. Map turtles are habitual baskers and rely on basking sites and branches for temperature regulation, feeding, and nocturnal resting sites. They appear to prefer basking sites which are partially submerged in areas of deepest water and swiftest current. Good water quality, which is necessary for production of snails and mollusks, is also important for turtle productivity.

The species was listed as federally threatened in 1988. At that time, evidence suggested that the species was restricted to the main channels of the Pearl and Bogue Chitto Rivers of Mississippi and Louisiana, and while abundant at some locales was almost extirpated from other river reaches. The ringed map turtle has been threatened by habitat modification for flood control and navigation, which contribute to downstream river sedimentation, turbidity and siltation affecting food resources and removal of habitat components including logs and river bars. Commercial collecting for the pet trade and water quality degradation are also threats to the ringed map turtle. Given the endemic status of the turtle and the compounding threats, the effects of any contributions of Bogue Chitto NWR to the conservation and improvement of habitat for the ringed map turtle may be significant.

Gulf Sturgeon

The Service's Baton Rouge Fish and Wildlife Conservation Office has on-going gulf sturgeon projects in the Bogue Chitto and Pearl Rivers to monitor movement, behavior, and habitat use patterns below and above the Bogue Chitto Sill. This requires transporting fish over the impeding structure as well. At flood stage, spawning sturgeon could pass over the sill, or perhaps find their way around the barrier through the flooded marsh. However, fish surveys over the last several decades by the Service and LDWF confirm that sturgeon rarely reach the upper river. Gravel bars are common in the critical habitat above the sill, and likely provided suitable habitat for spawning sturgeon in the past. The Gulf Sturgeon Recovery/Management Plan calls for action to be taken on structures, including low-head dams that are impeding migration or preventing access to critical sturgeon habitat. There have been several proposals to remove or mitigate the Bogue Chitto Sill and there is an associated feasibility study that explored impacts. However, little is known about the spawning habits in Louisiana's rivers. On-going and future involvement will assist in implementing recovery tasks outlined in the recovery plan.

Alabama Heelsplitter

The Alabama heelsplitter, which is referred to as the inflated heelsplitter in the species recovery plan (USFWS 1993b), is a large (sometimes reaching over 140 mm in length) freshwater mussel with a brown to black shell with green rays in young individuals (USFWS 1993b). Like other freshwater mussels, the Alabama heelsplitter feeds by filtering food particles from the water column. The Alabama heelsplitter was known historically from the Amite and Tangipahoa Rivers, Louisiana; the Pearl River, Mississippi; and the Tombigbee, Black Warrior, Alabama, and Coosa Rivers, Alabama (Hurd 1974; Stern 1976; Hartfield 1988.). Historic habitat for the Alabama heelsplitter has been impacted by channel modification for navigation and flood control, impoundment, pollution, and gravel dredging.

It is believed that more than 50 miles of available habitat remains for the species (NatureServe 2003); however, exact population numbers are unknown (USFWS 1993b, 2003). The USACE recently discovered 63 live animals during their surveys of the Tombigbee and Black Warrior Rivers (Miller 1995). In addition, George et al. (1996) reported that two fresh dead specimens were found in two separate locations in the West Pearl River drainage, the first such records since 1911. Recent surveys indicated that the species remains in the lower Amite River, where some small individuals were collected indicating successful recruitment (Brown and Banks 2001). Given the status and compounding threats of this species, the effects of any contributions of Bogue Chitto NWR to the conservation and improvement of habitat for the Alabama heelsplitter may be significant.

Louisiana Quillwort

The Louisiana quillwort *(Isoetes louisianensis)* is listed as endangered without critical habitat. It is currently known to occur in St. Tammany and Washington Parishes in southeastern Louisiana and in Jackson and Perry Counties in southern Mississippi. In Louisiana, all known sites are on private land; in Mississippi, all known sites occur on National Forest land. It appears to be restricted to sandy soils and gravel bars in or near shallow blackwater streams and overflow channels in riparian woodland/bayhead forests of pine flatwoods and upland longleaf pine. The Louisiana quillwort is extremely vulnerable because of its small population size and habitat loss from actions which affect the hydrology or stability of the streams it inhabits. The Louisiana quillwort has been known to occur in the Bogue Chitto Watershed.

Louisiana Black Bear

Black bear habitat in the Mississippi Alluvial Valley is fragmented, with >80 percent of the bottomland hardwood habitat having been lost to land clearing for agriculture. As a consequence, bear populations in the region exist in isolated remnants of wooded habitat. In 1992, the Service granted the Louisiana black bear threatened status under the ESA. Louisiana black bears are found in three main populations located at Tensas NWR, the upper Atchafalaya River, and along the coasts of southeast Louisiana and southwest Mississippi.

In the mid 1980s, a possible resident black bear was documented in the Wastehouse Bayou region of the Pearl River WMA. Currently, there is no evidence to suggest that Louisiana black bears are resident in the vicinity of Bogue Chitto NWR. Individual bears have visited the area in the last 10 years; however, those bears have most likely been transient or dispersing males. The habitats of Bogue Chitto NWR are likely suitable for bear and in the future, as the Louisiana black bear populations of Louisiana recover, dispersal and expansion to this portion of Louisiana might be anticipated. Bogue Chitto NWR can therefore contribute to recovery of this species by management of forested habitats in a manner which will be beneficial to black bears should they visit or colonize the area.

Ivory-Billed Woodpecker

Bogue Chitto NWR is within the historical range of the ivory-billed woodpecker (*Campephilus principalis*), though there are no confirmed reports of this species within or nearby this area. Nevertheless, a detailed sighting did occur on Pearl River Wildlife Management Area in 1999 adjacent to the refuge, and there have been more recent reports from this same area during the present decade (though nothing near the detail of the 1999 report, including a couple of inconclusive videos that were more recently taken). Despite extensive follow-up searches by universities, ornithologists, and wildlife biologists to collect evidence, none was found to confirm the reports. Presence of the species on or around the refuge seems unlikely due to the historical degradation of suitable forest habitat during the mid-1900s, and the more recent reduction of standing dead and dying trees blown over during Hurricane Katrina. However, habitat conditions in this area could support the species, if it is in fact present. This could be done through a combination of passive and active forest management over the next 20-30 years.

With these points in mind, current forest management actions for other priority species of wildlife (e.g., bears, bats, songbirds, and waterfowl) should overall parallel the potential habitat requirements for the ivory-billed woodpecker. Special considerations would include retention of the largest trees, especially those with large cavities (which are important also for potentially denning bears, roosting bats, and nesting wood ducks), and retention of all recently dead (within the last 3 years) or dying trees (which are also important for a whole host of invertebrate and vertebrate species) that are not in conflict with other refuge obligations.

For bottomland hardwoods, it is important to remember that recently dead and dying trees are exactly the types of trees that support the beetle and other invertebrate larvae considered most important for foraging ivory-billed woodpeckers, as this species specializes on foraging on recently dead and dying wood. Retention of these recently dead and dying trees should be considered as an important conservation measure, in case the species actually does occur in the vicinity of the refuge. Even if the ivory-billed woodpecker does not persist, many other priority species will benefit from standing dead and dying trees.

Strategies:

Gopher Tortoise

- Continue to use both fire and forest management tools to create optimal conditions (given site constraints) for gopher tortoise.
- Continue to monitor and map burrows on the refuge.
- Continue to use both fire and forest management tools to create optimal conditions (given site constraints) for the gopher tortoise. This will include prescribed short-rotation growing season fires to establish a productive grass and herbaceous understory and prescribed thinning to keep basal area within recommended levels.
- Desired conditions for gopher tortoise are currently recognized to be pine or pine-scrub oak dominated stands including no more than an average pine basal area (BA) of 70 sq feet/acre, no more than 70 percent coverage of overstory and midstory woody plants, no more than 15 percent shrub cover, and 25 percent or greater herbaceous cover (grasses and forbs) per stand or unit.
- It is recommended that all active and inactive gopher tortoise burrows be marked and protected by a 25-foot radius buffer during timber thinning or other heavy equipment operations (e.g., firebreak maintenance).
- Restrict heavy machinery operations to the gopher tortoise's dormant season (i.e., October to April) when tortoises are least likely to be above ground and away from their burrows. If that is not possible, then monitors will be used to ensure that tortoises are not struck by heavy equipment or falling trees. Firefighting operations during emergency situations are excluded from this provision.
- Inventory and map active gopher tortoise burrows at least once per 5-year period. Uniquely identify burrows and record using a geographic information system (GIS). Changes in burrow numbers, locations, and activity should be assessed and documented.
- Use GIS tools to assess gopher tortoise potential. Map habitat and soil types to assess pine areas with greatest potential for productive habitat. Assess potential for movement and exchange between occupied areas by overlaying burrow locations and habitat types in reference to expected tortoise behavior.
- Control invasive plants and animals which may negatively affect habitat quality and survival of individual gopher tortoises (e.g., cogon grass, fire ants, feral hogs).

Ringed Map Turtle:

- Coordinate with partners to promote surveys for the ringed map turtle on refuge waterways.
- Promote down woody debris in refuge waterways, particularly where it is suspended in locations over deep waters with a moderate current and at least several hours of exposure to sunshine daily.
- Currently (post-Hurricane Katrina), such suspended logs over the river are abundant. However, as time goes on more attention may be required to make sure that this transient habitat component is available.
- Protect ringed map turtle (and multiple other native species) habitat quality by participating in the USACE public engineering project planning process and representing the refuge lands in assessment of potential project effects.
- Seek to prevent potential negative ecological effects of projects in the planning stage and maintain involvement through implementation and mitigation stages.

- In particular, on-site or upstream projects such as flood control, navigation improvements, sand or gravel removal, and waste or waste-water disposal may significantly affect conditions for the ringed map turtle and the food resources on which it depends.

Gulf Sturgeon:

- Work in coordination with Baton Rouge Fish and Wildlife Conservation Office and continue gulf sturgeon projects in the Bogue Chitto and Pearl Rivers to monitor movement, behavior, and habitat-use patterns below and above the Bogue Chitto Sill.
- Partner to develop fish passageways for the sturgeon where needed.

Alabama Heelsplitter and Louisiana Quillwort:

- Work in coordination with partners to help achieve recovery plan goals for each of these species.

Louisiana black bear:

- Continue forest management to create site appropriate forest community and structure, with components including hard and soft mast producing species and a diverse structure. Forest management should emphasize retention of large trees and trees with large cavities, within prescriptions designed to address more comprehensive goals of developing appropriate forest composition and structure.
- Areas which are secure from flooding, have dense understory cover, and are relatively inaccessible by people during winter and early spring should be managed to retain these characteristics, to provide opportunity for use by bears for ground nesting or den sites.
- In recognition of the ongoing potential for visitation to refuge lands by transient bears and the likelihood for these to increase with time (as Louisiana populations increase and disperse), outreach and education efforts should incorporate bear-safe messages including prevention of nuisance bear activity (e.g., clean camps), and bear biology/behavior.

Ivory-billed woodpecker

- Conduct a vegetation survey to quantify occurrence of forested wetlands that match desired forest conditions as defined in the Lower Mississippi Valley Joint Venture Forest Resource Conservation Working Group (2007).
- Restore historic range of variation in forest structure, following the requirements of songbirds, bats, and other priority species (i.e., no special focus on IBWO is necessary at the present time).

Objective A-13. Nuisance animals: Reduce population levels of feral hogs with increased harvest by hunters, trapping, and any other available methods to control hog populations within 3 years of completion of the CCP.

Discussion: Feral hogs have been and will continue to be a problem on the refuge. Due to the massive increase in food and cover post Hurricane Katrina, feral hog numbers are expected to greatly expand. Hogs are very prolific reproducers, which can cause managers great concern. High hog numbers will not only compete with native wildlife for food but also predate on other species and degrade the overall habitat quality. An increased hog control effort is needed. This can most

effectively be done through increased public hunting and/or trapping opportunities, but can also be done to a lesser degree by refuge staff, especially during high water events. Thereby, warranting increased awareness and attention to the control of feral hog populations.

Strategies:

- Continue harvest by recreational hunters during the refuge deer hunts.
- Continue, and if necessary expand, take by hunters using specially trained chase and capture dogs. Hunting has proven to be the most effective means of control on the refuge.
- Investigate use of traps and permitted trappers for site-specific hog removal near public use areas, such as environmental education zones, prime wood duck hunting areas, or other sensitive habitat areas.

HABITAT MANAGEMENT

Goal B. Habitat Management: Protect, manage, enhance, and where appropriate, restore suitable habitat for the conservation of migratory birds, resident wildlife, fish, and native plants, including all federal and state threatened and endangered species endemic to the Pearl River Basin.

Discussion: The abundance and quality of wildlife habitat within forests often depends upon the time, distribution, intensity, and frequency of disturbance. Disturbances in the southeast often include tornadoes, hurricanes, floods, fires, silvicultural treatments, and others. Due to the effects of Hurricane Katrina on Bogue Chitto NWR, active forest management through silvicultural treatments such as thinnings, group selection, native species restoration and regeneration, and patch cuts may be limited in the short-term (next 1-5 years). However, through natural succession and the dynamics of bottomland hardwood forests, these stands will continue to change and reach closed canopy conditions. Once this occurs, the majority of the refuge forests will be in a uniform condition. The closed canopy conditions will result in generally poor horizontal structure, thus limiting habitat diversity. Early successional habitat in these areas will also be limited. Furthermore, the understory is typically deficient in forage and soft mast, as well as cover, which are important elements for the threatened Louisiana black bear and numerous other mammals, particularly white-tailed deer. Vertical structure for wildlife species that utilize the understory and midstory layers, including many neotropical migratory bird species, is generally poor also in the closed canopy conditions. Therefore, sustaining periodic disturbances through silvicultural treatments in the future will be essential in creating and maintaining favorable habitat conditions that are beneficial to priority wildlife species on Bogue Chitto NWR. Forest management is the single most important tool for the refuge to improve habitat quality for wildlife species.

Objective B-1. Bottomland hardwood forest: Revise and implement a habitat management plan by 2012 to guide future forest management activities on Bogue Chitto NWR and to develop desired habitat conditions, including horizontal and structural diversity.

Discussion: Desired forest conditions have been defined within *Restoration, Management and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat* (LMVJV 2007). Recommendations suggest that forests within suitable landscapes should provide vertical and horizontal structural diversity in terms of tree species, size and age classes, and growth forms (e.g., trees, shrubs, and vines) within a heterogeneous forest canopy with gaps and complex layering. Additionally, the report identified landscape and stand level parameters intended to guide and facilitate management actions that result in desired forest conditions beneficial to priority wildlife species. These parameters reflect a combination of published reports and the collective knowledge of experienced managers, thereby representing what we believe to be realistic,

long-term sustainable forest conditions. Parameters are represented as a range of values, thereby providing flexibility to modify prescriptions to meet overriding habitat needs within local landscapes and among different forest types.

In general, the long-term objective is to create, improve, and maintain forest habitat for priority species by developing a structurally diverse forest. Canopy gaps increase structural and species diversity in both the overstory and understory. Therefore, general guidelines for forest management activities should include a combination of thinning, group selection (<1 acre), and patches from 1-3 acres in size. This strategy is intended to: (1) Release residual trees for development of canopies and dominant trees that will potentially become emergent trees; (2) encourage development of understory and midstory layers; and (3) increase the amount of light penetration to the forest floor in areas large enough to support regeneration of shade-intolerant species.

Desired Forest Conditions (stand-level) within Bottomland Hardwood Forests

Primary Management Factors	Desired stand structure
Overstory canopy cover	60 – 70 %
Midstory cover	25 – 40 %
Basal Area	60 – 70 ft^2/acre
Tree Stocking	60 – 70 %
Secondary Management Factors	**Desired stand structure**
Dominant trees	> 2/acre
Understory cover	25 – 40 %
Regeneration	30 – 40 % of area
Coarse woody debris (>10" diameter)	$\geq$ 200 ft^3/acre
Small cavities (< 10" diameter)	**
Den trees/large cavities (> 10" diam.)	**
Standing dead and/or stressed trees	**

** See table & definitions in *Restoration, Management and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat (LMVJV 2007)*.

Strategies:

- Write and implement the habitat management plan to focus on "Desired Forest Conditions" given in the LMVJV Forest Resources Conservation Working Group publication titled "Restoration, Management and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat."
- Designate the area between Holmes Bayou (south) to Middle Bogue Chitto (north), and West Pearl River (west) to East Pearl River (east) as a "passive management" area in the HMP. This area would be approximately 65,000 acres and would be well suited to serve as a natural area. Designating the area as passive management in the FHMP would provide the refuge with flexibility to conduct management if needed, or for changes to be made at the refuge level.

- Implement a Continuous Forest Inventory (CFI) system. This would be a permanent plot system to collect initial inventory data and also monitor long-term forest changes. Monitoring should occur on 5-10 year intervals. Refer to LMVJV Forest Resources Conservation Working Group recommendations for vegetation monitoring for guidance.
- Coordinate with other foresters and biologists to assist in implementation efforts. It is possible for teams to be formed to accomplish the initial measurements.

Objective B-2. Upland pine forest management: Revise and implement a habitat management plan by 2012, to guide future forest management activities to develop desired habitat conditions. Design and implement a forest inventorying and monitoring program. Implement prescribed fire and silvicultural treatments to enhance forest structure and wildlife habitat.

Discussion: Habitat suitability in managed stands is affected by site preparation techniques, tree planting density, stocking, soils, and prescribed fire history. Habitat recommendations to maintain upland pine in open stands commonly involve timber thinning to maintain a pine basal area of no more than 50 to 70 feet^2/acre, with a canopy cover no greater than 60 to 80 percent, and frequent prescribed growing season fire (1- to 3-year intervals) to control encroaching hardwoods and shrubs

On those transitional sites between the floodplain and the pine-dominated ridges, not otherwise suitable for gopher tortoise, no further thinning or frequent prescribed burning is recommended. These areas are presently dominated by denser stocking of loblolly pine (*Pinus taeda*). This would encourage more unique shrub understory conditions.

Strategies:

- Restore longleaf pine to uplands to maintain gopher tortoise habitat.
- Continue to manage the upland southern pine forests through thinnings, prescribed burning, and native species restoration and regeneration as needed.
- Continue to use selective thinning and less frequent prescribed burning in transition areas (areas between upland and bottomland hardwood forests), which are considered to be “unique habitat” on the refuge.
- For future silvicultural treatments in bottomland hardwood forests, follow General Forest Management Guidelines produced by the LMVJV Forest Resources Conservation Working Group. These guidelines will generally reflect current forest management activities that create multi-canopied conditions through a combination of thinning, group selection, and patch cuts (1 to 3 acres) to increase production of herbaceous vegetation on the ground layer, and improve understory conditions that provide food and cover for priority wildlife species.
- Develop a fire and forest habitat monitoring system to include photo monitoring.

Objective B-3. Exotic invasive plant species: Actively search for and control/eliminate (to a level such that they have a negligible impact on native habitats) where feasible, exotic, invasive, and nuisance species, such as Chinese tallow, cogon grass, privet, Japanese climbing fern (*Lygodium japonicum*), and giant salvinia (*Salvinia biloba*) on the refuge annually. Integrate exotic plant removal into all refuge resource management programs to annually treat 30 percent of the refuge to control Chinese tallow, cogon grass, mimosa, privet, Japanese climbing fern, chinaberry, giant salvinia, and other exotic invasive plants on the refuge through mechanical, chemical, or burning control methods.

Discussion: Invasive and exotic plants have the potential for rapid population growth. They typically have little native wildlife value. They have also been shown to negatively affect forest regeneration and can severely affect other plants and habitats. Known invasive plants on the refuge consist of Chinese tallow, cogon grass, mimosa (*Albizia julibrissin*), Chinese privet (*Ligustrum sinense*), Japanese climbing fern, and giant salvinia. Control measures must be implemented aggressively and consistently to keep their numbers in check. The refuge should control and eliminate where feasible, exotic, invasive, and nuisance species on the refuge to maintain and enhance the biological integrity of the refuge's native bottomland hardwood habitats.

The main vector for proliferation of salvinia is by boat trailer. Cogon grass is spread by mowing equipment used for right-of-way maintenance. Chinese tallow disburses mostly via flooding and by wildlife. Mimosa and privet spread mostly near areas where they were planted or by wildlife or storm events.

Integrate exotic plant removal into all refuge resource management programs to annually treat 30 percent of the refuge to control Chinese tallow, cogon grass, mimosa, privet, Japanese climbing fern, chinaberry, giant salvinia, and other exotic invasive plants on the refuge through mechanical, chemical, or burning control methods.

Strategies:

- Develop a GIS database of all exotic plants found and treated on the refuge. Map and quantify invasive and undesirable plant occurrences.
- Hire forestry technician to develop a habitat management plan that addresses control of exotic plants.
- Seek advanced ways to control exotic plants through specialized herbicides, through timber sale contracts, or through grants and partnerships.
- Implement an aggressive control program to reduce and eliminate invasive exotic vegetation with an emphasis on Chinese tallow and cogon grass.
- Pre-treat all timber harvest areas for exotic plants. Follow up with post treatment review and possible re-treatment 2-12 years following forest management cuttings.
- Utilize timber receipts to pursue chemical control of exotic plants on the refuge.
- Coordinate with adjacent landowners and neighboring agencies to identify and treat high access areas to the refuge and neighboring lands such as on roads, rights-of-way, levees, skid rows, and logging roads.
- Signs should be placed at boat ramps to encourage boaters to inspect trailers for exotic plants before backing them into the water.
- Refuge water bodies should be periodically checked for presence of any exotic species. If exotics are identified and serious detrimental effects are expected, a method of control should be taken immediately.
- Develop and implement an integrated pest management program (IPM) to control invasive and undesirable plants. Appropriate IPM strategies will be used to annually treat 30 percent of the refuge to control Chinese tallow, cogon grass, mimosa, privet, Japanese climbing fern, Chinaberry, giant salvinia, and other exotic invasive plants on the refuge through mechanical, chemical, or burning control methods.

RESOURCE PROTECTION

Goal C. Resource Protection: Identify, conserve, and protect natural and cultural resources through partnerships, land protection programs, and law enforcement. Ensure a safe and secure environment for the visiting public and personnel.

Discussion: Inherent in ensuring that future generations can enjoy the refuge is protection of its resources. Cultural resources include archaeological resources, historic and architectural structures, historic landscapes, traditional cultural properties, and areas or sites of cultural and/or religious significance to Native Americans (614 FW 1, Policy, Responsibilities and Definitions). No comprehensive survey of refuge cultural resources has been completed. Enforcement of laws pertaining to wildlife and other natural resources is fundamental and necessary, especially in areas of high public use. Safety and protection of the people using the refuge is a priority. Also considered in this goal is protection of the resources by acquisition of land included in the acquisition boundary recognized in the initiating process of refuge establishment, and ensuring minimum negative effects to the refuge from oil and gas operations.

Objective C-1. Refuge land protection: Pursue active acquisition of land to protect habitat within the Pearl River Basin.

Discussion: The refuge acquisition boundary is 40,000 acres. Certain critical inholdings are still needed to meet habitat and public use objectives. These include foraging and sanctuary habitats for waterfowl and bird conservation areas, forested habitat objectives, as well as providing access to visitors, reducing off-refuge effects, and protecting unique habitats. Expansion will emphasize those tracts that have the greatest potential to enhance ecological integrity.

Some of the bottomland hardwood habitats in most danger of being converted to non-forested use are along the east side of the refuge in Mississippi. Many of these lands are being converted into gravel pits or other agricultural uses. Pine lands and pine/hardwood lands on the east side of the refuge are critical zones of influence on the refuge. They provide important habitat that supports the refuge's wildlife in times of high water. These upland areas are in danger of housing development. Bringing these bottomlands and uplands under conservation management either through acquisition or perpetual conservation easements will ensure the continued biological integrity, diversity, and ecological health of the refuge.

Strategies:

- Annually contact landowners within the 3,498 acres of the remaining approved acquisition boundary to seek their willingness to sell to the Federal Government and identify those lands for inclusion in Land and Water or Migratory Bird fund requests.
- Prioritize the purchase of inholdings to lands of high-quality wildlife habitat of lands with threat of removal from forested or wetland condition.
- If lands cannot be acquired, attempt to obtain first right of refusal on each tract.
- If tracts cannot be acquired, encourage landowners to participate in Partners for Wildlife Programs.
- Work with the Lower Mississippi Valley Joint Venture, The Conservation Fund, The Nature Conservancy, and others to identify high-priority lands for acquisition.
- Identify areas that can be mitigated through the USACE as restoration sites and donated to the refuge with operating funds.

- Conduct a boundary expansion to acquire an additional 4,000 to 10,000 acres of bottomland hardwood and the associated upland ridge and slope habitat along the outer boundaries of the refuge.

Objective C-2. Private land protection: Identify priority lands within the Pearl River Basin and work with partners and landowners to help enhance private land conservation within the watershed.

Discussion: The refuge should use a preliminary list of resource issues as a starting point for conversations with local conservation interests. Because basically all the land surrounding the refuge is in private ownership, developing a good cooperative working relationship with the Natural Resources Conservation Service (NRCS) and the Soil and Water Conservation Districts will be very important in order to address watershed-scale resource issues. The Friends group and the Ecological Services' private lands biologist can potentially play a big role in helping to identify resource issues and generate interest among private landowners. This interest could become a catalyst that would help get the other state and federal resource conservation agencies involved with watershed resource planning efforts.

There are several existing NRCS programs that are already addressing resource issues in the watershed. The refuge should coordinate and assist NRCS with these programs to the extent possible. The Wetland Reserve Program (WRP) is a good tool to not only restore wetlands, but to help reduce sedimentation and can reduce forest fragmentation. The refuge should work with NRCS in an attempt to target WRP around the refuge acquisition boundary. This would, in effect, broaden perpetual wetland restoration efforts beyond the refuge acquisition boundary. The Conservation Reserve Program is available to take highly erodible land out of crop production and help reduce sedimentation. Other programs, such as Environmental Quality Incentives Program and Wildlife Habitat Incentives Program are also available through NRCS to help private landowners with soil, water, and wildlife habitat assistance. There is a need for an extensive GIS database to identify and incorporate various land use types and forest stand conditions on the refuge and the immediate surrounding area. Such a database should also incorporate private land incentive projects, contaminants, water quality and hydrology, and wildlife surveys. This will aid in the formulation of refuge management plans and will also facilitate forest management.

Strategies:

- The private lands biologist will seek out interested landowners in areas of high priority for reforestation.
- Work through a variety of programs to provide technical and financial assistance necessary to provide additional migratory bird habitat to benefit refuge objectives, specifically wintering waterfowl habitat adjacent to the refuge.
- Work with the NRCS, FSA, private landowners, and other partners to designate conservation priority areas to provide incentives that will encourage landowners to implement practices that will benefit trust resources, refuge purposes, and ecosystem goals.
- Develop cooperative invasive species control projects. Communicate and meet a minimum of once a year with partners to identify new invaders, grant opportunities, and cooperation possibilities.

Objective C-3. Water quality and quantity: Protect and enhance the natural hydrologic process and aquatic resources, where feasible, associated with the refuge and surrounding landscape in coordination with partners.

Discussion: The Pearl River/Bogue Chitto River system represents a relatively unaltered system with portions of the river system listed as Scenic Rivers. However, USACE projects (Pearl River Canal and Walkiah Bluff Projects) have resulted in the creation of several water control structures (e.g., locks, dams, and sills) that impact river flow regimes and block passage of gulf sturgeon, mussels, and other wildlife species. Another potential upstream project, the Two-Lakes Project in Jackson, Mississippi, proposes to create a 4,900-acre reservoir along the Pearl River to control flooding in the Jackson area, which has the potential to influence downstream flows (increase flow and velocity during periods of high water and reduce flow during low water periods) thereby impacting trust resources and habitats on the refuge. The refuge should, where possible, protect and restore the hydrologic system to protect aquatic species from human-caused impacts.

Strategies:

- Determine current water quality status.
- Maintain appropriate buffer zones along rivers and waterways during forest habitat improvement and harvest operations
- Work with other agencies and the Ecological Services Office to identify and quantify effects from proposed upstream projects such as dams, channelization, dredging, etc., to refuge trust resources and habitats.
- Work with other agencies and Ecological Services Office to identify and quantify effects from sand and gravel mining operations on trust resources and habitats from increased siltation and water quality degradation from suspended sediments.
- Identify and inventory threatened and endangered and other at-risk aquatic species occurring within refuge boundaries.

Objective C-4. Law enforcement: Provide a full-time law enforcement officer to protect and enforce refuge regulations.

Discussion: Protecting the natural resources of the refuge and ensuring the safety of its visitors are fundamental responsibilities of the Refuge System. As crime continues to increase in rural America, refuges face a larger and more complicated enforcement problem. With thousands of natural resource violations and other serious felonies (including homicides, rapes, assaults, and acts of arson) occurring on the nation's refuges every year, law enforcement is necessary to ensure the safety of visitors and prevent poaching, illegal trespassing, and on-site pollution. Bogue Chitto NWR is currently managed as collateral duty by a 5-person staff, including one law enforcement officer, also responsible for management of Big Branch Marsh and Atchafalaya NWRs and assisting with other activities in the eight refuges that make up the Southeast Louisiana NWR Complex.

Strategies:

- Review and update Law Enforcement Plan.
- Hire an additional law enforcement officer.
- Develop and work cooperatively with local, state, and other federal law enforcement agencies to supplement resource protection.
- Provide educational and outreach programs in local communities as part of a preventative law enforcement effort to encourage voluntary compliance.

Objective C-5. Contaminants - external point source and non-point source pollution: Work with partners to reduce non-point source pollution in the Pearl River Basin. Conduct contaminant studies on the Pearl River and on land prior to acquisition and give advice to the general public on contaminant issues affecting the resources.

Discussion: Additional contaminant studies using fish and invertebrates would be useful in order to evaluate habitat and water quality conditions of the river. State water divisions/agencies need to be contacted to obtain any inventory data on water quality and to encourage establishing sampling points and gauges on refuge sections of the river.

Strategies:

- Work with the NRCS, USACE, Ducks Unlimited, and others to complete a geomorphologic and hydrological evaluation of existing refuge conditions, and to examine the potential beneficial and negative effects from any proposed levee breaching, irrigation system modification or installation, or wetland construction on the refuge.
- Investigate/establish water quality baseline for the refuge. Coordinate with state to determine if sampling sites on the refuge are needed.
- Work with partners to restore the natural hydrology of the. Consider additional contaminant studies and begin more biological assessment work involving the water quality and flow conditions of the Pearl River.

Objective C-6. Cultural and historical resources: Over the 15-year life of the CCP, enforce all federal and state laws applicable to the refuge. Protect all archaeological sites on the refuge from illegal take or damage in compliance with the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, and the National Historic Preservation Act. Complete comprehensive historical and archaeological resource surveys on current refuge lands by 2015 and any additional lands acquired.

Discussion: No formal archaeological investigations have been performed on refuge lands; however, the refuge possesses a high potential for historic properties dating as far back as 12,000 years ago. Patrol by law enforcement and refuge staff is needed to prevent uncontrolled access to the refuge, disturbance to wildlife habitat, and, if discovered, cultural resources. Although none of the refuge sites covered by this CCP are known to be eligible for inclusion on the National Register of Historic Places at this time, the refuge will continue to protect any newly discovered heritage resources.

Strategies:

- Maintain records of refuge survey data for cultural and archaeological sites. Implement routine law enforcement patrols of sites to inspect for disturbances and illegal digging and/or looting
- Contact regional archaeologist prior to construction projects or significant ground disturbance and complete a request for Cultural Resource Review Form to determine appropriate steps necessary for compliance.
- Within 5 years of the date of this CCP, refuge manager or designee will take the Overview for Cultural Resources Management Requirements Course (#WLD2117) and follow up with online courses when offered.
- Within 5 years of the date of this CCP, the refuge's law enforcement officers will take the 40-hour Archaeological Resources Protection Act course.

- Ensure cultural resource management and protection strategies are integrated into refuge management plans such as Fire Management Plan, Road Maintenance Plan, etc.
- Create a cultural resources GIS layer for protecting historic and archaeological properties during ongoing and future management activities, planning, and interpretation. Maintain data as confidential per National Historic Preservation Act and Archaeological Resources Protection Act.
- Conduct follow-up archaeological testing of identified historic properties to determine their eligibility for inclusion on the National Register of Historic Places.
- Conduct a reconnaissance archaeological survey of the refuge.
- The refuge, in consultation with the RHPO and the Region's Tribal Liaison, will develop and maintain contacts with the Chitimacha, the Alabama-Coushatta, the Coushatta, the Tunica-Biloxi, the Jena Band of Choctaws, the Mississippi Band of Choctaws, and the Choctaw Nation for information on and input into the management of historic properties, historic landscapes, and biota of significance to the tribes.
- The refuge, with the assistance of the RHPO, will identify potential partnerships on archaeological and historic investigations and promote interdisciplinary research.
- The refuge will work with Native American and local communities to develop an educational program regarding their cultural heritage and history, which includes historical interpretive displays for the visitor center and kiosks, updating the refuge's brochure, and a cultural resource education kit and teacher's guide for use in primary schools.

Objective C-7. Wilderness study area: Include Holmes Island as a Wilderness Study Area, maintain its wilderness character, and within 10 years of CCP implementation, prepare a wilderness study report on whether Holmes Island should be recommended for formal designation as a unit of the National Wilderness Preservation System (NWPS).

Discussion: All lands and waters of the Refuge System outside of Alaska and not currently designated wilderness are subject to a wilderness review, the results of which are summarized in Appendix H. The purpose of the wilderness review is to identify and recommend for congressional designation Refuge System lands and waters that merit inclusion 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 warrant further study for wilderness designation. These criteria include every area of at least 5,000 contiguous roadless acres or roadless areas sufficient in size to make practicable their preservation and use in an unimpaired condition; or be a roadless island of any size. Areas meeting these criteria are considered wilderness inventory areas. Wilderness inventory areas are then further evaluated for naturalness, opportunities for solitude or primitive and unconfined recreation, and special or supplemental values. Those areas that meet these criteria are identified as wilderness study areas.

The findings of the study determine whether a wilderness study area, or portion thereof, will be recommended for designation as wilderness. Wilderness recommendations are forwarded or reported to the Director of the Fish and Wildlife Service through the Secretary of the Department of the Interior and the President to Congress in a wilderness study report. The Service inventoried refuge lands within the planning area and found one area (9,760-acre Holmes Island) that meets the eligibility criteria for a wilderness study area as defined by the Wilderness Act.
Holmes Island was intensively logged but the last logging operations took place close to 100 years ago. The island has recovered from past logging activity and now exhibits century-old bottomland hardwood forests and forested wetlands. Although Hurricane Katrina altered the vegetation structure

by removing up to 60 percent of the trees, the event was natural and the area should recover to a bottomland hardwood forest over time. The island is one of the most remote areas on the refuge and provides excellent opportunities for solitude or primitive and unconfined types of wildlife-dependent recreation (Figure 10). Continuing to manage Holmes Island as wilderness is in keeping with the establishing purposes of Bogue Chitto NWR and management will be able to effectively maintain the island's wilderness character.

Strategies:

- Continue to maintain the wilderness character of Holmes Island while it is a wildlife study area by generally prohibiting motorized such as generators (by the Service, as well as the public) and provide it as a passively managed area. Motorized access and use of motorized equipment within the wilderness study area may be authorized by the refuge manager only if such access and use constitute the minimum tool necessary to accomplish wilderness objectives. Motorized boat access will only be allowed for hunting, fishing, wildlife observation, wildlife photography, environmental education and environmental interpretation.
- Attempt to use primitive tools for work within the wilderness study area where possible.
- Notify the public that Holmes Island is now a wilderness study area and specific reduced activities will be permitted pending a final decision on wilderness designation.
- Consult expertise within the Service's Regional Office in the preparation of a wilderness study report for submittal to the Director of the Fish and Wildlife Service and subsequently to the President and Congress.

VISITOR SERVICES

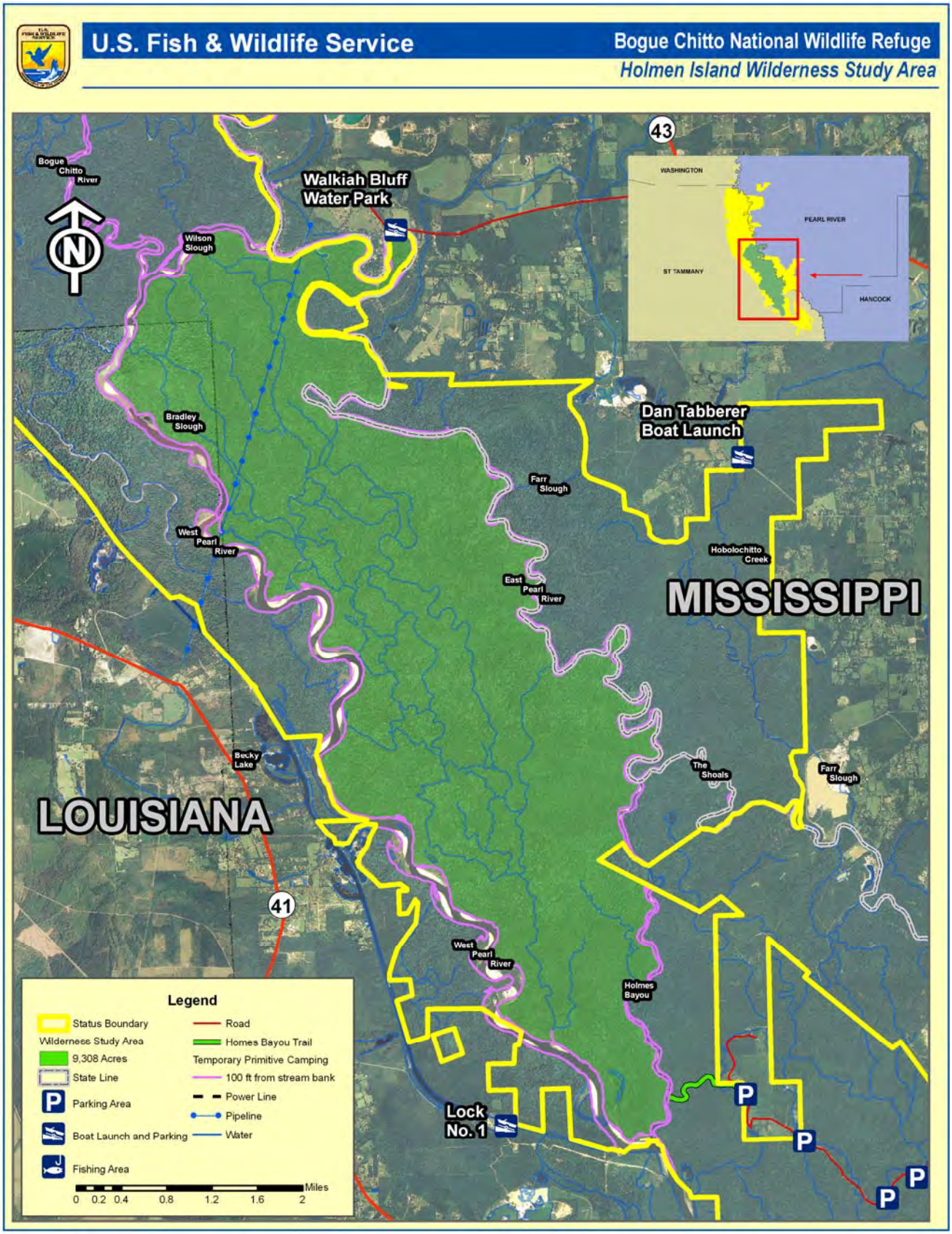
Goal D. Visitor Services: Provide compatible hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. Public use will provide visitors a greater understanding and enjoyment of fish, wildlife, and their habitats on the refuge and in the Pearl River Basin.

Discussion: The National Wildlife Refuge System Improvement Act of 1997, the organic legislation of the Refuge System, designates six wildlife-dependent "priority public uses." These are hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. National refuge policy encourages refuges to offer these opportunities and to seek out additional resources when needed. These activities foster an appreciation and understanding of wildlife and the outdoors.

Objective D-1. Visitor services planning: Develop a visitor services plan that would include a particular site for non-hunting, wildlife-dependent recreational uses.

Discussion: The Service provides recreational opportunities that reflect the unique qualities and features of each national wildlife refuge. Opportunities vary on each refuge for compatible wildlife-dependent recreation and must be evaluated against the compatibility standards, public desires, and other recreational opportunities in the area. A visitor services plan will evaluate the best fit for recreational opportunities in line with maintaining the biological integrity of the refuge. Visitor contact and information must be provided to allow visitors to gain the most information from their visit and provide a safe environment for wildlife and people. To maintain a visitor services program and the effects of such, volunteers will be used to maximize wildlife-dependent recreational opportunities and do so in a manner to allow the volunteers to take away a better understanding of wildlife and their role in the environment. A visitor services program creates a greater awareness of the biological environment, a better understanding of each individual's role in the environment, and promotes a conservation ethic in refuge visitors.

Figure 10. Proposed Holmes Island wilderness study area, Bogue Chitto NWR



Strategies:

- Develop an up-to-date visitor services plan that reflects current legislation, director's orders, initiatives, policy, and the mission of the refuge, the Refuge System and the Service. The plan should also address the current and future visitor services and recreation needs of refuge visitors, including a non-hunting, wildlife-dependent recreational area at the Pearl River Turnaround site.
- Develop, enhance, and improve refuge directional signage, brochures, and kiosks as noted in the visitor services review.
- Coordinate and collaborate with LDWF and MDWFP two to four times per year regarding public use programs, biological issues, and law enforcement coordination.

Objective D-2. Hunting: Provide safe, quality hunting opportunities in appropriate areas consistent with the refuge's established purposes and to meet wildlife and habitat objectives.

Discussion: Hunting is the most popular recreational activity on Bogue Chitto NWR. Louisiana and Mississippi state hunting regulations apply with supplemental refuge regulations listed in the refuge hunting, fishing, and camping brochure. All hunters must possess a signed refuge hunting permit. Additionally, state hunting licenses, appropriate for the species being hunted, are required. Any hunter under 16 years of age must possess proof of completing an approved hunter safety course and be accompanied by an adult 21 years of age or older.

Hunting access is provided by gravel roads and waterways scattered throughout the refuge. The refuge itself provides only one boat launch; however, three parish ramps and one county ramp are available. Access issues arose when Hurricane Katrina (2005) killed or toppled many large trees on the refuge. Briars and shrubs have overgrown the midstory, making walking very difficult.

In 2006, there were a total of 18,000 hunters and in 2010 there were a total of 15,600 hunters. The most popular hunts overall are for deer. Species hunted on the refuge include: deer (archery, gun, primitive weapons); turkey; squirrel; rabbit; raccoon; waterfowl (ducks, geese) and coots; woodcock; and hogs. Hunters may also take hogs during the archery deer hunt.

Strategies:

- Continue hunting seasons which run concurrent with statewide hunting seasons with minor exceptions, for deer (archery, gun, primitive weapons); turkey; squirrel; rabbit; raccoon; waterfowl (duck, geese) and coots; woodcock, and hogs.
- Explore additional hunting opportunities.
- Participate in annual state hunt coordination meetings to discuss proposed refuge hunting programs and regulations.
- Maintain communication on hunting and fishing issues that the States may have regarding opportunities or modifications to these programs.
- Update the hunt plan as needed to ensure the best opportunity for population control.
- Continue to post parking areas and boundaries of the refuge. Where no hunt areas are established, "No Hunting" signs will be erected and the areas will be identified in hunt brochures. Establish a no hunt area around the Pearl River Turnaround Fishing event site, allowing non-consumptive wildlife viewing areas near trails and boardwalks.

- Continue to issue news releases if/when hunting seasons are changed due to high water or other factors.
- Explore opportunities to add hunt days to existing hunts, due to missed hunt days.
- If deer populations become limited, evaluate limited hunt days to adjust take of deer.
- If deer populations become overpopulated, explore adding deer hunt days to maintain healthy populations of deer on the refuge.

Objective D-3. Fishing: Continue recreational fishing opportunities year-round in accordance with state regulations subject to special conditions and continue the annual youth fishing event which has been held annually since 1993.

Discussion: Fishing is the second most popular activity on the refuge, with nearly 16,800 people participating in 2010. Recreational fishing is permitted year-round in accordance with state regulations and is subject to refuge-specific conditions.

Strategies:

- Update the fishing plan.
- Continue to ensure that 50 CFR accurately reflects the current fishing regulations.
- Continue to stock and close the Pearl River Turnaround pond for at least 1 month prior to the youth fishing event.
- Promote the Pearl River Turnaround pond as a bank fishing area.
- Post current health advisories.
- Develop an information panel about types of fish that might be caught.
- Develop a “sub-entrance sign” at the gated entrance to the Pearl River Turnaround fishing pond.

Objective D-4. Wildlife observation and photography: Improve and increase wildlife observation and photography opportunities.

Discussion: Wildlife observation and wildlife photography are two closely related priority wildlife-dependent uses of the Refuge System. Programs and facilities, which enable visitors to view and photograph wildlife and their habitats, are essential parts of most national wildlife refuges. Currently, Bogue Chitto NWR has a limited numbers of visitors coming to observe wildlife or take photographs. This may be due to limited road access to the refuge.

The Holmes Bayou trail is located along the West Pearl River and is a scenic 3/4-mile trail. The trail is maintained by refuge staff and has rest benches strategically placed along the trail. The trail has been used by local bird clubs, universities, and birding enthusiasts. There is a short boardwalk located at the Pearl River Turnaround fishing pond. This trail provides some wildlife observation/photography opportunities to the public. Traveling by boat on the refuge provides additional opportunities to observe wildlife and take photographs.

Strategies:

- Update refuge bird list brochure.

  Fish Pond
  - Develop an extension to existing boardwalk to an observation platform at the cypress pond.
  - In order to promote the Pearl River Turnaround fishing pond as a non-hunting wildlife-dependent recreation area, explore the possibility of a photo blind.
  - Close the area around the Pearl River turnaround fishing pond to hunting.

  Holmes Bayou trail
  - Create a destination at the end of the trail:
    - Continue to maintain the viewscape at the end of the trail looking out over the bayou.
    - Install a 2'x3' interpretive panel discussing Pearl River Basin.
  - Continue to keep the vegetation around the benches cut back.
  - Move "Refuge closed when river reaches 15.5 feet" sign to a more visible location. Develop, enhance, and improve refuge directional signage, from I-59 as noted in visitor services review

  Paddling Opportunities
  - Develop short and long paddling opportunities to enjoy the refuge priority public uses (e.g., hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation).

Objective D-5. Environmental outreach and interpretation: Develop on-site interpretive programs that will increase public awareness of the habitat features, wildlife values, and management programs.

Discussion: Opportunities and information are provided to visitors through visitor center exhibits and kiosk panels to enable them to pursue wildlife observation, wildlife photography, and environmental interpretation. Visitor interpretive trails, observation towers, etc., allow visitors to develop an understanding of and appreciation for natural resources and how to use the refuge in an appropriate and compatible manner. Providing visitors with safe, quality wildlife observation and photography opportunities fosters ethical behavior, which results in minimal disturbance to wildlife and plants.

Interpretive activities are often the visitor's first contact with the refuge, the national wildlife refuge message, and possibly even his/her first contact with a conservation issue and wildlife. Through these contacts, visitors' attitudes and behaviors can be influenced positively through a better understanding of the Service and the Refuge System.

Refuge publications are located at public boat launch sites, the Pearl River Turnaround fishing pond, and at the Complex headquarters. The refuge also provides information via its web site. Refuge staff and Friends of Louisiana Wildlife Refuges promote special events held at the refuge. Special attention is given to the youth fishing event by placing information in local newspapers. The staff participates in various special events in communities throughout the Complex. At these events, information is provided about all the refuges in the Complex.

Strategies:

- Develop exhibits in the visitor center to provide information about Bogue Chitto NWR and relevant management practices.
- Identify appropriate events/festivals in the local communities where staff could be present to provide information about the refuge.
- Supply and distribute refuge brochures, maps, and event calendars to state welcome centers and local libraries.
- Maintain and update the Complex web site, including posting information about trails, the boardwalk, and other recreational opportunities on Bogue Chitto NWR.
- Work with the Friends group to continue the youth fishing event.
- Promote refuge events through local media.
- Work with media to keep local communities updated on changes/improvements taking place at the Complex and on the refuge.
- Build a restroom facility at the Pearl River Turnaround above flood levels for use during school visits and special events.
- Review non-personal interpretive media (i.e., kiosk panels, signs) and modify, as needed, to ensure that they complement and accurately interpret resource issues and management actions.

Objective D-6. Environmental education: Provide formal environmental education programs that promote public understanding, appreciation, and stewardship of refuge resources.

Discussion: Bogue Chitto NWR currently has one visitor services/education staff position that is shared with two other refuges in the Complex. Limited programs are given to Slidell, Picayune, Poplarville, Nicholson, and Pearl River area schools, which are in the immediate vicinity of the refuge. These programs focus on endangered species, animal adaptations and general information about the Refuge System.

The refuge also holds an annual youth fishing event which hosts more than 175 youth and their families. Participants receive free fishing equipment, a t-shirt, lunch for their whole family, and an opportunity to fish in the pond that has been stocked for the event. The event is very successful. Each year there are more applications than there are spaces for participants.

In 2008, the refuge also worked with the Friends Group to secure a grant that funded fishing days for at-risk youth from various communities or schools within the area. The refuge held six of these fishing days with an average of 45 youth per day. Additional opportunities will be pursued as resources become available.

Strategies:

- Continue to focus environmental education at the Complex and various off-site programs and add additional on- and off-site programs and events through help of volunteers and interns.
- Develop the Pearl River Turnaround area an educational gathering site with amenities for daily use.
- Continue to focus environmental education programs in area schools and at the Complex.
- Continue the youth fishing event in the spring.
- Continue to participate in Wildlife Day at the Crosby Arboretum.
- Continue to participate in Career Day at Poplarville High School.
- Recruit interns and volunteers to conduct onsite/offsite environmental education programs.

- Annually review programming and curriculum developments at state, parish, and county levels.
- Explore partnerships with local and national conservation organizations to provide environmental education programs with a larger, landscape-level focus (i.e., Crosby Arboretum, etc.)

Sub-Strategies:

- Develop and implement evaluation instrument to assess effectiveness of environmental programs in delivering desired messages about refuge management.
- As significant new management practices are implemented, explore the possibilities for complementary environmental education programming.
- Ensure that all educational programming complements state curriculum standards and Grade Learning Expectations.

Objective D-7. Other uses – primitive camping: Evaluate and increase awareness of present primitive camping program to reduce, control, and concentrate camping.

Discussion: Primitive camping is allowed within 100 feet of the rivers on the refuge. The camping has become an issue because many campers stay longer than the rules allow and they create litter problems.

Strategies:

- Evaluate and manage trash and habitat damage from camping on Bogue Chitto NWR:
  - Reduce the amount of area where camping is allowed.
  - Reduce the 14-day rule.
  - Continue to strictly enforce the regulations especially during hunting season (including the "removal within 72 hours" notice).
  - Enforce the "within 100 feet of the river" rule.
- GPS existing camp sites and take photos to make it easier to monitor.
- Include in the camping section of the hunt brochure, information about "pack in/pack out," not littering, $500 fine for littering.
- Develop a group of local volunteers to do camp cleanups as part of the "72-hour notice."

REFUGE ADMINISTRATION

Goal E. Refuge Administration: Work with Partners to secure and enhance staffing, funding, infrastructure and facilities to maintain the long-term integrity of the habitat and wildlife resources to fulfill the purposes of the refuge.

Discussion: The administrative functions associated with this refuge include a wide array of activities that are critical to the mission of the Refuge System and the purpose of the refuge. Refuges must have appropriate staff, facilities, and equipment in order to accomplish their goals and objectives and conserve the integrity of the refuge.

Objective E-1. Staffing: Maintain refuge manager, engineering equipment operator, park ranger (non-law enforcement), wildlife biologist, forester, and park ranger (law enforcement) positions shared with Atchafalaya, Bogue Chitto, and Big Branch Marsh NWRs. Seek funding and approval for positions of maintenance worker, park ranger (law enforcement), forestry technician, park ranger (non-law enforcement), assistant refuge manager, and biological technician dedicated to working on Bogue Chitto NWR.

Strategies:

- Provide continuing education and training opportunities to all staff to ensure a highly competent and motivated team.
- Provide safe and efficient equipment and vehicles for refuge operations and maintenance.
- Hire a part-time visitor services specialist to focus on developing education and outreach programs within the communities around Bogue Chitto NWR.
- Hire an assistant refuge manager, forestry technician, and biological technician that are shared among three refuges.
- Hire a maintenance worker and park ranger (law enforcement) that are dedicated to protecting and maintaining Bogue Chitto NWR.
- Utilize various funding sources to address biological/management needs, including partners, volunteers, Friends groups, numerous grants, etc.

Objective E-2. Facilities: Repair and maintain existing facilities and improve facilities in high public use areas.

Strategies:

- Repair and maintain facilities, buildings, and roads.
- Implement RONS and SAMMS projects to maintain refuge resources.
- Coordinate road maintenance with state, county, and parish governments.

Objective E-3. Equipment: Maintain existing equipment used as a part of refuge management. Upon plan approval, develop a system to periodically maintain heavy equipment and watercraft. Maintain and replace equipment as needed.

Discussion: Because Bogue Chitto NWR is one of a complex of eight refuges, equipment is shared among the refuges instead of being assigned solely to one refuge. The equipment referred to here is not separate from the other refuges in the Complex. Project efficiency depends largely on age, condition, and maintenance of the equipment needed to accomplish work projects.

Strategies:

- Maintain more than $3,000,000 worth of capitalized equipment used in all aspects of refuge management such as habitat, wildlife, public use, and protection.
- Within 6 years of the date of this CCP, develop an equipment maintenance log for heavy equipment and watercraft to ensure equipment is properly maintained.
- Maintain and replace equipment as needed.
- Acquire budgetary resources to purchase fundamental equipment necessary to perform habitat management activities.

Objective E-4. Refuge friends group: Foster, expand, and facilitate support from the Friends of Louisiana Wildlife Refuges by identifying specific projects at Bogue Chitto NWR that the group can support.

Discussion: The Friends of Louisiana Wildlife Refuges, Inc. is the Friends group for the Complex. The group provides assistance with funding for special projects, including participating in youth fairs, providing interns for educational activities, assisting in development of trails, and funding and supporting fishing events such as the Peyton Manning Foundation and the annual youth fishing event for 16 years.

Strategies:

- Continue to work with the Friends Group to identify projects at Bogue Chitto NWR which the group can support.
- Promote The Friends of Louisiana Wildlife Refuges, Inc., at special events and career fairs.

Objective E-5. Volunteers and partnerships: Foster, expand, and facilitate volunteers and partnership opportunities.

Discussion: There are no volunteers specifically assigned to Bogue Chitto NWR but there is a volunteer program that is associated with the Complex. When volunteers work at Bogue Chitto NWR, they are usually doing special projects or routine maintenance. The use of volunteers to supplement the work of paid staff is essential to completing the mission of the Refuge System and Bogue Chitto NWR. Resident volunteers, such as student interns and resident vehicle campers, have been invaluable in many areas of refuge activity, from education to maintenance to clerical duties. Presently, there are more than 400 volunteers who assist with projects at the Complex. Five full-service camper pads, including a community laundry facility, are located at the Complex for resident volunteers. A bunkhouse with bathroom, den, kitchen, and three bedrooms with six bunk beds are also available.

Strategies:

- Support a constructive partnership with The Friends of Louisiana Wildlife Refuges Inc.
- Continue to recruit, promote, and support local and residential volunteer opportunities.
- Maintain a list of task/job opportunities.
- Develop and update, as needed, volunteer position descriptions that can be publicized through federal and local volunteer recruitment avenues (i.e., volunteer.gov, Retired Seniors Volunteer Program or RSVP, etc.)
- Continue to provide training for volunteers (i.e., Heavy equipment, MOCC).

V. Plan Implementation

INTRODUCTION

Refuge lands are managed as defined under the Improvement Act. Congress has distinguished a clear legislative mission of wildlife conservation for all national wildlife refuges. National wildlife refuges, unlike other public lands, are specifically dedicated to the conservation of the Nation's fish and wildlife resources and wildlife-dependent recreational uses. Priority projects emphasize the protection and enhancement of fish and wildlife species first and foremost, but considerable emphasis is placed on balancing the needs and demands for wildlife-dependent recreation and environmental education.

To accomplish the purpose, vision, goals, and objectives contained in this CCP for Bogue Chitto NWR, this section identifies specific projects, funding and personnel needs, along with partnership opportunities, and required step-down management plans.

This CCP focuses on the importance of funding the operations and maintenance needs of the refuge to ensure the refuge staff can achieve the goals and objectives identified and are crucial to fulfill the purpose for which the refuge was established. The refuge's role in protecting and providing habitat for migratory waterfowl, birds, and endangered species is critical. Priority public use programs will establish opportunities for wildlife-dependent recreation.

PROJECTS

Listed below are the 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 project list reflects the priority needs identified by the public, planning team, and refuge staff based upon available information. These projects were generated for the purpose of achieving refuge-specific objectives and strategies. As funding and resources increase/decrease in the future, projects may be added/deleted as long as any new projects are in line with the refuge objectives in this CCP and within the scope of environmental effects already analyzed. The primary linkages of these projects to those planning elements are identified in each summary.

FISH AND WILDLIFE POPULATION MANAGEMENT

Conduct essential biological activities relative to wildlife and habitat management (RONS 2933) - Develop a professional science-driven biological program at Bogue Chitto NWR to achieve wildlife and habitat conservation goals identified in this CCP and state conservation plans, and that contribute to the Service mission. *(Linkages: Goal A, Objectives A.1-5.)*

- Conduct long-term wildlife monitoring on 36,000 acres of bottomland hardwoods as described in this CCP. This area is important for nesting and migratory songbirds and was heavily damaged by Hurricane Katrina, which destroyed 60 percent of the old growth trees. The loss of bottomland hardwood habitats, especially old growth stands, has had a negative effect on many bird species.

- Assess breeding bird densities, species communities, and the effects of forest management practices, especially on hooded, Swainson's, and Kentucky warblers. Studies will be conducted by university or contract personnel. Study contributions will serve to meet local and regional conservation objectives and goals, but also serve as a catalyst to attain landscape goals related to the Service's Strategic Habitat Conservation Initiative, Climate Change Initiative, and/or other national or global conservation pursuits.
- Monitor and evaluate the refuge's gopher tortoise population and dynamics and improve limiting factors for population expansion. Utilize Service recovery plan guidelines, once developed, to provide habitat conditions conducive to supporting the tortoise, as well as Bachman's sparrow (5 pairs/100 acres), field sparrow, chuck-wills-widow, northern bobwhite (7 coveys/100 acres), prairie warbler, brown-headed nuthatch (4.5 pairs/100 acres), and red-headed woodpecker (2 pairs/100 acres).
- Mark all active and inactive gopher tortoise burrows and protect by a 25-foot radius buffer during timber thinning or other heavy equipment operations.
- Limit timber operations during times of greatest use outside of burrows by tortoises. Conduct timber operations utilizing felling of trees or heavy equipment from October to March.
- Inventory and map active gopher tortoise burrows at least once per 5-year period. Uniquely identify burrows and record using a geographic information system (GIS). Changes in burrow numbers, locations, and activity should be assessed and documented.
- Identify swallow-tailed kite nesting areas on Bogue Chitto NWR and protect these areas until kites no longer nest on the refuge.
- Continue to provide hunting and fishing opportunities to manage wildlife populations and the habitats they use at healthy levels.

Recurring Costs: $25,000 Special Project Cost: $60,000

Science-based Inventorying and Monitoring of Plant and Animal Populations - Science-based inventorying and monitoring of plant and animal populations are critical to ensuring the biological integrity of the refuge. Information collected will serve as the basis for developing habitat management plans and will influence all refuge management activities. *(Linkages: Goal A, Objectives A.5-9.)*

- Conduct a systematic inventorying and monitoring program to enable the refuge to make informed management decisions and valuable long-term contributions to national and regional objectives for waterfowl, shorebirds, wading birds, wintering forest and scrub/shrub birds, and resident wildlife.
- Use standardized census and survey techniques and compile all data into databases including GIS for spatial analysis. This information is critical to formulating management actions and evaluating wetland restoration, habitat utilization, trends analysis for migratory and resident wildlife, and other refuge programs. All data will be shared with appropriate state and federal partners in an effort to further ecosystem management.

Recurring Costs: $25,000 Special Project Cost: $60,000

Ringed map Turtle Surveys (RONS 2936) - The ringed map turtle is a small map turtle (4 to 7 inches), which is endemic to the Pearl River System in Louisiana and Mississippi. The ringed map turtle typically utilizes riverine habitat with a moderate current and numerous basking logs, and requires sand and gravel bars for nesting. The species feeds primarily on aquatic snails and other mollusks, as well as aquatic insects. The refuge is located in the Pearl River Basin, which has a large concentrated population of this important species. The decline of this turtle is attributed primarily to habitat alteration due to channel modification for flood control and navigation and to water quality degradation from siltation and pollution. *(Linkages: Goal A, Objectives A-1-12.)*

- Contract extensive studies on the threatened ringed map turtle to help refuge biologists make sound, scientific management decisions regarding this species. Studies on this species can also provide data on water quality in the basin. This data can be used to help this species, as well as several other aquatic wildlife species, thrive on the refuge. This project will entail basking surveys, observation of turtles for disease or other maladies, obtaining geographic turtle locations, and recording nesting attempts.
- Hire a biological technician to conduct the required long-term monitoring for this study.

Recurring Costs: $20,000 Special Project Cost: $124,291

Conduct Critical Wildlife Surveys - Science-based inventorying and monitoring of wildlife populations are critical to ensuring the biological integrity of the refuge. Information collected will serve as the basis for development and implementation of habitat management plans and will influence all refuge management activities. This information is critical to formulating management actions and evaluating bottomland hardwood reforestation and management and other refuge programs. All data will be shared with appropriate state and federal partners in an effort to further ecosystem management. *(Linkages: Goal A, Objectives A.10-12.)*

- Collect a baseline data related to the presence of all plant and animal species of special concern.
- Utilize a biological technician to assist with wildlife surveying and monitoring.
- Conduct check-stations or self clearing stations to gain better insight to number of hunters and harvest.
- Work with states to gather information on hunter success based on required reporting systems.

Recurring Costs: $25,000 Special Project Cost: $100,000

Control Invasive Feral Swine - Bogue Chitto NWR has an established population of feral swine. The scientific literature has documented many adverse effects caused by feral swine on the habitat productivity and reproduction of most native wildlife. Being omnivores, feral swine utilize virtually every component of the habitat and directly compete with native wildlife, reducing their carrying capacity and adversely affecting their reproduction and recruitment. Feral swine are compromising the refuge's efforts in wetland restoration, reforestation, and habitat management. Currently, the refuge is using public hunting and some staff control. *(Linkages: Goal A, Objectives A.13.)*

- Utilize professional animal damage control personnel to supplement the current program and an expansion of feral swine control efforts. Control work will be contracted with USDA Animal Damage Control and/or other professional nuisance animal control personnel.

- Implement control techniques including hunting, trapping, and professional removal of feral swine on the refuge to be least injurious to trust resources.

Recurring Costs: $15,000 Special Project Cost: $30,000

HABITAT MANAGEMENT

Improve Water Level Management for Wildlife (RONS 2939) - These impoundments are critical roosting areas for wading birds and provide nesting habitat for wood ducks. Desired water levels will be maintained on a 2- to 3-year cycle. Restoration and monitoring will be a joint effort between the Service and researchers. *(Linkages: Goal A, Objectives A.1-13; Goal B, Objectives B.1.)*

- Restore water management capabilities on 50 acres by impounding Little Indian Bayou drainage near the Honey Island Swamp Road.
- Monitor wetland vegetation, invertebrates, and wildlife response to meet the needs of spring and fall migration of neotropical and other migratory birds.
- Install a stop log riser water control structure adjacent to the road at Little Indian bayou.

Recurring Costs: $10,000 Special Project Cost: $60,000

Provide Information and Capability Necessary to Promote and Sustain Desired Forest Conditions (RONS 2656) - *(Linkages: Goal B, Objectives B.1-3.)*

- Develop a habitat management plan designed to improve habitat quality and diversity within the bottomland hardwood system by mimicking old growth forest characteristics within this highly effected system to create desired forest conditions.
- Hire a full-time forestry technician to help actively manage 36,000 acres of forest lands on Bogue Chitto NWR. A technician will assess the effectiveness of past forest management activities including 2,000 acres of forest habitat improvement, 120 acres converted from pine to bottomland hardwood, and another 1,000 acres that were treated with commercial harvest for forest regeneration. The forestry technician will evaluate the effects of Hurricane Katrina and climate change in collaboration with LCC to implement SHC projects. The technician will also carry out activities identified in the Habitat Management Plan, which will improve habitat for migratory birds, native wildlife, and endangered species by creating desired forest conditions to benefit threatened and endangered species, as well as species of concern such as Swainson's warbler (5 pairs/100 acres), Kentucky warbler (5 pairs/100 acres), hooded warbler (10 pairs/100 acres), wood thrush (10 pairs/100 acres), and American woodcock.
- Maintain upland pine in open stands; commonly involve timber thinning to maintain a pine basal area of no more than 50 to 70 feet^2/acre, with a canopy cover no greater than 60 to 80 percent, no more than 15 percent shrub cover, and 25 percent or greater herbaceous cover, and frequent prescribed growing season fire (1- to 3-year intervals) to control encroaching hardwoods and shrub, keeping fire out of the refuge during turkey nesting season where possible.
- Manage bottomland hardwoods to provide vertical and horizontal structural diversity in terms of tree species, size and age classes, and growth forms (e.g., trees, shrubs, and vines) within a heterogeneous forest canopy comprised of gaps and a complex layering, favoring cypress for cavity trees, sweetgums for super-dominance, and oaks for mast production. These forests should obtain canopy gaps to encourage the establishment of tree age and species diversification, various levels of canopy closure, and various stages of understory plant

succession. In order to meet these objectives, general guidelines for forest management activities should include a combination of thinning, group selection (<1 acre), and patches from 1 to 3 acres in size.
- Provide for downed woody debris for basking logs open to many hours of sunlight daily in partially submerged areas along the rivers in deep and swift currents for ringed map turtles.
- Provide habitat for Louisiana black bears by creating forests including hard and soft mast producing species and a diverse structure. Forest management should emphasize retention of large trees and trees with large cavities.
- Maintain habitat suitable to support at least 10 nesting neighborhoods or approximately 30 breeding pairs of swallow-tailed kites (per 36,000 acres). Do not conduct burns or forest management in areas where suspect kite nests exist between March 15 and August 15. Maintain super-dominant trees along waterways and swamp interface and pine trees near swamps for nesting.
- Maintain suitable buffer zones along waterways during forest habitat improvement and harvest operations.

Recurring Costs: $60,035 Special Project Cost: $80,046

Improve Maintenance Capabilities at Bogue Chitto NWR (RONS 2657) - Since its establishment in 1980, the refuge has increased from 18,000 to 36,000 acres. The maintenance need is driven by the high public use (approximately 50,000 visitors annually) that is constantly increasing with the popularity of the refuge. *(Linkages: Goal B, Objectives B.1-3.)*

- Hire a maintenance worker. A maintenance worker will keep up the maintenance shop, 50 miles of boundary lines, four new kiosks, two new fishing piers, 1 mile of new road along with 2 miles of existing roads, and numerous boats, motors and vehicles. This project will keep facilities maintained so that they will not deteriorate with increasing public use

Recurring Costs: $54,278 Special Project Cost: $72,371

Control Invasive Vegetation - The refuge's biological integrity is threatened by a variety of invasive plant species. *(Linkages: Goal A-B.)*

- Develop and implement an integrated pest management program (IPM) to control invasive and undesirable plants. Appropriate IPM strategies will be used to annually treat 30 percent of the refuge to control Chinese tallow, cogon grass, mimosa, privet, Japanese climbing fern, Chinaberry, giant salvinia, and other exotic invasive plants on the refuge through mechanical, chemical, or burning control methods.
- Map and quantify invasive and undesirable plant occurrences.
- Seek ways to control invasive plants by specialized herbicides, timber sale contracts, and grants and partnerships.

Recurring Costs: $15,000 Special Project Cost: $15,000

RESOURCE PROTECTION

Cultural and Historical Resource Overview of the Refuge - Using available scientific and historic information, an interdisciplinary overview of the refuge's cultural and natural landscape as it has changed over the past 15-20,000 years will be written. The final technical report will include, at a minimum, sections about the area's geomorphology and hydrological regime, paleoenvironmental

reconstruction, the area's cultural history, the scope and scale of past archaeological investigations on and near the refuge, a detailed list of the refuge's historic properties, and future research questions. Submission of the overview report will partially satisfy the cultural resource objectives listed in the CCP. *(Linkages: Goal C, Objective C.6.)*

- Using the information generated from the overview, as well as on-going scientific archaeological investigations of the area, the refuge will contact a qualified archaeological firm to inventory and then evaluate the National Register's eligibility of historic properties located on the refuge. Recurring costs include conservation and protection of sites and curation of the recovered archaeological materials and associated administrative records. This project would also include interpretation and display of pertinent information for the visiting public.
- Develop a detailed list of the refuge's historic properties and future research questions.

Recurring Costs: $10,000 Special Project Cost: $125,000

Conduct Boundary Surveys (RONS 2867; SAMMS WO 2006494326) - This surveying is vital to the refuge's law enforcement program, to implementation of wildlife and habitat management plans, and to recreational use by the public. The area is heavily used by hunters, anglers, and other outdoor enthusiasts. This survey can prevent refuge visitors from inadvertently trespassing onto adjacent private property. Additionally, effective timber harvest and pest plant control cannot occur without solid knowledge of the refuge boundary. *(Linkages: Goal C, Objectives C.1-7.)*

- Survey 10 miles of Bogue Chitto NWR that have never been surveyed and replace boundary signs lost due to Hurricane Katrina.

Recurring Costs: $20,000 Special Project Cost: $100,000

Acquire and manage lands for conservation - Continue to acquire and protect lands within Bogue Chitto NWR's current acquisition boundary and evaluate the possibility of expanding the acquisition boundary. Annually contact landowners within the 3,498 acres of the remaining approved acquisition boundary to seek their willingness to sell to the Federal Government and identify those lands for inclusion in Land and Waters or Migratory Bird fund requests.

- Prioritize the purchase of inholdings to lands of high-quality wildlife habitat or lands with threat of removal from forested or wetland condition.
- Identify and prioritize areas that can be mitigated through USACE as restoration sites and donated to the refuge with operating funds.
- Evaluate for a major or minor boundary expansion to acquire from 4,000 to 10,000 acres of new lands to manage as the refuge.

Recurring Costs: $ Unknown Special Project Cost: $30,000,000

Conduct a Wilderness Study of the Holmes Island WSA - The findings of the study determine whether a WSA, or portion of a WSA, will be recommended for designation as wilderness. Wilderness recommendations are forwarded or reported from the Director of the Fish and Wildlife Service through the Secretary of the Department of the Interior and the President to Congress in a wilderness study report. The Service inventoried refuge lands within the planning area and found one area (9,760-acre Holmes Island) that meets the eligibility criteria for a WSA as defined by the Wilderness Act. *(Linkages: Goal C, Objectives C.1-7.)*

- Determine desired uses of the Holmes Island area to include for continued use in the wilderness study area, including access by boats for hunting, fishing and other compatible refuge uses to be submitted in the wilderness study report.

Recurring Costs: $5,000 Special Project Cost: $30,000

VISITOR SERVICES

Provide quality refuge visitor services programs (RONS 2636) - Develop and implement the visitor services program. The refuge, which is located near the cities of Slidell and Picayune, can increase public awareness pertaining to climate change and the challenges facing wildlife by developing educational kiosks that provide information on the causes and effects of climate change, the effects of habitat loss and fragmentation on refuge species, and potential means to prevent and mitigate these challenges. It is estimated that the visitor services park ranger can reach an additional 2,000 students per year and 5,000 additional refuge visitors. *(Linkages: Goal D, Objectives D.1-7.)*

- Develop and implement a visitor services plan.
- Hire a visitor services specialist to implement the plan.
- Obtain accurate visitor counts through car counters and law enforcement patrols.
- Maintain the Pearl River Turnaround area as a non-hunting wildlife-dependent recreation area. Improve signage to convey this message. Use as an outdoor classroom, summer camp location, and site for the youth fishing event.
- Acquire lands to increase access to refuge lands, including land and water access.
- Maintain and develop agreements with the Friends of Louisiana Wildlife Refuges, Inc., to cooperate on projects and provide refuge support.

Outreach:

- Maintain and improve interpretive exhibits at Complex visitor center.
- Develop interpretive panels related to climate change and the effects of habitat loss and fragmentation on refuge species and potential means to prevent and mitigate these challenges.
- Produce a refuge-specific general brochure.
- Update existing bird brochure.
- Supply refuge brochures, including hunt brochures, bird lists, and general brochures to parish convention centers, state welcome centers, and other tourist hubs.
- Issue press releases on important events on the refuge, including public events, refuge fire program activities, and changes to public use programs (i.e., hunting).
- Update and maintain an interactive refuge web site with links to hunt brochures, bird lists, trail maps and guides, refuge maps, contacts for assistance, signup for programs, etc.
- Develop and deliver refuge education programs for adults through civic groups and to neighborhood groups surrounding the refuge.
- Develop paddling trails and associated maps and brochures.

Environmental Education:

- Increase outreach to area schools and conservation and civic groups.
- Revise and maintain an array of formal, curriculum-based environmental education programs for students in parishes bordering the refuge that, through first-hand experiences, promote understanding, appreciation, and stewardship of refuge resources and support for refuge management practices.

- To complement on-site programming, provide relevant classroom educational programming with the same goals of promoting understanding and stewardship of refuge resources.
- Maintain liaison contacts with area school systems and curriculum coordinators to continuously upgrade refuge education programs in the classroom and on the refuge to match curriculum needs.
- Develop a monitoring plan with schools to evaluate educational program results and effectiveness relative to Grade Learning Expectations.
- Visit school career fairs to promote Student Career Employment and Student Temporary Employment Programs and Youth Conservation Corps Programs to increase Fish and Wildlife Service's career awareness within the nearby community.

Volunteer/Interns:

- Increase volunteer and intern pool to supplement education programs and staff visitor contact centers.
- Recruit volunteers and volunteer groups, such as recreational vehicle campers, to supplement and assist refuge staff, and to provide education, visitor services, maintenance, and clerical duties.

Protection of visitors

- Hire a full-time law enforcement officer.

Recurring Costs: $164,000 Special Project Cost: $97,911

Develop Canoeing or Kayaking Opportunities.

The refuge with its web of waterways, assorted access points and widely varying water levels makes for very exciting paddling explorations. Paddling in the refuge has been minimal due to absence of any information on where to paddle in the refuge and the techniques of how to navigate through a flooded hardwood forest.

- The refuge should consider developing paddling trails from locks 3 and/or 2 for short and long excursions to observe wildlife, interpret the refuge, and photography along with other compatible refuge uses. Trails should be marked and described in publications with attached maps. The publications need to stress that a paddler should be aware of hazards to paddling in a bottomland hardwood forest with flowing turbulent water, the requirements to lift the canoe or other boat over obstructions, and presence of water obstructions in the river as well as suggestions of developing a float plan, and possession of maps, compass/GPS, and safety equipment.

Recurring Costs: $1,000 Special Project Cost: $5,000

Improve visitor services facilities. (RONS 1474) - Connect the public with nature by increasing the quality of five of the six priority public uses of the Refuge System as identified in the Improvement Act. This would include activities at the non-consumptive visitor use area to connect people with nature, ensuring the future of conservation by engaging members of the public in focused efforts to understand their stake in conservation. This underutilized site could focus on environmental education and interpretive programs; summer camps are already prepared for large groups of individuals, to include students. *(Linkages: Goal D, Objectives D.1-7.)*

- Install a self contained restroom facility at the Pearl River Turnaround site, outside of flooded areas.
- At the Pearl River Turnaround site add a photo blind and an observation deck to the existing boardwalk to increase wildlife viewing opportunities.
- Improve and maintain kiosks, trailheads, boat launches, and parking areas. Resurface four parking areas on road to Holmes Bayou Trail with 4 to 6 inches of compacted base material.
- Improve existing culverts on Holmes Bayou Trail with three stop log structures/standpipe risers.
- Inspect public use facilities annually for compliance with safety concerns and maintenance needs.
- Develop rustic trails for uses in highly accessible areas of the refuge.

Recurring Costs: $3,000 Special Project Cost: $64,500

REFUGE ADMINISTRATION

Provide Management, Improve Refuge Operations and Enhance Partnerships (RONS 2654) – Provide administrative support to Bogue Chitto NWR. This refuge is highly visited by hunters, anglers, birdwatchers, nature photographers, and other outdoor enthusiasts. *(Linkages: Goal E, Objective E.1-5.)*

- Hire an assistant manager to support the development and implementation of the CCP and to support the manager in the formulation and handling of budgetary and programmatic requirements needed to implement management goals.

Recurring Costs: $54,278 Special Project Cost: $73,433

Upgrade Administrative Roads (SAMMS 2007743036; 2007743038; 2010123949; 2007741460) - The primary access roads surrounding the refuge are in need of rehabilitation. *(Linkages: Goal D, ObjectivesD.3-7; Goal E, Objective E.2-3.)*

- Upgrade Cemetery Road, Gravel Pit Road, and St. Regis Road to ensure dependable all-weather access to perform critical refuge operations and allow the development of compatible wildlife-dependent recreation in other areas of the refuge. These roads are used on a daily basis to transport equipment, perform associated maintenance activities, and allow public access.

Recurring Costs: $15,000 Special Project Cost: $400,000

Repair the Damaged Security Fence Around the Bogue Chitto NWR Maintenance Yard and Volunteer RV Camper Site (SAMMS 2007733681) - Volunteers who camp in recreational vehicles on the refuge during the winter park their homes within the security fence and the repairs will reduce the possibility of theft to their belongings. *(Linkages: Goal D, Objectives D.1-7; Goal E, Objective E.1-5.)*

- Repair the damaged security fence around the Bogue Chitto NWR maintenance yard and volunteer recreational vehicle camper site. The chain link fence secures the maintenance building and equipment. Several of the posts are bent and there are holes in the fence that allow for illegal access. The bent posts will be replaced and new fencing will be added in small portions to alleviate the holes that allow illegal access.

Recurring Costs: $ 5,000 Special Project Cost: $15,000

FUNDING AND PERSONNEL

Table 1. Summary of projects

PROJECT TITLE	FIRST YEAR COST *	RECURRING ANNUAL COST	NEW FTE TO BE HIRED
Conduct essential biological activities relative to wildlife and habitat management	60,000	25,000	
Science-based Inventory and Monitoring of Plant and Animal Populations	60,000	25,000	
Ringed Map Turtle Surveys. Hire a Biologist	124,291	20,000	1
Conduct Critical Wildlife Surveys	100,000	25,000	
Control Invasive Feral Swine	30,000	15,000	
Improve water level management for wildlife	60,000	10,000	
Provide information and capability necessary to promote and sustain desired forest conditions. Hire a Forester	80,046	60,035	1
Hire a new maintenance worker	72,371	54,278	1
Control invasive vegetation	15,000	15,000	
Cultural and Historical Resource Interpretation Overview of the Refuge	75,000	10,000	
Boundary Surveys	100,000	10,000	
Acquire and manage lands for conservation	30,000,000	Unknown	
Conduct a Wilderness Study of the Holmes Island WSA	30,000	5,000	
Provide quality refuge visitor services programs. Hire education specialists	97,911	164,000	2

PROJECT TITLE	FIRST YEAR COST *	RECURRING ANNUAL COST	NEW FTE TO BE HIRED
Improve visitor services facilities	64,500	3,000	
Provide Management, Improve Refuge Operations, and Enhance Partnerships. Hire an assistant Refuge Manager.	73,433	54,278	1
Upgrade Administrative Roads	400,000	15,000	
Repair the Damaged Security Fence Around the Bogue Chitto	15,000	5,000	

** cost estimates are rough undocumented and funding sources would be various and not all FWS funding.*

PARTNERSHIP/VOLUNTEER OPPORTUNITIES

A key element of this CCP is to establish cooperative agreements and partnerships with private organizations, and other state and federal natural resource agencies. Partnerships are critically important to achieve refuge goals, leverage funds, minimize costs, reduce redundancy, and bridge relationships. In the immediate vicinity of the refuge, opportunities exist to establish and maintain partnerships with MDWF, Nature Conservancy, and private individuals. The refuge can also work with neighboring state lands through agreements for managing neighboring land to compliment the refuge management program.

STEP-DOWN MANAGEMENT PLANS

A CCP is a strategic plan that guides the future direction of the refuge. A step-down management plan provides more specific guidance on activities, such as habitat and visitor services management. Step-down plans (Table 2) are developed in accordance with the National Environmental Policy Act (NEPA), which requires the identification and evaluation of alternatives and public review and involvement prior to their implementation only when project activities or effects to the environment will be significantly different or greater than effects already analyzed during the preparation of this document.

Table 2. Bogue Chitto NWR step-down management plans

Step-down Plans	Completion Date
Habitat Management Plan	2012
Station Safety Plan	Annually
Law Enforcement Plan	2012
Fishery Management Plan	2013
Fire Management Plan	2015

Step-down Plans	Completion Date
Biological Inventorying and Monitoring Plan	2016
Nuisance Animal Plan	2014
Hunt Plan (update)	2013
Cultural Resource Protection Plan	2015
Visitor Services Management Plan	2014
Invasive Management Plan	2016
Disaster Action Plan	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 refuge. 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 non-target species and/or communities, then alterations to the management projects will be made. Subsequently, this CCP will be revised. Specific monitoring and evaluating activities will be described in the step-down management plans.

PLAN REVIEW AND REVISION

This CCP will be reviewed annually in development of refuge annual work plans and budget. It will also be reviewed to determine the need for revision. A revision will occur if and when conditions change or significant information becomes available, such as a change in ecological conditions or a major refuge expansion. This CCP will be augmented by detailed step-down management plans to address the completion of specific strategies in support of goals and objectives. Revisions to this CCP and the step-down management plans will be subject to public review and NEPA compliance only when major changes in environmental conditions have occurred or major changes in goals and objectives are planned that were not covered in this CCP.

Appendix A. 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 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.
Alluvial:	Sediment transported and deposited in a delta or riverbed by flowing water.
Alternative:	1. A reasonable way to fix the identified problem or satisfy the stated need (40 CFR 1500.2). 2. 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).
Anadromous:	Migratory fishes that spend most of their lives in the sea and migrate to fresh water to breed.
Beneficial dredging	Using the spoil for restoring and building elevation from dredging that would take place regardless of the use of the spoil (see dedicated dredging).
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).
CFR:	Code of Federal Regulations.

Compatible Use:	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 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).
Concern:	See Issue
Cover Type:	The present vegetation of an area.
Crevasse	Relatively small opening or breach in levee or embankment
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 Resource Overview:	A comprehensive document prepared for a field office that discusses, among other things, its prehistory and cultural history, the nature and extent of known cultural resources, previous research, management objectives, resource management conflicts or issues, and a general statement on how program objectives should be met and conflicts resolved. An overview should reference or incorporate information from a field offices background or literature search described in Section VIII of the Cultural Resource Management Handbook (Service Manual 614 FW 1.7).
Cultural Resources:	The remains of sites, structures, or objects used by people in the past.
Dedicated Dredging	Dredging for the purpose of restoring and building elevation (see beneficial dredge).

Designated Wilderness Area:	An area designated by the United States Congress to be managed as part of the National Wilderness Preservation System (Draft Service Manual 610 FW 1.5).
Disturbance:	Significant alteration of habitat structure or composition. 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.
Emergent Marsh	Wetlands dominated by erect, rooted, herbaceous plants.
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).
Estuary:	The wide lower course of a river into which the tides flow. The area where the tide meets a river current.
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 but does not define measurable units (Service Manual 620 FW 1.6J).
Habitat:	Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.
Habitat Restoration:	Management emphasis designed to move ecosystems to desired conditions and processes, and/or to healthy ecosystems.
Habitat Type:	See Vegetation Type.
Improvement Act:	The National Wildlife Refuge System Improvement Act of 1997.
Informed Consent:	The grudging willingness of opponents to "go along" with a course of action that they actually oppose (Bleiker).
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).
Management Alternative:	See Alternative
Management Concern:	See Issue
Management Opportunity:	See Issue
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 impacts of their 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 Intent (NOI):	A notice that an environmental impact statement will be prepared and considered (40 CFR 1508.22). Published in the Federal Register.
Noxious Weed:	A plant species designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insect or disease; or non-native, new, or not common to the United States, according to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or had adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health.
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. Making objectives attainable, time-specific, and measurable (Service Manual 602 FW 1.6N).

Plant Association: A level of classification for plant communities based on species composition, structure, and habitat and encompassing dominants and diagnostic species in all canopy layers in a plant community. Three interrelated criteria-species composition, structure, and habitat-conceptually define an association. The association concept encompasses both the dominant species (those that cover the greatest area) and diagnostic species (those found consistently in some vegetation types but not others (NatureServe 2010).

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.

Proposed Alternative: This is the alternative determined [by the decision maker] 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). May be from natural ignition or intentional ignition.

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 Plan: Broad long-term guidance for involving the public in the comprehensive planning process.

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 specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge sub-unit." For refuges that encompass Congressionally designated wilderness, the purposes of the Wilderness Act are additional purposes of the refuge Service Manual 602 FW 106 S).
Recommended Wilderness:	Areas studied and found suitable for wilderness designation by both the Director and Secretary, and recommended for designation by the President to Congress. These areas await only legislative action by congress in order to become part of the Wilderness System. Such areas are also referred to as "pending in Congress." (Draft Service Manual 610 FW 1.5).
Record of Decision (ROD):	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).
Refuge Goal:	See Goal.
Refuge Purposes:	See Purposes of the Refuge.
Songbirds: (Also Passerines)	A category of birds that are medium to small, perching landbirds. Most are territorial singers and migratory.
Splay	Splay in biological terms is a vegetated, emergent marsh that develops from sediments deposited in open water as a result of overflow of the natural banks or levees of a river or channel or as the result of a natural or created crevasse or sediment diversion.
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/EIS 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.

Tiering: The coverage of general matters in broader environmental impact statements with subsequent narrower statements of environmental analysis, incorporating by reference, the general discussions and concentrating on specific issues (40 CFR 1508.28).

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.

Unit Objective: See Objective

Vegetation Type, Habitat Type, 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 and undergoing evaluation for recommendation for inclusion in the Wilderness System. A study area must meet the following criteria:

- Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable
- Has outstanding opportunities for solitude or a primitive and unconfined type of recreation
- Has at least 5,000 contiguous roadless acres or is sufficient in size as to make practicable its preservation and use in an unimpaired condition (Draft Service Manual 610 FW 1.5)

Wilderness: See Designated Wilderness

Wildfire:	A free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands (Service Manual 621 FW 1.7).
Wildland Fire:	Every wildland fire is either a wildfire or a prescribed fire (Service Manual 621 FW 1.3

ACRONYMS AND ABBREVIATIONS

BCC	Birds of Conservation Concern
BRT	Biological Review Team
CAA	Clean Air Act
CBRA	Coastal Barrier Resources Act of 1982
CCP	Comprehensive Conservation Plan
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIAP	Coastal Impact Assistance Program
CO2	Carbon Monoxide
CWCS	Comprehensive Wildlife Conservation Strategy
CWPPRA	Coastal Wetland Planning, Protection, and Restoration Act
COE	US Army Corps of Engineers
DOI	Department of the Interior
DU	Ducks Unlimited
EA	Environmental Assessment
EE	Environmental Education
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FR	Federal Register
FTE	Full-time Equivalent
FY	Fiscal Year
GIS	Global Information System
GIW	Gulf Intracoastal Waterway
GCJV	Gulf Coast Joint Venture
IPCC	Intergovernmental Panel on Climate Change
LCA	Louisiana Coastal Area
LDWF	Louisiana Department of Wildlife and Fisheries
LMRE	Lower Mississippi River Ecosystem
LMVJV	Louisiana Mississippi Valley Joint Valley
MMS	Mineral Management Service
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NABCI	North American Bird Conservation Initiative
NAMS	National Ambient Monitoring Stations
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Society
NO2	Nitrogen Oxide
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
PM10	Particle Matter 10
PM2.5	Particle Matter 2.5
PFT	Permanent Full Time
PUNA	Public Use Natural Area
RM	Refuge Manual
RNA	Research Natural Area
ROD	Record of Decision

RONS	Refuge Operating Needs System
RRP	Refuge Roads Program
Service	U.S. Fish and Wildlife Service (also, FWS)
SLAMS	State and Local Ambient Monitoring Stations
SLAMM	Sea-Level Affecting Marshes Model
SO2	Sulfur Dioxide
TFT	Temporary Full Time
TGCE	Texas Gulf Coast Ecosystem
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey

Appendix B. References and Literature Citations

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Appendix C. Relevant Legal Mandates and Executive Orders

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.
Anadromous Fish Conservation Act of 1965, as amended	Authorizes the Secretary of the Interior and Commerce to enter into cooperative agreements with states and other non-Federal interest for conservation, development, and enhancement of anadromous fish and contribute up to 50 percent as the Federal share of the cost of carrying out such agreements. Reclamation construction programs for water resource projects needed solely for such fish are also authorized.
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.

STATUTE	DESCRIPTION
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.
Bankhead-Jones Farm Tenant Act of 1937	Directs the Secretary of Agriculture to develop a program of land conservation and utilization in order to correct maladjustments in land use and thus assist in such things as control of soil erosion, reforestation, preservation of natural resources and protection of fish and wildlife. Some early refuges and hatcheries were established under authority of this Act.
Cave Resources Protection Act of 1988	Established requirements for the management and protection of caves and their resources on Federal lands, including allowing the land managing agencies to withhold the location of caves from the public, and requiring permits for any removal or collecting activities in caves on Federal lands.
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 “sir quality and related values” of land under their control. These values include fish, wildlife, and their habitats.
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.
Coastal Barrier Resources Act of 1982 (CBRA)	Identifies undeveloped coastal barriers along the Atlantic and Gulf coasts and included them in the John H. Chafee Coastal Barrier Resources System (CBRS). The objectives of the act are to minimize loss of human life, reduce wasteful Federal expenditures, and minimize the damage to natural resources by restricting most Federal expenditures that encourage development within the CBRS.

STATUTE	DESCRIPTION
Coastal Barrier Improvement Act of 1990	Reauthorized the CBRA, expanded the CBRS to include undeveloped coastal barriers along the Great Lakes and in the Caribbean, and established “Otherwise Protected Areas (OPAs)”. The Service is responsible for maintaining official maps, consulting with Federal agencies that propose spending Federal funds within the CBRS and OPAs, and making recommendations to Congress about proposed boundary revisions.
Coastal Wetlands Planning, Protection, and Restoration (1990)	Authorizes the Director of the Fish and Wildlife Service to participate in the development of a Louisiana coastal wetlands restoration program, participate in the development and oversight of a coastal wetlands conservation program, and lead in the implementation and administration of a National coastal wetlands grant program.
Coastal Zone Management Act of 1972, as amended	Established a voluntary national program within the Department of Commerce to encourage coastal States to develop and implement coastal zone management plans and requires that “any Federal activity within or outside of the coastal zone that affects any land or water use or natural resource of the coastal zone” shall be “consistent to the maximum extent practicable with the enforceable policies” of a State’s coastal zone management plan. The law includes an Enhancement Grants Program for protecting, restoring or enhancing existing coastal wetlands or creating new coastal wetlands. It also established the National Estuarine Reserve Research System, guidelines for estuarine research, and financial assistance for land acquisition.
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, required 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.

STATUTE	DESCRIPTION
Energy Policy Act of 2005	Includes a section that establishes the Coastal Impact Assistance Program (CIAP), a program authorizing funds to outer continental shelf oil and gas producing states to mitigate the impact of oil and gas activities
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.
Estuary Protection Act of 1968	Authorized the Secretary of the Interior, in cooperation with other Federal agencies and the States, to study and inventory estuaries of the United States, including land and water of the Great Lakes, and to determine whether such areas should be acquired for protection. The Secretary is also required to encourage State and local governments to consider the importance of estuaries in their planning activities relates to Federal natural resource grants. In approving any state grants for acquisition of estuaries, the Secretary was required to establish conditions to ensure the permanent protection of estuaries.
Estuaries and Clean Waters Act of 2000	This law creates a Federal interagency council that includes the Director of the Fish and Wildlife Service, the Secretary of the Army for Civil Works, the Secretary of Agriculture, the Administrator of the Environmental Protection Agency and the Administrator for the National Oceanic and Atmospheric Administration. The Council is charged with developing a national estuary habitat restoration strategy and providing grants to entities to restore and protect estuary habitat to promote the strategy.
Food Security Act of 1985, as amended (Farm Bill)	The Act contains several provisions that contribute to wetland conservation. The Swampbuster provisions state that farmers who convert wetlands for the purpose of planting after enactment of the law are ineligible for most farmer program subsidies. It also established the Wetland Reserve Program to restore and protect wetlands through easements and restoration of the functions and values of wetlands on such easement areas.
Farmland Protection Policy Act of 1981, as amended	The purpose of this law is to minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. Federal programs include construction projects and the management of federal lands.

STATUTE	DESCRIPTION
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, nonduplicative function. Committees must be strictly advisory unless otherwise specified and meetings must be open to the public.
Federal Coal Leasing Amendment Act of 1976	Provided that nothing in the Mining Act, the Mineral Leasing Act, or the Mineral Leasing Act for Acquired Lands authorized mining coal on refuges.
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.
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 non-gamebird species, identify species of management concern, and implement conservation measures to preclude the need for listing under the Endangered Species Act.

STATUTE	DESCRIPTION
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.
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.
Fish and Wildlife Programs Improvement and National Wildlife Refuge System Centennial Act of 2000	Recognizes the vital importance of the Refuge System and the fact that the System will celebrate its centennial anniversary in the year 2003. Established the National Wildlife Refuge System Centennial Commission to prepare a plan to commemorate the 100th anniversary of the System, coordinate activities to celebrate that event, and host a conference on the National Wildlife Refuge System. The commission is also responsible for developing a long-term plan to meet the priority operations; maintenance and construction needs for the System, and improve public use programs and facilities.
Fishery (Magnuson) 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.
Geothermal Steam Act of 1970, as amended	Authorizes and governs the lease of geothermal steam and related resources on public lands. Section 15 c of the Act prohibits issuing geothermal leases on virtually all Service-administrative lands.

STATUTE	DESCRIPTION
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 act 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.
Marine Mammal Protection Act of 1972, as amended	The 1972 Marine Mammal Protection Act established a Federal responsibility to conserve marine mammals with management vested in the Department of Interior for sea otter, walrus, polar bear, dugong, and manatee. The Department of Commerce is responsible for cetaceans and pinnipeds, other than the walrus. With certain specified exceptions, the Act establishes a moratorium on the taking and importation of marine mammals as well as products taken from them.
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", 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
Mineral Leasing Act for Acquired Lands (1947), as amended	Authorizes and governs mineral leasing on acquired public lands.
Minerals Leasing Act of 1920, as amended	Authorizes and governs leasing of public lands for development of deposits of coal, oil, gas and other hydrocarbons, sulphur, phosphate, potassium and sodium. Section 185 of this title contains provisions relating to granting rights-of-ways over Federal lands for pipelines.
Mining Act of 1872, as amended	Authorizes and governs prospecting and mining for the so-called “hardrock” minerals (such as gold and silver) on public lands.
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	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 Trails System Act (1968), as amended	Established the National Trails System to protect the recreational, scenic and historic values of some important trails. National Recreation Trails may be established by the Secretaries of Interior or Agriculture on land wholly or partly within their jurisdiction, with the consent of the involved State(s), and other land managing agencies, if any. National Scenic and National Historic Trails may only be designated by an Act of Congress. Several National Trails cross units of the National Wildlife Refuge System.

STATUTE	DESCRIPTION
National Wildlife Refuge System 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 National Wildlife Refuge System 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 National Wildlife Refuge System Administration Act of 1966. This Act defines the mission of the National Wildlife Refuge System, 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.
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. North American Wetlands Conservation Council is created to recommend projects to be funded under the Act to the Migratory Bird Conservation Commission. Available funds may be expended for up to 50 percent of the United States share cost of wetlands conservation projects in Canada, Mexico, or the United States (or 100 percent of the cost of projects on Federal lands).
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.

STATUTE	DESCRIPTION
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 non-game species. The funding formula is no more than 1/3 Federal funds, at least 1/3 Foundation funds, and at least 1/3 State funds.
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.
Rivers and Harbors Appropriations Act of 1899, as amended	Requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States. The Fish and Wildlife Coordination Act provides authority for the Service to review and comment on the effects on fish and wildlife activities proposed to be undertaken or permitted by the Corps of Engineers. Service concerns include contaminated sediments associated with dredge or fill projects in navigable waters.
Sikes Act (1960), as amended	Provides for the cooperation by the Department of the Interior and Defense with State agencies in planning, development, and maintenance of fish and wildlife resources and outdoor recreation facilities on military reservations throughout the U.S. It requires the Secretary of each military department to use trained professionals to manage the wildlife and fishery resource under his jurisdiction, and requires Federal and State fish and wildlife agencies be given priority in management of fish and wildlife activities on military reservations.
Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948	This Act 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.

STATUTE	DESCRIPTION
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.
Uniform Relocation and Assistance and Real Property Acquisition Policies Act (1970), as amended	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.
Wild and Scenic Rivers Act of 1968, as amended	This act selects certain rivers of the nation possessing remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values; preserves them in a free-flowing condition; and protects their local environments.
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 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 a permanent Youth Conservation Corps (YCC) programs within the Department of Interior and Agriculture. Within the Service, YCC participants perform many tasks on refuges, fish hatcheries, and research stations.

EXECUTIVE ORDERS	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 Executive 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.

EXECUTIVE ORDERS	DESCRIPTIONS
EO 12906, Coordinating Geographical Data Acquisition and Access (1994), Amended by EO 13286 (2003). Amendment of EO's & other actions in connection w/ transfer of certain functions to Secretary of DHS.	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 CCP planning is the National Vegetation Classification System (NVCS), which is adopted, standard for vegetation mapping. Using NVCT 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.
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 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.

EXECUTIVE ORDERS	DESCRIPTIONS
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. This EO replaces and rescinds EO 11987, Exotic Organisms (1977).
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. (2001)	Instructs federal agencies to conserve migratory birds by several means, including the incorporation of strategies and recommendations found in Partners in Flight Bird Conservation plans, the North American Waterfowl Plan, the North American Waterbird Conservation Plan, and the United States Shorebird Conservation Plan, into agency management plans and guidance documents.

Appendix D. Public Involvement

SUMMARY OF PUBLIC SCOPING COMMENTS

In accordance with Service guidelines and NEPA recommendations, public involvement has been a crucial factor throughout the development of this CCP for Bogue Chitto NWR. It has been written with input and assistance from interested citizens, conservation organizations, and employees of local and state agencies. The participation of these stakeholders and their ideas has been of great value in setting the management direction for Bogue Chitto NWR. The Service, as a whole, and the refuge staff, in particular, are very grateful to each one who has contributed time, expertise, and ideas to the planning process.

The development of this CCP was executed in accordance with refuge planning policy [602 FW 3.4C(1)] and NEPA. This development was initiated in October 2008, with the establishment of a core planning team. Through the planning process, and with input from local, state, and federal agencies, the public, and conservation associations, the planning team identified issues and concerns that were relevant to the current and future conservation and management of the refuge.

On May12-15, 2008, a biological review was conducted at Bogue Chitto NWR that assessed the status of biological resources and programs currently in place on the refuge, resulting in a report published in December 2008. The review was conducted as part of a planning process for the refuge, as required by the Improvement Act. Recommendations provided in this report were developed within the established purposes of this refuge by a diverse group of biologists and specialists, representing various offices and agencies. These recommendations were used to guide management of the refuge and to develop the proposed alternative in this CCP.

In 2008, a visitor services review was conducted to evaluate the status of the existing public use programs, facilities, and opportunities, resulting in a report published in June 2008. This review provided guidance for short-, intermediate-, and long-term recommendations for improving the quality of public use and educational services.

Public involvement and input into the development of this CCP were initiated by the submission of a notice of intent (NOI). The NOI, summarizing the intent of the refuge to begin the CCP process, was published in the *Federal Register* on February 20, 2009 (74 FR 7913). Public scoping meetings were held April 8 and 9, 2009, to allow stakeholders the opportunity for their concerns to be considered in the refuge's future management. Approximately 25 members of the public attended the public scoping meeting. Eight members of the public offered their comments at the public meeting, and four other comments were received by mail.

Comments received include the following:

Internally: The biological review team discussed a variety of biological issues and management options during the review session. Many important biological programs were addressed and productive recommendations made; however, there was consensus that certain broad management efforts were essential first and foremost on Bogue Chitto NWR. It was agreed that the following priority actions would most essentially address the biological integrity of the refuge and allow it to meet its purpose, laying the groundwork for stable and productive wildlife habitat: (1) Maintain habitat integrity through active forest management and prescribed fire programs; (2) maintain habitat integrity through control of exotic and invasive plants and animals; (3) provide personnel to perform mission

critical management and to administer such management; and (4) implement research and monitoring activities to facilitate conservation and management of trust resources. Immediate needs were identified as: (1) Hire a biologist/forestry technician to assist with on-the-ground management and survey and monitoring activities; and, (2) increased resources (financial, staff, equipment) to pursue proactive control of invasive exotics.

Visitor Service related issues included: (1) Develop the fish pond into a fishing, hiking, wildlife watching, and photography destination; (2) develop one-panel kiosks to be placed beside all public boat ramps to inform visitors of the rules and regulations of Bogue Chitto NWR; and (3) camping regulations need to be strictly enforced and camping needs to be gradually reduced to an acceptable level on the refuge.

State: LDWF and MDWFP are in agreement and support the efforts of refuge management. LDWF would like to move Bogue Chitto NWR's closing water level to 16.5 feet at the Pearl River gauge in order to bring it in-line with the closure level on the adjacent Pearl River WMA. LDWF would also like the Service to utilize new imagery data to evaluate area flooded on Bogue Chitto NWR at 15.5- and 16.5-foot elevations in order to assess this change in water level. MDWFP had chosen to participate actively in the comprehensive conservation planning process by appointing one employee to the core planning team.

Tribes: Letters were provided to representatives of Tunica-Biloxi Indians of Louisiana, Caddo Nation of Oklahoma, and the Quapaw Tribe, requesting issues they would like to see addressed in the CCP and inviting them to participate in the process. No responses were received.

Partners: Included above under Internal and State headings.

Public: The following comments received from the public either at the public scoping meetings or in correspondence are noted below:

FISH AND WILDLIFE POPULATION MANAGEMENT

- Need baseline data on fish and wildlife populations.
- Turkeys gone.
- Possible problems with dredging due to endangered mussel.
- Haven't seen any bob-white quail in 9 years. Afraid their population is going down. Used to see them on refuge.
- Fox will kill off quail.
- Hog population is too high and competing with wildlife.
- Concerned that bull frogs and wood duck populations have decreased in the area.

HABITAT MANAGEMENT

- Can't cut vegetation which makes it impossible to move through.
- Vegetation is very thick.
- Allow hunters to cut briars and small vegetation to make the refuge accessible.
- Make an effort to inventory, monitor, protect, and enhance habitat for refuge species as outlined in the Draft CCP/EA, particularly with regards to non-native species.
- Conduct controlled burn in order to reduce vegetation loads from Hurricane Katrina and increase access to Bogue Chitto NWR, especially along the Pearl River near Walkiah Bluff.

- Believes the direct hit from a catastrophic hurricane and damage to Bogue Chitto NWR should justify more aggressive habitat management including: (1) Conduct frequent controlled burns, but not during turkey nesting season; (2) relax restrictions on cutting vegetation, and let hunters cut trails but only briars and no trees; and (3) bring in heavy equipment to push briars and dead trees into large piles and burn them and then plant fast growing trees of all kinds.

RESOURCE PROTECTION

- Global warming concerns.
- The Service needs to clear power line rights-of-way.
- The river is stalling on refuge and staying, slows river.
- Concerned with illegal dumping and river pollution.
- Litter caused by inconsiderate refuge users needs to be addressed.
- Would like to see the National Park Service, Fish and Wildlife Service, and USDA Forest Service purchase every piece of property possible.
- Boundary signs need to be improved. Storm knocked down a lot of signs.
- Problem would be if you were hunting on state lands and person is actually hunting on federal land.
- It would be nice to see statistics on what is taken on the refuge annually.
- Pearl River is not a state scenic river. Since it is not, the Pearl River needs to be dredged, clearing out river and adding the dredge to marsh land.
- Is there going to be another reservoir and what would that do to the river flow on the refuge? Ensure involvement in process due to potential effects on the refuge. Work with partners to ensure river around area is not drained or knocked out.
- When river is low the only access is to walk the slough.
- The Nature Conservancy – Pearl River project manager, looking at sediment loads, two lakes reservoir project is in the works, really important to stay in tune.
- Dredging may actually not improve area and in the long term will not start filling in again. Not long-term solution.
- Dredging may make river able to navigate.
- Increase law enforcement presence on refuge. It seems to be absent.
- Concerned about shots heard and boating with spotlights at night.
- Weir at Walkiah Bluff is dangerous. Work with Corps to make it safer.
- The CCP should evaluate all wilderness lands that were previously proposed for wilderness designation so that the public may understand the conservation status of those lands. The plan should also identify future management actions.
- The CCP must also address management actions for both potential and designated wilderness lands.
- The presence of the federally listed threatened Gulf sturgeon and a highly diverse mussel population in the waters of Bogue Chitto NWR make water quality in the refuge a special consideration. The Wilderness Society urges refuge management to carefully review ongoing sand and gravel mining operations.
- Evaluate any other mineral extraction operations occurring in and around Bogue Chitto NWR which could have deleterious effects on refuge inhabitants.
- The CCP should outline the challenges and management requirements associated with all inholdings.

- The CCP should examine acquisition possibilities. In anticipation of changes to the landscape due to outside development, global warming, and other factors present new management challenges. The response to these challenges may in some instances require refuge expansion or boundary changes. Timely acquisition can enhance management capability to ease new wildlife population pressures deriving from a warmer, drier climate and resulting habitat perturbations.
- The Service is also required to identify any and all foreseeable land acquisition and expansion plans for the refuge and assess the potential for future impacts to fish, wildlife, and their habitats and wilderness within the refuge. Short-term and cumulative threats to the refuge from potential development must be prohibited.
- We request that the Service assess the implications of climate change in all of the alternatives developed for the CCP. The Service should be proactive in developing management alternatives that account for climate change in management strategies and objectives.
- Bogue Chitto NWR stands in a unique position due to its relationship with The Conservation Fund's Go Zero™ program. Carbon sequestration projects can be used both to reforest current refuge land and acquire and reforest additional lands near the refuge. While this is an opportunity that the refuge should take advantage of, it would also be wise to do some planning. Deciding which lands should be reforested, taking an active approach in determining the species composition, and setting guidelines for how the land will be managed in accordance with the Refuge System's "wildlife first" mandate can help to ensure that the refuge truly benefits from the voluntary carbon market.
- Bogue Chitto NWR should take special note of how carbon sequestration projects will uniquely affect the refuge. Reforestation from carbon sequestration projects has great potential to mitigate climate change and help wildlife adapt to changing global temperatures.

VISITOR SERVICES

- Camp at Red Bluff – Prior to storm, access was possible at river stage 13-14 feet. Currently, when river gets up, access to Big Creek is cut off. They would like to have access to Bogue Chitto NWR and Big Creek. Cut out the bayou coming to Big Creek. Clear out feeder bayou.
- Install check station where campers must obtain a permit and have designated numbered camping areas to control littering problems.
- Littering and accessibility to refuge are the most important issues facing the refuge.
- Clearing will help with flood control.
- Hurricane Katrina caused the inability to boat areas.
- Since Katrina, access is a struggle, oaks are gone, gum trees are gone. Completely changed causing no access.
- Hog and deer populations are growing because of access to and hunting seasons closed due to the river being too high.
- Like idea of making up hunting days.
- Hogs are depredating acorns that deer could eat. Would like to have hog hunting with dogs when seasons close in order to control hog populations.
- Open hog season entire summer.
- Hunt hogs with whatever weapon that a season is open.
- Would like one week of hog hunting with guns in February.
- Steel shot requirement is hampering take of squirrels or other small game. Crippling is a problem. Would like to see lead shot for hunting small game.
- Deer management – Do away with doe days during the rifle season. Reduce take of does. Concerned that there are not enough does in Louisiana side.

- Muzzle loader season should start in January to better coincide with rut. Bucks only. No does.
- Could the public participate in cutting some trails or in the bayous?
- Would like to see more hunt days. Access is a problem since the storm so would like to see more time allowed to hunt deer.
- Horseback riding is a good way to see wildlife up close. Would like to see horseback riding allowed on the refuge. Old logging trails make good horse trails. Don't need to make additional trails since old trails work well.
- Mississippi side of refuge had less hunt days than Louisiana. Want to see more hunt days on Mississippi side.
- Mississippi side got short-changed on number of hunt days compared to Louisiana.
- Set primitive hunting days closer to the time of rut.
- Would like to see hunters from Louisiana or Mississippi buy a combined permit enabling the hunter to utilize both sides of the refuge.
- Would like to see deer hunting season start in November and end in February.
- Need more days to hunt. There are more deer now then there has ever been.
- Would like to see hog season at same time as squirrel season. Would like to see larger take of hogs.
- Hogs are taking over.
- Open up old logging trails on Farrs Island to provide hunter access.
- Open up old logging roads for hunter access. Access is tough due to post-storm conditions.
- Post storm conditions have made access so difficult you need to clear some live vegetation to access your stand and/or retrieve your deer after the kill. Just want to get briars out of the way. Not interested in killing oak trees.
- Turkeys are nesting in late May. Doesn't want to see the area burned then. Hens are nesting before, especially during high flood waters. Would like to see burning in February or after June 1.
- Too many hogs. Need to find a safe way to reduce their populations.
- Would like to have a hog season without dogs. Just hogs, not combined with another season.
- Audubon Society wanted more birding opportunities and make refuge more birder friendly.
- Correlate the public uses on the refuge with their impacts on the refuge's wildlife species.
- The CCP should examine and outline a plan for off-road vehicle use
- TWS requests that the Service identify and analyze in the CCP all non-wildlife-dependent activities on the refuge – activities not included in the priority public uses, as described in the Improvement Act. This includes, but is not limited to, access to the refuge, such as ATV use and proposed roads.

SUMMARY OF DRAFT CCP/EA COMMENTS

Public involvement in the development of the Draft CCP/EA for Bogue Chitto NWR in St. Tammany and Washington Parishes, Louisiana, and Pearl River County, Mississippi was sought throughout the planning process.

The issues and alternatives generated from the scoping meeting, coupled with the input of the planning team, are summarized in Chapter III.

The Draft CCP/EA was made available for public review beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to four local, state, and regional newspapers, six online media outlets, and two local radio networks. Copies of the Draft CCP/EA were posted at refuge

headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies. One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail. Draft CCP/EA comments and the Service's response to those comments are summarized below.

The comments submitted during the public review and comment period were evaluated, summarized, and grouped into several categories: General; Fish and Wildlife Populations; Habitat Management; Visitor Services; Resource Protection; and Refuge Administration. Comments on like topics were grouped together. The Service's responses to the comments are provided, by category.

The page numbers referenced relate to the original page numbers in the Draft CCP/EA that was released for public review and comment.

General

Comment: Four respondents provided general editorial comments, noting minor discrepancies and the need to correct inconsistencies.

***Service Response**:* The Service incorporated these changes where appropriate.

Comment: One respondent requested the Service include information on which waterways within Bogue Chitto NWR are polluted and the known or suspected sources of this pollution

***Service Response**:* The Service incorporated these changes, included information in Chapter II, and integrated in appropriate parts of the CCP.

Comment: Forty-two respondents were in support of Alternative A, the No Action Alternative, which would leave the refuge as it is now. Twenty respondents were in favor of Alternative B except the proposal to make Holmes Island a Sanctuary area without hunting, fishing or access, and were not in favor of a lottery hunt.

***Service Response**:* The Service believes that the selection of Alternative B as the proposed action best meets the purpose and goals of the refuge, as well as providing for appropriate and compatible public uses on the refuge. Hunting, fishing, and boat access are expected to continue to be allowed on Holmes Island even if it was entered as a Wilderness Study Area and officially designated as Wilderness.

Comment: One respondent requested that information be added on the connection between the sediments laid down by the Mississippi and Bogue Chitto Rivers and the importance of loess deposits in and about the Bogue Chitto and Pearl Rivers that were laid down 51,000 to 13,000 years ago.

***Service Response**:* Comment noted. The Service added this information to the CCP.

Comment: One respondent notes that the CCP provides a number of laws that protect human health and the environment and points out that Louisiana also has some legal tools which could benefit Bogue Chitto NWR, such as Article 9, Section 1, of the Louisiana Constitution.

***Service Response**:* Comment noted.

Comment: One respondent noted that another project which has caused dramatic environmental impacts to the sediment loads, water quality, and fish and wildlife habitat in and along the Pearl River has been the Ross Barnett Reservoir. This respondent also notes that the Bogue Chitto River, which flows through the refuge, is part of the Louisiana Natural, Scenic, and Historic River Systems designated back in 1970.

***Service Response**:* Comment noted. This information has been added to Chapter II, Section Special Designations.

Comment: One respondent believes a national park should be created at the refuge which would include recreational vehicle camping, tours, and other items the National Park Service offers.

***Service Response**:* Comment noted. Although the National Park Service is the Service's sister agency within the Department of the Interior, the missions are vastly different. However, we do support and will provide for appropriate, compatible wildlife-dependent uses on Bogue Chitto NWR.

FISH AND WILDLIFE POPULATIONS

Comment: One respondent would like information on what recommendations have and will be made on the existing barriers to the Gulf Sturgeon in their native habitat on the Bogue Chitto River. This respondent noted that when the USACE built a sill on the Bogue Chitto River, it prevented Gulf Sturgeon from reaching their historical nesting areas which are located above the sill across the river.

***Service Response**:* Comment noted. More information was added to Goal A, Objective A-12 regarding specific strategies to benefit the Gulf Sturgeon.

Comment: One respondent believes that the Service should not be managing for species such as turkey, white-tailed deer, and blue jays, species least in need of protection, and instead should manage for species needing interior old growth forests.

Service Response: The wildlife and habitat vision for national wildlife refuges stresses that wildlife comes first; that ecosystems, biodiversity, and wilderness are vital concepts in refuge management; that refuges must be healthy and growth must be strategic; and that the Refuge System serves as a model for habitat management with broad participation from others. Although the Service is charged with managing the Refuge System for trust species, migratory birds and endangered species, other species benefit from these efforts. The Service and Bogue Chitto NWR support the Desired Forest Conditions developed by the Lower Mississippi Valley Joint Venture Forest Resource Conservation Working Group, which describes habitat conditions to support sustainable populations of all forest-dependent wildlife species, including those that require forest interior old growth conditions. A reference to managing for those conditions is made in appropriate sections of this CCP and will be followed up in more detail in the Step-down Habitat Management Plan.

HABITAT MANAGEMENT

Comment: Many respondents believe the Service should allow trimming of vegetation and knocking down briars, especially on older logging roads and river banks in order to better access the refuge since Hurricane Katrina came through.

***Service Response**:* The national policy on all national wildlife refuges states that disturbing, poisoning, destroying, collecting, or attempting to disturb, poison, destroy, or collect plants on national wildlife refuges is prohibited as per 50 CFR 27.51, without a special use permit from the

refuge. The public may request a special use permit from the refuge office to clear vegetation in drainages, streams, old logging roads, and trails. It has not been policy to enforce the damage of vegetation from the knocking down of briars by persons walking through the woods. All users are encouraged to contact the refuge office for guidance on clearing vegetation for public access. Within the last two years, only one entity has requested to clear trees from preventing access, which was granted via special use permit.

Comment: One respondent would like the Service to stop cutting timber along river banks or creating new roads and trails into the refuge because they cause erosion. Two individuals would like the Service to stop all timber harvesting.

***Service Response**:* The services mission is to conserve and not preserve. Conservation requires activities to management, create, or restore wildlife habitats. The Service must and will continue to manage according to its mission. Timber cutting along river banks has not been performed within a 5-chain buffer strip for the entire life of the refuge (since 1986). This CCP proposes to continue maintaining a 5-chain buffer strip where best management practices are implemented to limit activities near named rivers, bayous, and streams, which will protect from runoff and provide aesthetics along waterways.

VISITOR SERVICES

Comment: Approximately fifty respondents believe the Service should not hold lottery hunts on the refuge. Most believe this would be dangerous to outsiders using the refuge due to the difficulty of accessing areas and unnecessary since a lottery hunt could limit the hunting pressure which is already very low.

Service Response: The Service notes these comments and concurs. All reference to lottery hunts was taken out of the CCP. The Service supports not holding lottery hunts on this refuge which has multiple egress and ingress points, providing difficulty in managing a lottery hunt.

Comment: Two respondents were not in favor of hunting on the refuge.

Service Response: Hunting is one of the six priority public uses identified in the Improvement Act, and hunting has been found to be compatible with the purposes for which Bogue Chitto NWR was established. Hunting will be continued at a level similar to what has occurred in recent years. Any reduction could lead to over-population of deer and other species, which would result in habitat damage and competition with migratory birds for food resources. Minor adjustments in bag limits, hunter quotas, and hunt dates will continue to be evaluated on an annual basis as well as addressed in a visitor services step-down plan. Non-hunting areas will be identified in areas where non-consumptive use is encouraged. Hunting of big game and small game is closed when wildlife are forced to seek high ground during floods, as when the Pearl River gauge reaches 15.5 feet or higher.

Comment: One respondent wants the Service to ban all trapping stating that there is no “nuisance” wildlife.

Service Response: Presently, trapping is not permitted on Bogue Chitto NWR for fur bearers and the Service would have to go through a planning and public comment period in order to open it to this type of trapping. Hogs cause an unacceptable degree of damage to the bottomland hardwood forest and habitat on adjacent lands. On a landscape scale, considering the historical forest as greatly diminished in size, the percent of remaining forest impacted by hogs is much greater than would have occurred naturally in an undisturbed setting. Due to the massive increase in food and cover post

Hurricane Katrina, feral hog numbers are expected to greatly expand. Hogs are very prolific reproducers, which can cause managers great concern. High hog numbers will not only compete with native wildlife for food but also predate on other species and degrade the overall habitat quality. An increased hog control effort is needed and targeted trapping has proven to be an effective tool on other refuges.

Comment: Approximately forty-eight respondents want to see an increased law enforcement presence on the refuge.

Service Response: The Service concurs and Goal E, Objective E-1, states the need to hire an additional law enforcement agent.

Comment: One respondent would like the Service to provide opportunities for paddling and hiking, information on where to paddle, and how paddlers can navigate in the flooded hardwood forest in the refuge. This respondent suggests creating marked paddling trails from Locks 3 and 2 and described in a publication. This respondent also believes that once the canopy has returned and the undergrowth is reduced, opportunities for hiking would also be important.

Service Response: The Service concurs and changes have been made to the CCP.

Comment: One respondent commented on the Compatibility Determination for Boating. This respondent believes that surface drive motors should be allowed on Bogue Chitto NWR.

Service Response: For the past several years, currently, and in the predicted future, the Service has not and does not plan on banning the use of surface drive motors on Bogue Chitto NWR.

Comment: One respondent believes the Service should offer more weeks for primitive weapon deer hunting on Bogue Chitto NWR. Another respondent believes the Service should move the primitive weapon season later in the calendar year around the prime rut. One respondent would like to be able to leave deer stands in the hunting position. One individual would like to be able to use lead shot for small game. Another individual would like to keep doe days down to a minimum and have more buck only days closer to the rut.

Service Response: The Service will address specific hunting season changes in a step-down visitor services plan to be developed in 2014. The Service has and will continue to alternate hunt days and buck versus doe hunts on the basis of population size and deer herd health. The Service continues annual health checks in cooperation with the State of Louisiana and the Center for Disease Control. The peak of the rut on Bogue Chitto NWR was determined based on fetus size to be near December 25. The Service continues to provide the most opportunistic hunting days the week before and the week after Christmas. Primitive weapon seasons on the refuge were recently extended to allow more days for Mississippi hunters to use primitive weapons and alternated from November to January based on multiple hunter requests.

Leaving deer stands on the refuge in a non-hunting position was a regulation required for all refuges in Louisiana and matches the same requirement in state wildlife management areas for consistency in wildlife management area/refuge regulations.

The requirement for the use of non-toxic shot to hunt small game is a retained regulation since most refuge lands that inhabit small game also inhabit waterfowl or are within a shooting distance of waterfowl habitat.

Comment: Many respondents believe hogs are taking over the refuge. Comments included offering a bounty on hunted hogs, hunt hogs during the squirrel season, trap hogs, bait hogs, and allow the taking of hogs during any season.

Service Response: On Bogue Chitto NWR, hogs cause an unacceptable degree of damage to the bottomland hardwood forest and habitat on adjacent lands. On a landscape scale, considering the historical forest as greatly diminished in size, the percent of remaining forest impacted by hogs is much greater than would have occurred naturally in an undisturbed setting. Due to the massive increase in food and cover post Hurricane Katrina, feral hog numbers are expected to greatly expand. Hogs are very prolific reproducers, which can cause managers great concern. High hog numbers will not only cause competition with native wildlife for food but also will predate on other species and degrade the overall habitat quality. An increased hog control effort is needed. Research has shown that recreational hunting in itself does not control hog populations. Additional refuge funding will be needed to offer a bounty or contract with animal control agents. Allowing the hunting of hogs during squirrel and rabbit season has proven to be unsafe to users. Several members of the general public were mistakenly killed for hogs while squirrel and rabbit hunting. The Service does not currently recommend opening hog hunting during squirrel and rabbit season. The Service does support increased efforts in removing hogs and has added experimental hog seasons in this CCP.

Comment: One respondent would like boat access only on the refuge. Several respondents were against any motorized boat restrictions.

Service Response: Comment noted. Boat access to the refuge for historical uses was identified in the enabling legislation establishing the refuge. Motorized boats in many cases are and will be the only means to access the refuge. There exists currently and it is proposed in this CCP to not have a restriction on the type of boat used to access the refuge. Motorboat access described in this CCP encourages and allows access for the priority public uses identified in the Improvement Act (e.g., hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

Comment: Many respondents believe that the refuge provides lower income individuals an opportunity to hunt in a premiere area similar to an expensive hunt club experience. These respondents are concerned that if Holmes Island or any other part of the refuge becomes wilderness and sanctuary, they will lose this resource.

Service Response: The CCP requires the Service to conduct a wilderness study. The refuge currently plans on including and maintaining hunting in the potential wilderness area.

Comment: Many respondents believe the camping system on the refuge needs to be improved and enforced. Multiple respondents believe that camping permits should be issued, which hold each individual responsible for a particular campsite, but there should not be designated camping areas on the refuge, nor a limit to the number of days an individual can camp. Many believe that increasing fines and law enforcement presence would solve the issues of littering, campsites being left unattended, and camps being established for too long. Another respondent suggests that since most people camp in the same spots every year, law enforcement agents could GPS these locations, post no littering signs, and take pictures of the sites.

Service Response: The Service agrees that the camping system needs improvement and has tried many steps to improve the camping and associated littering problem. Camping is not a priority public use identified in the Improvement Act and it is not required to meet public use objectives. The Service welcomes suggestions from the public on addressing the problems associated with camping and in enforcing camping and littering regulations. The Service will consider developing camping permits and

will also consider reducing camping locations or centralizing camp sites to allow for better enforcement. The Service does believe that additional law enforcement officers are needed on the refuge.

Comment: One respondent believes there should not be a reduction in camping areas on the refuge. This respondent believes that more boating accidents, illegal activity, and hunting advantages to adjacent private landowners would occur. This respondent also commented that poor river bank conditions, thick vegetation growth, and low water levels limit the available camping areas regardless. Another respondent believes the Service should designate camping areas near boat launches and off the main river channel during the hunting seasons.

Service Response: Presently, camping is allowed on all refuge lands within 100 feet of either bank of Bogue Chitto River, Wilson Slough, West Pearl River, East Pearl River, and Holmes Bayou. These are all the major waterways that boats can navigate on the refuge. With this large amount of camping area allowed, illegal camp dumping and littering have continued. As a result, camping issues will be addressed as mentioned previously.

RESOURCE PROTECTION

Comment: Approximately, forty-nine respondents do not want the Service to turn Holmes Island into a sanctuary without hunting, fishing, or access. One respondent noted that the proposed WSA contains 9,308 acres; nearly 1/3 of the refuge and restricting access to foot traffic only would significantly reduce and negatively impact traditional hunting and fishing uses. This respondent believes that a major reason the Service is considering a WSA in this area is due to litter associated with overnight camping. They suggest that the Service increase law enforcement efforts to control litter problems and establish designated camping areas instead of creating a WSA. Most of the respondents believe that the area experiences very little hunting pressure due to access and that if hunting was not allowed hogs would take over this area of the refuge.

Service Response: The proposed wilderness study area has no relation to the camping and associated litter problem. The Holmes Island fits the guidelines in identifying wilderness study areas. The wilderness study area proposal can have guidance in maintaining present uses and the refuge plans to maintain hunting and fishing within the wilderness study proposal.

Comment: Approximately five respondents believe it is very difficult and dangerous to access the refuge, especially during low water conditions and getting around the spillway between Locks 2 and 3 is difficult. These respondents believe that something must be done to make this spillway and Wilson Slough easier and safer to navigate by dredging the river, restructuring the weir, and/or diverting more water down past the Walkiah Bluff boat ramp. Several comments were received regarding the need to dredge the Pearl River and canal.

Service Response: The Service concurs. The Service wants to see the river remain as natural as possible; therefore, it has no plans to dredge any portion. Dredging of the Pearl River Lock and Dam System or the Pearl River from Walkiah Bluff south to Wilson Slough may be performed by the USACE as state waters. The Service supports removal of all sills along the river, but has no authority to do so.

Comment: One respondent believes the cultural resources component of the CCP is far from complete. This respondent believes the Service should list tribal cultural affiliations and discuss discoveries and procedures, reference SHPO and THPO consultation and procedures, and site show maps for previous construction work.

Service Response: Changes were made to the CCP

Comment: One respondent stated that the Draft CCP/EA does not identify any structures or features that are listed or eligible for listing in the National Register of Historical Places. This respondent believes that a historic standing structure survey of all properties that are listed or eligible for listing in the National Register would need to be completed prior to them commenting on the Draft CCP/EA.

Service Response: There are no historical structures on the refuge. However, changes were made to the CCP requesting surveys to be completed.

REFUGE ADMINISTRATION

Comment: One respondent commented that the refuge probably needs five times more staff and equipment than has been provided by the U.S. Congress and that partnering can enhance protection of resources.

Service Response: The refuge shares five staff members with two other refuges and these five staff members also assist with activities at all eight refuges within the Southeast Louisiana NWR Complex. Therefore, current staffing levels restrict the refuge's ability to meet its objectives. Adequate funding, staffing, and maintenance/purchase of necessary equipment are vital to ensure adequate management of the refuge.

Comment: One respondent commented that on page 84 of the Draft CCP/EA, the recurring costs of $24,478 to hire an assistant manager is stated incorrectly.

Service Response: The Service corrected this inconsistency.

Appendix E. Appropriate Use Determinations

BOGUE CHITTO NATIONAL WILDLIFE REFUGE APPROPRIATE USE DETERMINATIONS

An appropriate use determination is the initial decision process a refuge manager follows when first considering whether or not to allow a proposed use on a refuge. The refuge manager must find that a use is appropriate before undertaking a compatibility review of the use. This process clarifies and expands on the compatibility determination process by describing when refuge managers should deny a proposed use without determining compatibility. If a proposed use is not appropriate, it will not be allowed and a compatibility determination will not be undertaken.

Except for the uses noted below, the refuge manager must decide if a new or existing use is an appropriate refuge use. 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:

Six wildlife-dependent recreational uses - As defined by the National Wildlife Refuge System Improvement Act of 1997, the six wildlife-dependent recreational uses (hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation) are determined to be appropriate. However, the refuge manager must still determine if these uses are compatible.

Take of fish and wildlife under state regulations - States have regulations concerning take of wildlife that includes hunting, fishing, and trapping. The Fish and Wildlife Service considers take of wildlife under such regulations appropriate. However, the refuge manager must determine if the activity is compatible before allowing it on a refuge.

Statutory Authorities for this policy:

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. This law provides the authority for establishing policies and regulations governing refuge uses, including the authority to prohibit certain harmful activities. The Act does not authorize any particular use, but rather authorizes the Secretary of the Interior to allow uses only when they are compatible and "under such regulations as he may prescribe." This law specifically identifies certain public uses that, when compatible, are legitimate and appropriate uses within the Refuge System. The law states ". . . it is the policy of the United States that . . .compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System . . .compatible wildlife-dependent recreational uses are the priority general public uses of the System and shall receive priority consideration in refuge planning and management; and . . . when the Secretary determines that a proposed wildlife-dependent recreational use is a compatible use within a refuge, that activity should be facilitated . . . the Secretary shall . . . ensure that priority general public uses of the System receive enhanced consideration over other general public uses in planning and management within the System . . . ." The law also states "in administering the System, the Secretary is authorized to take the following actions: . . . issue regulations to carry out this Act." This policy implements the standards set in the Act by providing enhanced consideration of priority general public uses and ensuring other public uses do not interfere with our ability to provide quality, wildlife-dependent recreational uses.

Refuge Recreation Act of 1962, 16 U.S.C. 460k. The 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-dependent recreational development or protection of natural resources. It also authorizes the charging of fees for public uses.

Other Statutes that Establish Refuges, including the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) (16 U.S.C. 410hh - 410hh-5, 460 mm - 460mm-4, 539-539e, and 3101 - 3233; 43 U.S.C. 1631 et seq.).

Executive Orders. The Fish and Wildlife Service must comply with Executive Order 11644 when allowing use of off-highway vehicles on refuges. This order requires the Service to designate areas as open or closed to off-highway vehicles in order to protect refuge resources, promote safety, and minimize conflict among the various refuge users; monitor the effects of these uses once they are allowed; and amend or rescind any area designation as necessary based on the information gathered. Furthermore, Executive Order 11989 requires the Service to close areas to off-highway vehicles when it is determined that the use causes or will cause considerable adverse effects on the soil, vegetation, wildlife, habitat, or cultural or historic resources. Statutes, such as ANILCA, take precedence over executive orders.

Definitions:

Appropriate Use
A proposed or existing use on a refuge that meets at least one of the following four conditions.

1) The use is a wildlife-dependent recreational use as identified in the Improvement Act.
2) 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.
3) The use involves the take of fish and wildlife under state regulations.
4) The use has been found to be appropriate as specified in section 1.11.

*Native American***.** American Indians in the conterminous United States and Alaska Natives (including Aleuts, Eskimos, and Indians) who are members of federally recognized tribes.

Priority General Public Use. A compatible wildlife-dependent recreational use of a refuge involving hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

Quality. The criteria used to determine a quality recreational experience include:

- Promotes safety of participants, other visitors, and facilities.
- Promotes compliance with applicable laws and regulations and responsible behavior.
- Minimizes or eliminates conflicts with fish and wildlife population or habitat goals or objectives in a plan approved after 1997.
- Minimizes or eliminates conflicts with other compatible wildlife-dependent recreation.
- Minimizes conflicts with neighboring landowners.
- Promotes accessibility and availability to a broad spectrum of the American people.
- Promotes resource stewardship and conservation.
- Promotes public understanding and increases public appreciation of America's natural resources and the Service's role in managing and protecting these resources.

- Provides reliable/reasonable opportunities to experience wildlife.
- Uses facilities that are accessible and blend into the natural setting.
- Uses visitor satisfaction to help define and evaluate programs.

Wildlife-Dependent Recreational Use. As defined by the Improvement Act, a use of a refuge involving hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Bogue Chitto NWR

Use: Walking, Hiking, and Jogging

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 USFWS 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: Signed _____ Date: 9/16/2014

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: Signed _____ Date: 9/26/14

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Bogue Chitto NWR

Use: Camping

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 USFWS 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: Signed _____ Date: 9/16/2011

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: Signed _____ Date: 9/26/11

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Bogue Chitto NWR

Use: Boating

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 USFWS 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: Signed _____ Date: 9/16/2011

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: Signed _____ Date: 9/26/11

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Bogue Chitto NWR

Use: Nuisance Animal Control

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 USFWS 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:_ Signed _____ Date: 9/16/2011

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:___ Signed _____ Date: 9/26/11

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Bogue Chitto NWR

Use: 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 USFWS 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: Signed _____ Date: 9/16/2011

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: Signed _____ Date: 9/26/11

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Bogue Chitto NWR

Use: Scientific Research

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 USFWS 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: Signed _____ Date: 9/16/2011

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: Signed _____ Date: 9/26/11

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Bogue Chitto NWR

Use: Kayaking and Canoeing (paddling opportunities)

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 USFWS 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: Signed ____ Date: 9/16/2011

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: Signed Date: 9/26/11

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Bogue Chitto NWR

Use: Bicycling

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 USFWS 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:_____ Signed _____ Date: 9/16/2011

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:_____ Signed _____ Date: 9/26/11

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

Appendix F. Compatibility Determinations

Bogue Chitto National Wildlife Refuge

Uses: The following uses were considered for compatibility determination:

1) Wildlife observation/photography
2) Recreational fishing
3) Recreational hunting
4) Environmental education and interpretation activities
5) Walking, hiking, and jogging
6) Camping
7) Forest management
8) Scientific research
9) Kayaking, canoeing, and other paddling opportunities
10) Boating
11) Nuisance animal control
12) Bicycling

A description and the anticipated biological effects for each use are addressed separately in this Compatibility Determination.

Refuge Name: Bogue Chitto National Wildlife Refuge

Date Established: 1980

Establishing and Acquisition Authorities: Bogue Chitto NWR was approved under 94 Stat. 604, dated June 28, 1980, the Emergency Wetland Resources Act of 1986; the Fish and Wildlife Act of 1956; and the National Wildlife Refuge System Administration Act.

Refuge Purpose: These lands approved under 94 Stat. 604, dated June 28, 1980 state the purpose for which the refuge was established to: “Administer all lands, waters, and interests therein, acquired under this act in accordance with the provisions of the National Wildlife Refuge Administration Act, and to utilize such additional statutory authority as may be available for the conservation and development of wildlife and natural resources, the development of outdoor recreation opportunities, and interpretive education as deemed appropriate to carry out the purposes of this Act.“

The purposes statement is further defined to include: For the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..." 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986); For the development, advancement, management, conservation, and protection of fish and wildlife resources ..." 16 U.S.C. 742f(a)(4) "... for the benefit of the U.S. Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ..." 16 U.S.C. 742f(b)(1) (Fish and Wildlife Act of 1956); and for conservation, management, and ... restoration of the fish, wildlife, and plant resources and their habitats ... for the benefit of present and future generations of Americans..." 16 U.S.C. 668dd(a)(2) (National Wildlife Refuge System Administration Act).

National Wildlife Refuge System Mission:

The mission of the Refuge System, as defined by the National Wildlife Refuge System Improvement Act of 1997, 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:

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)
Wilderness Act (16 U.S.C. 1131; 78 Stat. 890)
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)
Use of Off-Road Vehicles on Public Lands (Executive Order 11644, as amended by Executive Order 10989)
Endangered Species Act of 1973 (16 U.S.C. 1531 et seq; 87 Stat. 884)
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 (50 CFR Subchapter C; 43 CFR 3101.3-3)
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
Title 50, Code of Federal Regulations, Parts 25-33
Archaeological Resources Protection Act of 1979
Native American Graves Protection and Repatriation Act of 1990

Compatibility determinations for each description listed are considered separately. Although, for brevity, the preceding sections from “Uses” through “Other Applicable Laws, Regulations, and Policies” are only written once within the CCP, they are part of each descriptive use and become part of that compatibility determination if considered outside of the CCP.

(1) Description of Use: Wildlife observation/photography

Wildlife observation and photography have been identified in the National Wildlife Refuge System Improvement Act of 1997 as priority wildlife-dependent recreational uses provided they are compatible with the purpose for which the refuge was established.

Wildlife photography, including other image-capturing activities, such as videography, has occurred on the refuge. There are no blinds or platforms on the refuge specifically for photography. However, opportunities exist for photography and photography blinds on the refuge. Commercial photography or videography can occur in areas open to the public. A special use permit is required if commercial photography is requested for areas closed to the general public, which will include specific restrictions. Often, the public offers copies of exceptional pictures for refuge use in publications and reports.

The general public could participate in wildlife observation and photography year-round from sunrise to sunset on the refuge. Wildlife observation and photography could be accomplished while driving or walking on refuge roads open to public vehicular traffic. Also, these public uses could be accomplished by walking trails or by boating.

Availability of Resources: The refuge would normally incur no expense except administrative costs for issuance of a special use permit in the case of commercial photography or videography, and staff time to conduct compliance checks.

Anticipated Effects of the Use: Activities associated with wildlife observation and both commercial and personal photography have shown no measurable environmental effects on the refuge, its habitats, or wildlife species. The uses can cause temporary minor disturbance to wildlife. However, use is expected to remain at levels causing only random, limited, and temporary disturbance. Any malicious or unreasonable harassment of wildlife would be grounds for the manager to restrict the uses.

Photography can increase visitors' knowledge and appreciation of fish and wildlife and their habitats on the refuge, and lead to greater understanding of the Refuge System's public stewardship mission. Quality photographs taken on refuge lands and provided to refuge staff can enhance the refuge's outreach and public use programs.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- All wildlife observation and photography activities would be conducted with the refuge's primary objectives, habitat management requirements, and goals as the guiding principles.
- Modes and times of uses would be limited to legal means and times according to refuge regulations on access available to the general public.
- All commercial photographers wanting to operate outside of refuge open areas must have a special use permit that specifies access stipulations to prevent excessive disturbance to wildlife, damage to habitat, or conflicts with other public uses or management activities. The special use permit would stipulate that imagery produced on refuge lands be made available to the refuge for use in outreach, interpretation, internal documents, or other suitable uses.
- The commercial photography use must demonstrate a means to extend public appreciation and understanding of wildlife, natural habitats, enhance education, appreciation and/or understating of the Refuge System, or further outreach and education goals of the refuge.
- Commercial products must include appropriate credits to the refuge and to the Fish and Wildlife Service.

Justification: Wildlife observation and photography are priority public uses on National Wildlife Refuge System lands as identified in the Improvement Act. By facilitating these uses on the refuge, we will increase visitors' knowledge and appreciation of fish, wildlife, and their habitats which will lead to increased public stewardship. Increased stewardship supports and complements the refuge's purposes and the mission of the Refuge System.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 15-year Re-evaluation Date: 09/27/2026

(2) Description of Use: Recreational fishing

Fishing was a traditional recreational use of the land and waters prior to their inclusion in the National Wildlife Refuge System and continues to be a popular recreational pursuit. Fishing is a wildlife-dependent recreational pursuit and has been identified in the National Wildlife Refuge System Improvement Act of 1997 as a priority public use provided it is compatible with the purpose for which the refuge was established.

Fishing is permitted year-round in all refuge waters subject to regulations established by the Louisiana Department of Wildlife and Fisheries and the general regulations governing fishing on national wildlife refuges set forth in the Code of Federal Regulations and the refuge fishing permit. Fishing is permitted to provide fishable waters to the public and to utilize a sustainable natural resource.

Availability of Resources: Funding for the fishing program is borne by annual operation and maintenance funds. Costs include permit printing, administration, maintenance of boat ramps and docks, and monitoring the activity.

Anticipated Effects of the Use: Minor, short-term effects to the environment from recreational fishing include litter and the possible contamination of refuge waters from oil and gas leaking from boat motors. Because the fish population is a sustainable natural resource and local fish habitat is vast, no long-term effects are expected.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- Limb lines are permitted but must be 100 percent cotton.
- Trotlines are permitted, but the last 5 feet of the trotline, on both ends, must be 100 percent cotton.
- The fishing pond at the Pearl River Turnaround is open except closed from April-June. Non-gas powered boats may be hand launched when open. The use of this fishing pond area is permitted from 30 minutes before legal sunrise to 30 minutes after legal sunset.

Justification: The Improvement Act identified fishing as one of the priority public uses on national wildlife refuges, where compatible with refuge purposes. This use is legitimate and appropriate, and is dependent upon healthy fish populations. Offering recreational fishing is in compliance with refuge goals, is a management objective for Bogue Chitto NWR, and furthers the goals and missions of the Refuge System.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 15-year Re-evaluation Date: 09/27/2026

(3) Description of Use: Recreational hunting

Recreational hunting, a wildlife-dependent activity, has been identified in the National Wildlife Refuge System Improvement Act of 1997 as a priority public use, provided it is compatible with the purpose for which the refuge was established.

The State of Louisiana hunting regulations apply with supplemental refuge regulations listed in the refuge hunting, fishing, and camping brochure. All hunters must possess a signed refuge hunting permit. Additionally, state hunting licenses, appropriate for the species being hunted, are required. Any hunter under 16 years of age must possess proof of completing an approved Hunter Safety Course and be accompanied by an adult 21 years of age or older.

Hunting access is provided by gravel roads and waterways scattered throughout the refuge. The refuge itself provides only one boat launch; however, three parish ramps and one county ramp are available.

In 2006, there were 18,000 hunters. The most popular hunts overall are for deer. The refuge is open to hunting of deer, squirrel, rabbit, raccoon, turkey, waterfowl, woodcock, and hog each fall in accordance with refuge and state regulations. The refuge will be closed to camping and hunting (except waterfowl) when the water level at the Pearl River (LA) Gauge is at 15.5 feet or higher.

Availability of Resources: Funding for the hunting program is supported by annual operation and maintenance funds. Costs include permit printing, administration, monitoring the activity, and maintaining access points with safe parking areas.

Anticipated Effects of the Use: While managed hunting opportunities result in both short- and long-term effects to individual animals, effects at the population level are usually negligible. Small game animal populations are capable of sustaining harvest because of their short reproduction cycles. Hunting regulations for both endemic and migratory game species are based on specific state-wide and nation-wide harvest objectives. Migratory bird regulations are established at the federal level each year, following a series of meetings involving both state and federal biologists. Harvest guidelines are based on population survey and habitat condition data. Refuge hunting programs are always within these regulations. As currently proposed, the known and anticipated levels of disturbance of allowing hunting are considered minimal and well within the tolerance level of known wildlife species and populations present on the refuge. All hunting activities would be conducted within the constraints of sound biological principles and refuge-specific regulations established to restrict illegal or questionable activities. Monitoring activities through wildlife inventories and assessments of public use levels and activities would be utilized, and public use programs would be adjusted as needed to limit disturbance. Implementation of an effective law enforcement program and development of site-specific refuge regulations that are reviewed annually should minimize most incidental take problems.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- Hunting seasons and bag limits are established annually as agreed upon during the annual hunt coordination meeting with Louisiana Department of Wildlife and Fisheries and Mississippi Department of Wildlife Fisheries and Parks personnel.
- All hunters are required to possess a signed refuge hunting permit while participating in refuge hunts. State hunting regulations apply unless otherwise listed in the permit.
- The possession of toxic shot during all refuge hunts is prohibited.
- Hunting from a permanent tree stand or from a tree in which a metal object (such as nails, spikes, or screws) has been driven is prohibited.
- The use or possession of alcoholic beverages while hunting is prohibited.
- The use of horses is prohibited.
- All commercial activities including guiding or participating in a guided hunt are prohibited.
- Target shooting on the refuge is prohibited.
- Houseboats are prohibited within refuge boundaries except for navigational purposes.
- Trail cameras are prohibited.
- The use of deer or turkey gobbler decoys is prohibited.
- Hunting or the discharge of firearms within 150 feet from the centerline of a public road, refuge road, designated or maintained trail, building, residence, designated public facility, or from or across above-ground electric facilities is prohibited.
- We prohibit the use or possession of any type of material used as flagging or trail markers, except bright eyes.
- State and other refuge hunting regulations apply unless otherwise listed.

Justification: The Improvement Act identified hunting as one of the priority public uses on national wildlife refuges, where compatible with refuge purposes. This use is legitimate and appropriate and is dependent upon healthy wildlife populations. Offering recreational hunting is in compliance with refuge goals, is a management objective for Bogue Chitto NWR, and furthers the goals and missions of the Refuge System.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 15-year Re-evaluation Date: 09/27/2026

(4) Description of Use: Environmental education and interpretation activities

Environmental education and interpretation have been identified in the National Wildlife Refuge System Improvement Act of 1997 as priority public uses, provided they are compatible with the purpose for which the refuge was established. Environmental education and interpretation consist of public outreach and onsite activities conducted by refuge staff, volunteers, teachers, Friends groups, conservation partners, university professors, and others. Activities include educational programs and teacher workshops carried out on nature trails, canoe trips, and at refuge observation towers, refuge areas of interest, and other areas suitable for teaching environmental science. Interpretation occurs when information is explained for the public by refuge staff or others using exhibits, displays, signs, kiosks, facilities, and brochures. 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 organizations, or by other members of the public with approval of the refuge manager.

Environmental education and interpretation activities can occur throughout the year and are conducted with the refuge's primary goals, objectives, and habitat management requirements as the guiding principles. Activities conducted under these restrictions allow the refuge to accomplish its management goals and also provide for the safety of visitors.

Bogue Chitto NWR currently provides programs to Slidell and Pearl River schools, which are in the immediate vicinity of the refuge. These programs focus on refuge specific public uses and general information about the Refuge System.

The refuge also holds an annual kids fishing event which hosts over 150 youth and their families. In 2008, the refuge also worked with the Friends group to secure a grant that funded fishing days for at-risk youth from various communities or schools within the area. The refuge held 6 of these fishing days with an average of 45 youth per day.

Availability of Resources: Funding for these activities is with annual operation and maintenance funds. Existing facilities exist off-site at the Lacombe Centre on the Complex headquarters.

Anticipated Effects of the Use: Minimal effects are expected, such as temporary disturbance to wildlife species and possibly some trampling of vegetation in the immediate vicinity of the activity. Most activities would take place on existing roads, trails, and facilities, with no additional disturbance. Environmental education and interpretation activities are not expected to indirectly or cumulatively negatively affect refuge resources.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- Adequate precautions would be taken to ensure that permanent facilities are sited an adequate distance from sensitive wildlife areas.
- Evaluations of sites and programs would be conducted periodically to assess if objectives are being met and that natural resources are not being degraded.

Justification: The Improvement Act identified environmental education and interpretation as priority public uses on national wildlife refuges, where compatible with refuge purposes. Offering environmental education and interpretation is in compliance with refuge goals, is a management objective of Bogue Chitto NWR, and furthers the goals and mission of the Refuge System. Environmental education and interpretation encourage understanding of ecological and biological principles and refuge-specific issues, and develop support for refuges.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 15-year Re-evaluation Date: 09/27/2026

(5) Description of Use: Walking, hiking, and jogging

More than 4 miles of refuge roads, and 1 mile of developed trails are used by many visitors for walking, hiking, and jogging.

Availability of Resources: The roads and levees are maintained for refuge purposes and therefore do not constitute additional cost for these activities, with the exceptions of the interpretive trails, which are maintained by a combination of volunteers and refuge staff.

Anticipated Effects of the Use: Effects from these activities could include littering, vegetation trampling, and wildlife disturbance.

Public Review Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Hiking, jogging, and walking are restricted to daylight hours. Certain areas of the refuge may be restricted seasonally for breeding or nesting purposes or to protect habitat. Pets must be kept on a leash at all times.

Justification: These activities are low impact and considered to be wildlife-dependent. Observation of wildlife is enhanced by using the many trails offered at the refuge.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 10-year Re-evaluation Date: 09/27/2021

(6) Description of Use: Camping

Primitive camping is allowed with 100 feet of designated streams on the refuge. Camping is only allowed on the refuge in conjunction with wildlife-dependent activities, primarily hunting and fishing.

Availability of Resources: The areas used for camping have been open to public use since they were acquired. Supervision and enforcement of camping activities will be administered by Bogue Chitto NWR staff and will not exceed the general operational costs of the refuge.

Anticipated Effects of the Use: Camping may result in some disturbance to wildlife, increased litter, increased demand on limited staff time and funding, and increased administrative burden associated with enforcing refuge regulations. These effects, at this time, are within allowable levels to maintain compatibility in that this use is critical to support the existing priority refuge public uses such as hunting and fishing. Also, some loss of native vegetation (within the campgrounds) resulting in limited soil compaction and erosion has been noted.

Public Review Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

- Primitive camping is permitted within 100 feet of designated streams. These may include portions of the banks of the Bogue Chitto River, Wilson Slough, West Pearl River south of Wilson Slough, and refuge lands along the East Pearl River and Holmes Bayou.
- No campsite can be left unattended longer than 24 hours.
- Campsites cannot be established longer than 14 consecutive days.
- Cutting, removing, or damaging live trees is prohibited.
- The refuge is closed to camping when the Pearl River reaches 15.5 feet on the gauge at Pearl River.

Justification: The outdoor experience, especially by hunters and fishermen, is vastly enhanced by the primitive camping opportunity. It should be noted that a large percent of refuge users are from non-local areas (i.e., in excess of 75-100 miles from the area). There are inadequate overnight accommodations (i.e., hotels, motels) in close proximity to the refuge and most of the refuge can only be accessed by boat. Primitive, on-refuge camping locations have been provided since refuge establishment in the 1980s, and are essential to support development and implementation of priority public use activities such as hunting and fishing. Current use rates, including public use in general (all activities) and physical capacity to support camping are about at maximum capacity with little if any room for expansion. At existing levels, this use remains compatible and is an essential part of the refuge public use program. Staff needs to remain vigilant to changes (increases/decreases) in use levels and patterns and adjust camping opportunities as needed to eliminate overall resource effects.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 10-year Re-evaluation Date: 09/27/2021

(7) Description of Use: Forest management

Forest management, via timber harvest, is the only realistic tool that is available to enable the refuge to achieve wildlife habitat objectives. The forests of Bogue Chitto NWR require significant management at a level that cannot be achieved without incorporating silvicultural techniques. In order to facilitate timber removal from the refuge, forest management packages are offered for bid to the general public, which allow harvest of trees in excess of what is needed to promote optimal wildlife habitat. The excess value of the trees in relation to the cost of the entire management package will be the amount paid to the government and placed in the general fund. Forest management is conducted to benefit wildlife and further the refuge purpose. It is not based on current or future economic gain from timber harvest.

Where would the use be conducted?

The refuge forester and manager would decide where forest management is needed. Designated areas would be marked with tree marking paint and timber sale boundaries would be displayed on a map.

When would the use be conducted?

Timber harvest would occur when forest management is needed, when soil conditions are appropriate, and when the bidding process is complete and a contract is awarded.

How would the use be conducted?

Active forest management consists of mechanical removal of commercial and non-commercial forest products by refuge personnel or contractors utilizing conventional logging equipment. The refuge is sub-divided into manageable-sized compartments, which are selected for forest management activities based on the greatest need for wildlife habitat improvement, and which are tempered with considerations for spatial, temporal, and area constraints stated in the Bottomland Hardwood Forest Habitat Management Guidelines (LMVJV 2005). Once selected, vegetative/wildlife data is collected and analyzed to determine the extent of treatment needed, which is then expressed in a document that details the specific silvicultural strategies necessary to obtain specific wildlife habitat objectives. Only those trees marked with two spots of tree-marking paint (one at ground level and one at eye level) would be cut by the permitted logger. Stumps would be cut as low as possible to the ground as long as some portion of the paint remained visible on the stump. Special use permits, detailing specific environmental, fiscal, physical, and administrative constraints, are issued to contractors that have bid the highest for the forest products or through the negotiation process, if applicable. All state and federal permits, clearances, and consultations (such as State Historic Preservation Office cultural resource clearance, permits associated with the Clean Water Act and Intra-Service Section 7 consultation, only as applicable) would be obtained prior to implementing the special use permit. Timber sales require a pre-entry conference between the refuge forester and permittee before starting logging operations.

Why is this use being proposed?

Forest management is needed to improve general health, productivity, diversity, and quality of bottomland and upland forests. Forest stands often need to be gradually thinned to reduce competition, to increase diversity, to lessen the chance for epidemics of damaging insects, and to remove diseased trees. Accomplishing habitat improvement targets requires heavily utilizing the commercial sale of refuge forest products (timber sales), which is the only practical way to remove timber from the refuge.

Availability of Resources: Funding for these activities would be through annual operation and maintenance funds and would consists predominantly of administration, monitoring, and midstory and understory clearing. Equipment and maintenance costs associated with commercial timber harvest would be carried out by the contractor.

Anticipated Effects of the Use: Forest management operations can cause adverse effects on habitat values and water quality if not carefully controlled and supervised. Restrictions and conditions, such as only operating in dry conditions, creating buffers along waterways, and minimizing damage to residual trees, must be placed on operations to minimize adverse effects from equipment. Minor, short-term effects from using equipment, such as disturbance to wildlife and trampling of understory vegetation, are expected to occur. In the long-term, forest conditions after management treatments would be more beneficial to wildlife by restoring the functions and values necessary to meet their needs.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Forest management operations may be conducted throughout the year, but only according to the guidelines detailed in a Habitat Management Plan or the special conditions section of the special use permit.

Justification: The forest management actions, proposed in the CCP, are in accordance with Fish and Wildlife Service guidelines for the protection, management, and enhancement of habitats for wildlife populations on refuges. The Habitat Management Plan, a step-down plan, details how forest management actions promote the enhancement of habitats for threatened or endangered species, migratory birds, and resident wildlife species; promote habitat restoration; protect cultural resources; and provide opportunities for public recreation and environmental education. This use furthers the goals and missions of the Refuge System and Bogue Chitto NWR.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 10-year Re-evaluation Date: 09/27/2021

(8) Description of Use: Scientific research

This activity will allow university students and professors, non-governmental researchers, and governmental scientists access to the refuge's natural environment to conduct both short- and long-term research projects. The outcome of this research will result in better knowledge of our natural resources and improved methods to manage, monitor, and protect refuge resources. The refuge will support Fish and Wildlife Service and Geological Survey research of neotropical migratory birds, waterfowl, bottomland hardwood restoration, fisheries, amphibians and reptiles, and other wildlife species. Efforts will be made to expand partnerships with Louisiana State University and other universities.

Availability of Resources: No additional fiscal resources are needed to conduct this use. Existing staff can administer permits and monitor use as part of routine management duties.

Anticipated Effects of the Use: There should be no significant negative effects from scientific research on the refuge. The knowledge gained from the research will provide information to improve management techniques and better meet the needs of trust resource species. Effects, such as trampling vegetation and temporary disturbance to wildlife, will occur but should not be significant. A small number of individual plants or animals may be collected for further study. These collections will have an insignificant effect on refuge plant and animal populations.

Stipulations Necessary to Ensure Compatibility: Each request for use of the refuge for research will be examined on its individual merit. Questions of who, what, when, where and why will be asked to determine if requested research contributed to the refuge purposes and could best be conducted on the refuge without significantly affecting the resources. If so, the researcher will be issued a special use permit. Progress will be monitored and the researcher will be required to submit annual progress reports and copies of all publications derived from the research.

Justification: The benefits derived from sound research provide a better understanding of species and the environmental communities present on the refuge. These benefits far outweigh any short-term disturbance or loss of individual plants and animals that might occur.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

_X_ Use is Compatible with Following Stipulations

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 10-year Re-evaluation Date: 09/27/2021

(9) Description of Use: Kayaking, canoeing, and other paddling opportunities

Paddling opportunities allow the general public access through and around the refuge's waterways for wildlife observation, wildlife photography, and recreation. Access to the refuge will be allowed anytime of the year during daylight hours when the refuge is open to the public, or after dark, on a case-by-case basis, as authorized by the refuge manager. Kayaks, canoes, and other paddled watercraft used by the general public for these recreational purposes can be transported through the refuge's designated travel routes on motorized vehicles that do not exceed the weight and size limits for the roads. Access through or entry on all or portions of individual areas may be temporarily suspended, by posting, upon occasions of unusual or critical conditions affecting land, water, vegetation, wildlife/plant populations, or public safety.

Availability of Resources: Portions of the refuge have been opened to the public since they were acquired. Thus, roads, access trails, parking lots, signs, and other infrastructure, as well as staff to enforce regulations and maintain these facilities, have been provided by the Service.

Designated launch and recovery sites for paddling opportunities, and other facilities, as well as educational/interpretive signs in these areas, are being addressed in the CCP. Through the comprehensive conservation planning process, the Service recognizes these needs and recommends solutions to improve public access opportunities.

Anticipated Effects of the Use: Access to the refuge for the purpose of launching non-commercial paddle watercraft such as kayaks, pirogues and canoes on designated roads of travel pose minimal effects to plant and wildlife species. Access for these types of watercraft is typically by individuals or small groups. On average, users transport one to four kayaks or one to two canoes on top of their motorized vehicles or tow them on small trailers. Within the non-restricted areas of the refuge, the designated routes of travel end in established parking lot areas, which, in turn, have strategically placed barriers that prevent vehicles from driving onto the foot trails. Based on biological data, conservation management plans, unreasonable harassment of wildlife, or destruction of the habitat, the manager may restrict the use or close some areas from this and other public use, if it is determined that they could have negative effects on the resources, and bird nesting activities.

Damage to habitat by walking or dragging a small personal paddle craft to and from the launch sites is minimal and temporary. Damage to wetland vegetation by individuals paddling through the areas is minimal and temporary. There is some temporary disturbance to wildlife due to human activity on the land and on the water (e.g., flushing wildlife from cover); however, the public access for paddling opportunities should not create unreasonable effects.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):
_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: (1) Harassment of wildlife and excessive damage to vegetation is prohibited; (2) access by motorized vehicles is only authorized on public roads and parking lots; (3) rented or owned paddled watercraft brought by the visitors onto the refuge for their use is permitted; and (4) providing outfitting or commercial services on the refuge requires a special use permit issued by the refuge;.

Justification: This use has been determined compatible because allowing the general public access through the Bogue Chitto NWR to use personal paddle watercraft for wildlife observation, wildlife photography, and recreation will not interfere with the Service's work to protect and conserve natural resources. The level of use for these activities is moderate on the refuge. The associated disturbance to wildlife is temporary and minor. Although recreational paddling is not priority public uses, under the conditions described above, they are not detrimental activities. Access for wildlife observation and photography, which are priority uses, allows visitors to enjoy the outdoors and wild lands. Designated launch and recovery sites also provides the Service with specific areas in which to place educational/interpretive signs, highlighting natural resources and their conservation needs. These uses also help fulfill the mission of the Refuge System.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 10-Year Re-evaluation Date: 09/27/2021

(10) Description of Use: Boating

A large portion of the refuge is roadless and only accessible by boat. In order to disperse hunters and access remote areas for hunting and fishing, refuge users have historically utilized boats in order to access these areas. Boating is allowed on most portions of the refuge along the Pearl River and

other areas, year-round, in accordance with refuge and state regulations. Non-gas powered boats may be hand launched at the fishing pond at the Pearl River Turnaround when open.

Considering the remoteness of the area and the fact that most of the refuge is surrounded by water, the need for use of motorized boats by certain refuge users is evident. It will be impossible to develop an effective public use program that provides optimum consumptive use opportunities without providing for motorized boats.

Recreational boating that is connected with other public use activities such as hunting, fishing, and wildlife observation and photography over and adjacent to refuge-owned water bottoms is permitted. No air boats are allowed on refuge waters.

Availability of Resources: Funding for boating is supported by annual operation and maintenance funds. Costs include permit printing, administration, and monitoring the activity.

Anticipated Effects of the Use: Use of motorized boats over refuge waters for regulated public use activities in accordance with permit regulations should not have any significant adverse biological effects. As currently proposed, the known and anticipated levels of disturbance from boating is considered minimal and well within the tolerance level of known fish and wildlife species and populations present on the refuge. Implementation of an effective law enforcement program and development of site specific refuge regulations that are reviewed annually should minimize most problems.

Boating is restricted to the river and its tributaries and backwaters. Access is typically by a couple of individuals per boat. Some motor boating occurs and could cause minor disturbance to wading bird colonies. Disturbance may affect nest abandonment, predation on young, or subject young birds to environmental stress. Boating activity can also disturb wildlife, especially birds, because it disrupts feeding activity and can affect large areas in a short period of time. The disturbance can result in increased energy expenditures from avoidance flights and decreased energy intake due to interference with feeding activity. This is important to survival especially with wintering waterfowl. However, there are species-specific differences in response to boating activities. Speed and approach of boats can influence wildlife response.

Zoning of visitor activities, clustering public use facilities, proper monitoring, educating visitors, and enforcement will ensure compatibility with the purposes of the refuge and mission of the Refuge System. Through periodic evaluation of boating effects on wildlife, the visitor services program will assess resource effects. If future human effects are determined through evaluation to be detrimental to important natural resources, actions will be taken to reduce or eliminate those effects. Continued monitoring for significant disturbance during critical times or with large groups of birds will allow the refuge to determine if additional regulations are needed if use increases. Any unreasonable harassment would be grounds for the manager to close the area to these uses or restrict the uses to minimize harm. Horsepower restrictions exist for motorboats, and limited human conflicts have occurred as a result of reckless boat operators. This use will be monitored for effects and future modifications could be made to regulations. The use of motorized and human powered boats will not adversely affect refuge purposes. The biggest problem with this use is littering and will continue to be handled with law enforcement and refuge staff for cleanup.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: House boats are prohibited on the refuge waters. Non-gas powered boats only may be used in the fishing pond at the Pearl River Turnaround when open.

Justification: The Improvement Act identified hunting, fishing, and wildlife observation and wildlife photography as priority public uses on national wildlife refuges, where compatible with refuge purposes. Boating can facilitate these priority public uses and is the only way to access the refuge due to its remote location. This use is legitimate and appropriate. Offering recreational boating is in compliance with refuge goals, is a management objective for Bogue Chitto NWR, and furthers the mission of the Refuge System.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 10-year Re-evaluation Date: 09/27/2021

(11) Description of Use: Nuisance animal control

Feral hogs are the species which may require nuisance animal control. This species occurs on the refuge at levels high enough to adversely affect ecosystem functions. As indicated in the CCP, feral hog activities have caused significant deterioration and loss of bottomland hardwoods throughout the refuge and have negative effects on the reproduction of forest breeding birds and wild turkeys. Protection and restoration of bottomland hardwoods and improvements in game and nongame populations are central components of the CCP. To this end, trapping and/or hunting remain the only viable methods to reduce population levels of feral hogs. The Service will issue special use permits to administer a trapping program consistent with sound biology, refuge purposes, and conservation of ecosystem functions.

Individuals will be allowed to live-trap hogs on the refuge under the conditions and guidelines of a special use permit. Hogs captured in traps must be killed before they are removed from the refuge. Hunting with the aid of hounds will be allowed on the refuge under the conditions and guidelines of a special use permit. Hogs captured by hog/hound hunters must be removed from the refuge dead at the conclusion of the hunt.

Hunters participating in archery, gun, and primitive firearms deer hunts and youth gun deer hunts will be permitted to harvest feral hogs. There is no bag limit on hogs.

Feral hog management will occur throughout the refuge. The area will be open for feral hog control as deemed necessary by the refuge manager to protect habitat from destruction by feral hogs.

Feral hog may be taken during the month of February with the aid of trained hog hunting dogs. Legal hunting hours are 30 minutes before legal sunrise to 30 minutes after legal sunset. All hogs must be killed prior to removal from the refuge. During this season, only shotguns with non-toxic shot, or 0.22 caliber rifle, or smaller pistols or rifles with fire ammunition are permitted. These activities will be closely monitored by the refuge staff in an effort to mitigate any conflicts with the visiting public or disturbance to wildlife. Additional gun season hunts for hogs may be determined and allowed by refuge management when population numbers are high.

Availability of Resources: No additional fiscal resources are needed to conduct this use. The existing staff can administer permits and monitor this use as part of routine management duties.

Anticipated Effects of the Use: Targeted removal of feral hogs from portions of the refuge will reduce the negative effects these species are having on ecosystem functions. Control of feral hog populations will help ensure the protection of important bottomland hardwood forests, including reforestation areas. However, no trapping program, regardless of how well it is designed, can prevent the possible take of other species. Trappers will be required to report the incidental take of other species. A negligible effect on other wildlife species is expected in both the short term and long term.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):

_____ Use is Not Compatible

_X_ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: As a trapping program is implemented on the refuge, it will be closely monitored to assess the potential adverse effects on other wildlife, as well as the benefits to game and nongame species and their habitats. Modifications to the program will be implemented as needed to maintain compatibility. All trapping activities will be carried out under a

refuge special use permit. Trappers will be limited by number, area, and season in order to target problem areas and minimize any negative effects. Each trapper will be required to report the number and location of all traps and all wildlife taken. The implementation of a trapping program, under controlled conditions, provides an essential population control management tool and is compatible with the purposes of the refuge.

Justification: The purposes of Bogue Chitto NWR emphasize conservation of wetlands and migratory birds. Trapping is a wildlife population management tool used to regulate the population of certain wildlife species when those species are disrupting ecosystem functions. Feral hogs have been documented to cause negative effects to forested wetlands and nesting birds. When these negative effects become significant on the refuge, wildlife managers need nuisance animal control as a management tool to control the level of damage.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 10-year Re-evaluation Date: 09/27/2021

(12) Description of Use: Bicycling

Bicycling is not a priority public use designated by the Improvement Act; however, it can occur on the refuge provided it is compatible with the purpose for which the refuge was established. Requests to ride bicycles on refuge roads not open to public vehicular traffic have been made. These requests have been made associated with wildlife-dependent recreational uses, such as hunting, photography, and bird observation. The only areas available for bike riding are the 3/4-mile Holmes Bayou trail and 3 miles of gravel roads including Company Road, Gravel Pit Road, and Cemetery Road.

Availability of Resources: Funding for this program would be from annual operation and maintenance funds, but little to no cost is associated with this activity. No special equipment, facilities, or improvements are necessary to support the use.

Anticipated Effects of the Use: Since only non-motorized bicycles would be allowed on dirt and gravel refuge trails, little disturbance to wildlife and habitat would occur. As long as bike riders are courteous, no conflict should occur between hikers, who can also access these trails.

Public Review and Comment: This Compatibility Determination was made available for public review along with the Draft CCP/EA beginning May 27, 2011 and ending June 27, 2011 (76 FR 30959). A news release was sent out to sixteen local, state, and regional newspapers and one local radio network. Copies of the Draft CCP/EA were posted at refuge headquarters and on the Service's Internet website and more than 100 copies were distributed to local landowners, the public, and local, state, and federal agencies.

One hundred four respondents consisting of: the Service; LDWF; the Louisiana Department of Culture, Recreation, and Tourism; the Jena Band of Choctaw Indians; the National Park Service; and local citizens submitted written comments by a public meeting, mail or e-mail.

Determination (check one below):
_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulation Necessary to Ensure Compatibility:

- Bicycling is only allowed on graveled roads and maintained trails during daylight hours.

Justification: At the present level, few bicyclists use gravel roads and trails for hunting, photography, and wildlife observation. Bicycling is not detrimental to the environment if only allowed on these trails and gravel roads and requires no added expenses to regulate. This use is in compliance with the CCP and furthers the goals and missions of the Refuge System and Bogue Chitto NWR.

NEPA Compliance for Refuge Use Decision (check one below):

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

Mandatory 10-year Re-evaluation Date: 09/27/2021

Approval of Compatibility Determinations

The signature of approval is for all compatibility determinations considered within the CCP for Bogue Chitto NWR. If one of the descriptive uses is considered for compatibility outside of the CCP, the approval signature becomes part of that determination.

Refuge Manager: Signed 9/16/2011
(Signature/Date)

Regional Compatibility Coordinator: Signed 9/26/11
(Signature/Date)

Refuge Supervisor: Signed 9/26/11
(Signature/Date)

Regional Chief, National Wildlife Refuge System, Southeast Region: Signed 9-26-11
(Signature/Date)

Appendix G. Intra-Service Section 7 Biological Evaluation

SOUTHEAST REGION
INTRA-SERVICE SECTION 7
BIOLOGICAL EVALUATION FORM
[Federally endangered, threatened, and candidate species]

Originating Person: Ken Litzenberger
Telephone Number: 985-882-5365 **E-Mail:** Kenneth_Litzenberger@fws.gov
Date: 09-20-2010

PROJECT NAME (Grant Title/Number): Comprehensive Conservation Plan for Bogue Chitto NWR

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: Louisiana/USFWS

III. Station Name: Bogue Chitto NWR

IV. Description of Proposed Action (attach additional pages as needed):
Implement the Comprehensive Conservation Plan for Bogue Chitto NWR by adopting the proposed alternative. This plan directs the management of the refuge for the next 15 years.

V. Pertinent Species and Habitat:
A. Include species/habitat occurrence map: See attached map for locations of gopher tortoise sites. The gulf sturgeon, Alabama heelsplitter mussel, and the ringed map turtle occur in the Pearl River. Louisiana quillwort has been known to occur in the Bogue Chitto Watershed.

B. Complete the following table:

Table 1. Listed/proposed species/critical habitat that occur or may occur within the project area:

SPECIES/CRITICAL HABITAT	STATUS[1]
Alabama Heelsplitter	T
Ringed Map Turtle	T
Gulf Sturgeon	T
Gulf Sturgeon	CH
Gopher Tortoise	T
Louisiana quillwort	T

[1]STATUS: E=endangered, T=threatened, PE=proposed endangered, PT=proposed threatened, CH=critical habitat, PCH=proposed critical habitat, C=candidate species

VI. Location (attach map):

A. Ecoregion Number and Name: Central Gulf Coast

B. County and State: St. Tammany and Washington Parishes, Louisiana, Pearl River County, Mississippi

C. Section, township, and range (or latitude and longitude): Throughout the entire refuge; Centered at Sec 27, T4S, R14E; See Figure 1 CCP.

D. Distance (miles) and direction to nearest town: 1 of mile to Carriere, Mississippi

E. Species/habitat occurrence:

See CCP Figure 7.

VII. Determination of Effects:

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

Table 2. Project impacts to listed/proposed species/critical habitat.

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Alabama Heelsplitter	No Impact
Ringed Map Turtle	Potential impact: erosion water runoff
Gulf Sturgeon & CH	Potential impact: erosion water runoff
Gopher Tortoise	Potential impact: destruction of burrows
Louisiana quillwort	Potential impact: erosion water runoff

B. Explanation of actions to be implemented to reduce adverse effects:

Table 3. Conservation measures proposed to minimize or eliminate adverse impacts to proposed/listed species, critical habitat.

SPECIES/ CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS
Gopher Tortoise	Limit logging and management activity to 50' from active burrows. The 50’ area around the burrows will be flagged prior to salvage or management activities.
Gulf Sturgeon & CH	A 3-5 chain (330') buffer strip along all names streams will be managed to enhance habitat for this species.
Ringed Map Turtle	A 3-5 chain (330') buffer strip along all names streams will be managed to enhance habitat for this species
Alabama Heelsplitter	A 3-5 chain (330') buffer strip along all names streams will be managed to enhance habitat for this species.
Louisiana quillwort	A 3-5 chain (330') buffer strip along all names streams will be managed to enhance habitat for this species.

VIII. Effect Determination and Response Requested:

Table 4. The effect determination and response requested for impacts to each proposed/listed species/critical habitat.

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE[1] REQUESTED
	NE	NA	AA	
Alabama Heelsplitter		X		Concurrence
Ringed Map Turtle		X		Concurrence
Gulf Sturgeon & CH		X		Concurrence
Gopher Tortoise		X		Concurrence
Louisiana quillwort		X		Concurrence

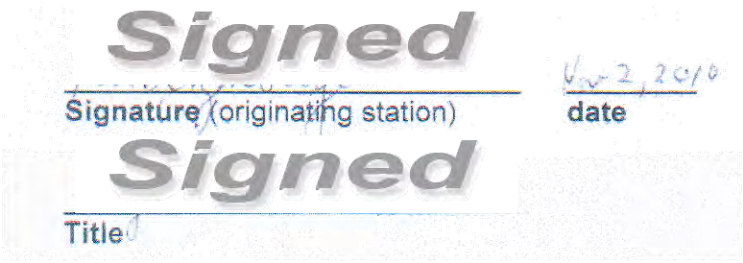
[1]

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".



If the project description changes or incidental take exceeds that which has been exempted under section 9 of the Act, then the Ecological Services Field Office must be contacted.

IX. Reviewing Ecological Services Office Evaluation:

A. Concurrence ✓ Non-concurrence _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

E. Remarks (attach additional pages as needed): see attached

Signed 12/15/10

Signature Date

Dep. Field Supervisor

Title/Office

Louisiana ES Office

Appendix H. Wilderness Review

The Southeast Louisiana NWR Complex project leader, refuge manager, and Complex planner met at the Complex headquarters on July 14, 2009, to inventory and study the refuge as part of the wilderness review. The review team included:

Ken Litzenberger, Southeast Louisiana Refuge Complex Project Leader
Danny Breaux, Bogue Chitto NWR Refuge Manager
Tina Chouinard, Area 1 Natural Resources Planner

The wilderness review is a required component of the comprehensive conservation plan.
The Wilderness Act defines a Wilderness Area as an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, and managed to preserve its natural conditions such that it:

1. generally appears to have been influenced primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;

2. has outstanding opportunities for solitude or primitive and unconfined types 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 unimpeded condition; or is a roadless island, regardless of size;

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; and

5. may contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

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 warrant further study for wilderness designation. These criteria include every area of at least 5,000 contiguous roadless acres or roadless areas sufficient in size to make practicable their preservation and use in an unimpaired condition; or be a roadless island of any size. Areas meeting these criteria are considered wilderness inventory areas. Wilderness inventory areas are then further evaluated for naturalness, opportunities for solitude or primitive and unconfined recreation, and special or supplemental values. Those areas 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 (ecological, recreational, cultural, economic, symbolic); resources (wildlife, water, vegetation, minerals, soils); refuge uses; and refuge management activities within the WSA. It 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. Wilderness recommendations are forwarded or reported from the Director of the Fish and Wildlife Service through the Secretary of the Interior and the President to Congress in a wilderness study report.

Wilderness Review Findings
The wilderness review team identified one wilderness inventory unit in Bogue Chitto NWR. The Service inventoried refuge lands within the planning area and found one area (9,760-acre Holmes Island) that meets the eligibility criteria for a WSA as defined by the Wilderness Act.

Holmes Island (Figure 10) meets the minimum criterion for a wilderness inventory area (a roadless island of any size), and provides values and resources in keeping with wilderness character. Historically, Holmes Island was intensively logged, but the last logging operations took place close to 100 years ago. The island has recovered from past logging activity and now exhibits century-old bottomland hardwood forests and forested wetlands. Although Hurricane Katrina altered the vegetation structure by removing up to 60 percent of the trees, the event was natural and the area should recover to a bottomland hardwood forest over time. The island is one of the most remote areas on the refuge and provides excellent opportunities for solitude or primitive and unconfined types of wildlife-dependent recreation. Continuing to manage Holmes Island as wilderness is in keeping with the establishing purposes of Bogue Chitto NWR and management will be able to effectively maintain the island's wilderness character.

The inventory and initial study phases of the wilderness review warrant inclusion of Holmes Island as a wilderness study area in the CCP. An objective and strategies will be developed as part of the CCP to maintain the wilderness character and within 10 years of the date of the CCP, the staff will prepare a wilderness study report on whether Holmes Island should be recommended for formal designation as a unit of the National Wilderness Preservation System.

Wilderness Management
The wilderness management policy and regulations allow motorized access and use of mechanized equipment only if such uses are the minimum tool necessary to accomplish wilderness objectives. For the purpose of analysis in this CCP, managers should assume that authorization of such uses would be temporary and rare in a wilderness area. If such restrictions would significantly limit the Service's ability to accomplish other resource management objectives, these impacts would be fully described and evaluated in the wilderness study report.

Congressionally Designated Wilderness
The National Wilderness Preservation System is a network of federally owned areas designated by Congress as wilderness and managed by one of four federal agencies: the Service, Bureau of Land Management, National Park Service, or the USDA Forest Service. More than 70 designated wilderness areas, totaling 20.7 million acres, are currently found on 63 national wildlife refuges. This represents approximately 22 percent of the National Wilderness Preservation System.

The Service administers wilderness areas within the 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; protect and preserve the wilderness character of areas within the National Wilderness Preservation System; and administer areas 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.

Preserving wilderness character is a primary criterion for judging the appropriateness of proposed refuge management activities and refuge uses, including public use and enjoyment in wilderness. Preserving wilderness character requires that we maintain both the tangible and intangible aspects of wilderness. Section 4(c) of the Wilderness Act prohibits commercial enterprises and permanent roads within wilderness. Commercial services, such as outfitter and guide services, are permitted only when they are “necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas.” We may allow commercial services where they are necessary to accomplish the purposes of the refuge, including Wilderness Act purposes.

Section 4(c) of the Wilderness Act also lists a number of "generally prohibited uses" in wilderness: temporary roads, use of motor vehicles, use of motorized equipment or motorboats, landing of aircraft, other forms of mechanical transport, and structures or installations. We do not authorize generally prohibited uses in refuge wilderness except when the use is: allowed under the terms of the area specific wilderness legislation and the Wilderness Act; the minimum requirement for administering the area as wilderness and necessary to accomplish the purposes of the refuge, including Wilderness Act purposes; or an emergency involving the health and safety of persons within the area.

The Service conducts and documents a "minimum requirement analysis" for all proposed refuge management activities, whether or not the activity involves a generally prohibited use. The minimum requirement analysis clarifies the need for and impacts of a proposed action. The Service authorizes an activity only if it is demonstrated that the activity is necessary to meet the minimum requirement for administering the area as wilderness and necessary to accomplish the purposes of the refuge, including Wilderness Act purposes. The management alternative that has the least impact upon all of the area’s wilderness values and character, including intangible aspects of wilderness character, and accomplishes refuge purposes, including wilderness purposes, constitutes the minimum requirement. The Service does not use cost or convenience as the main factor in determining the minimum requirement or minimum tool. Furthermore, the Service will attempt to use primitive tools when possible.

Appendix I. Refuge Biota

Common Name	**Scientific Name**
Birds	
Peregrine Falcon	*Falco peregrinus*
Yellow Rail	*Coturnicops noveboracensis*
Solitary Sandpiper	*Tringa solitaria*
Short-eared Owl	*Asio flammeus*
Sedge Wren	*Cistothorus platensis*
American Kestrel	*Falco sparverius*
Solitary Sandpiper	*Tringa solitaria*
Common Ground-Dove	*Columbina passerina*
Chuck-will's-widow	*Caprimulgus carolinensis*
Whip-poor-will	*Caprimulgus vociferus*
Bewick's wren	*Thryomanes bewickii*
Sedge wren	*Cistothorus platensis*
American Swallow-tailed Kite	*Elanoides forficatus*
Bald Eagle	*Haliaeetus leucocephalus*
Red-headed Woodpecker	*Melanerpes erythrocephalus*
American Bittern	*Botaurus lentiginosus*
Least Bittern	*Ixobrychus exilis*
Loggerhead Shrike	*Lanius ludovicianus*
Brown-headed Nuthatch	*Sitta pusilla*
Wood Thrush	*Hylocichla mustelina*
Blue-winged Warbler	*Vermivora pinus*
Black-throated Green Warbler	*Dendroica virens*
Prairie Warbler	*Dendroica discolor*
Cerulean Warbler	*Dendroica cerulea*
Prothonotary Warbler	*Protonotaria citrea*
Swainson’s Warbler	*Limnothlypis swainsonii*
Kentucky Warbler	*Oporornis formosus*
Bachman’s Sparrow	*Aimophila aestivalis*
Henslow’s Sparrow	*Ammodramus henslowii*
Le Conte’s Sparrow	*Ammodramus leconteii*
Nelson’s Sharp-tailed Sparrow	*Ammodramus nelsoni*
Painted Bunting	*Passerina ciris*
Dickcissel	*Spiza americana*
Rusty Blackbird	*Euphagus carolinus*
Orchard Oriole	*Icterus spurious*
Wood Duck	*Aix sponsa*
Gadwall	*Anas strepera*
American Widgeon	*Anas americana*
Mallard	*Anas platyrhynvchos*
Blue-winged Teal	*Anas discors*
Northern Shoveler	*Anas clypeata*
Northern Pintail	*Anas acuta*
Green-winged Teal	*Anas crecca*
Canvasback	*Aytha valisineria*
Redhead	*Aythya americana*
Ring-necked Duck	*Aythya collaris*

Greater Scaup	*Aythya marila*
Lesser Scaup	*Aythya affinis*
Common Goldeneye	*Bucephala clangula*
Bufflehead	*Bucephala albeola*
Hooded Merganser	*Lophodytes cucullatus*
Red-breasted Merganser	*Mergus serrator*
Ruddy Duck	*Oxyura jamaicensis*
Mississippi Kite	*Ictinia mississippiensis*
Eastern wild turkey	*Meleagris gallopavo*
Yellow-billed Cuckoo	*Coccyzus americanus*
Olive-sided Flycatcher	*Contopus cooperi*
Eastern Wood-Pewee	*Contopus virens*
Acadian Flycatcher	*Empidonax virescens*
Alder Flycatcher	*Empidonax alnorum*
Least Flycatcher	*Empidonax minimus*
Eastern Phoebe	*Sayornis phoebe*
Vermilion Flycatcher	*Pyrocephalus rubinus*
Great Crested Flycatcher	*Myiarchus crinitus*
Eastern Kingbird	*Tyrannus tyrannus*
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Snowy Egret	*Egretta thula*
Little Blue Heron	*Egretta caerulea*
Tricolored Heron	*Egretta tricolor*
Reddish Egret	*Egretta rufescens*
Cattle Egret	*Bubulcus ibis*
Green Heron	*Butorides virescens*
Black-crowned Night-Heron	*Nycticorax nycticorax*
Yellow-crowned Night-Heron	*Nycticorax violacea*
White-eyed Vireo	*Vireo griseus*
Yellow-throated Vireo	*Vireo flavifrons*
Blue-headed Vireo	*Vireo solitarius*
Philadelphia Vireo	*Vireo philadelphicus*
Red-eyed Vireo	*Vireo olivaceus*
Red-breasted Nuthatch	*Sitta canadensis*
Brown Creeper	*Certhia ameicana*
Carolina Wren	*Thryothorus ludovicianus*
Veery	*Catharus fuscescens*
Gray-cheeked Thrush	*Catharus minimus*
Swainson’s Thrush	*Catharus ustulatus*
Hermit Thrush	*Catharus guttatus*
Golden-winged Warbler	*Vermivora chrysoptera*
Tennesee Warbler	*Vermivora peregrine*
Orange-crowned Warbler	*Vermivora celata*
Nashville Warbler	*Vermivora ruficapilla*
Northern Parula	*Parula americana*
Yellow Warbler	*Dendroica petechia*
Chestnut-sided Warbler	*Dendroica pensylvanica*
Magnolia Warbler	*Dendroica magnolia*
Yellow-rumped Warbler	*Dendroica coronata*
Black-throated Blue Warbler	*Dendroica caerulescens*

Blackburnian Warbler	*Dendroica fusca*
Yellow-throated Warbler	*Dendroica dominica*
Pine Warbler	*Dendroica pinus*
Palm Warbler	*Dendroica palmarum*
Bay-breasted Warbler	*Dendroica castanea*
Black-and-white Warbler	*Mniotilta varia*
American Redstart	*Setophaga ruticilla*
Worm-eating Warbler	*Helmitheros vermivorus*
Ovenbird	*Seiurus aurocapilla*
Northern Waterthrush	*Seiurus noveboracensis*
Louisiana Waterthrush	*Seiurus motacilla*
Common Yellowthroat	*Geothlypos trichas*
Hooded Warbler	*Wilsonia citrina*
Wilson's Warbler	*Wilsonia pusilla*
Yellow-breasted Chat	*Icteria virens*
Summer Tanager	*Piranga rubra*
Scarlet Tanager	*Piranga olivacea*
Eastern Towhee	*Pipilo erythrophthalmus*
Chipping Sparrow	*Spizella passerine*
Vesper Sparrow	*Pooecetes gramineus*
Savannah Sparrow	*Passerculus sandwichensis*
Grasshopper Sparrow	*Ammodramus savannarum*
Fox Sparrow	*Passerella iliaca*
Song Sparrow	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
Swamp Sparrow	*Melospiza georgiana*
White-throated Sparrow	*Zonotrichia albicollis*
White-crowned Sparrow	*Zonotrichia leucophrys*
Dark-eyed Junco	*Junco hyemalis*
Rose-breasted Grosbeak	*Pheucticus ludovicianus*
Blue Grosbeak	*Passerina caerulea*
Indigo Bunting	*Passerina cyanea*
Red-winged Blackbird	*Agelais phoeniceus*
Eastern Meadowlark	*Sturnella magna*
Brewer's Blackbird	*Euphagus cyanocephalus*
Baltimore Oriole	*Icterus galbula*
American woodcock	*Scolopax minor*

Mammals

White-tailed Deer	*Odocoileus virginianus*
Feral hogs	*Sus scrofa*
River otter	*Lontra canadensis*
Bobcat	*Lynx rufus*
Eastern grey squirrel	*Sciurus carolinensis*
Swamp rabbit	*Sylvilagus aquaticus*
Raccoon	*Procyon lotor*
American mink	*Neovison vison*
Striped Skunk	*Mephitis mephitis*

Reptiles and Amphibians

American alligator	*Alligator mississippiensis*
yellow-blotched sawback	*Graptemys flavimaculata*
Ringed map turtle	*Graptemys oculifera*
Gopher tortoise	*Gopherus polyphemus*

Fish

Gulf sturgeon	*Acipenser oxyrinchus desotoi*
Highfin carpsucker	*Carpoides velifer*
Blue sucker	*Cycleptus elongatus*
Frecklebelly madtom	*Noturus munitus*
Bluntnose minnow	*Pimephales notatus*
Flagfin shiner	*Pteronotropis signipinnis*
Alabama shad	*Alosa alabamae*
Alligator gar	*Atracosteus spatula*
paddlefish (spoonbill)	*Polyodon spathula*
skipjack herring	*Alosa crysochloris*
inflated heelsplitter mussel	*Potamilus inflatus*

Plant communities

Bottomland hardwoods
Pine flatwoods and savannahs
upland hardwoods
Bayhead swamp

Appendix J. List of Preparers

Core Planning Team

The core planning team, which obtained the input from the public and governmental and non-governmental partners, was the primary decision-making team for the CCP. The key tasks of this group involved defining and refining the vision; identifying, reviewing, and filtering the issues; defining the goals; outlining the alternatives; and providing a conceptual framework for the plan (objectives and strategies to accomplish the vision). The following individuals serve on the Core Planning Team:

Core Team	***Organization***
Ken Litzenberger	Southeast LA NWR Complex, Project Leader
Tina Chouinard	FWS, Planning Team Leader
Pon Dixson	Southeast LA NWR Complex, Deputy Project Leader
Daniel Breaux	Bogue Chitto NWR, Refuge Manager
Neil Lalonde	Bogue Chitto NWR, Biologist
Jody DeMeyere	Bogue Chitto NWR, Park Ranger, Visitor Services
Alex Michalek	Bogue Chitto NWR, Forester
Mike Downie	Southeast Louisiana Refuges, Supervisory Park Ranger, Law Enforcement
James Harris	Atchafalaya NWR, Senior Wildlife Biologist
Josh Moree	Mississippi Department of Wildlife, Fish, and Parks

Interdisciplinary Team	***Organization***
Chuck Hunter	FWS, Atlanta, GA; Natural Resources and Planning Chief
Rick Kanaski	FWS, Atlanta, GA; Regional Archaeologist
Evelyn Nelson	FWS, Atlanta, GA; Writer/Editor
Randy Musgraves	FWS, Atlanta, GA; Formatting and Print Coordination
Rosamond Hopp	FWS, Atlanta, GA; Regional Planning Coordinator
Tom MacKenzie	FWS, Atlanta, GA; External Affairs

Biological Review Team

The biological review team is an interdisciplinary team which was responsible for determining the status, trends, and condition of the refuge's biological resources. The biological review for Bogue Chitto NWR took place on May 14-15, 2008, resulting in a report dated September 2008 (Wilson 2008). The following individuals serve on the biological review team:

Jennifer Coulson	Orleans Audubon Society
Jimmy Stafford	Louisiana Department of Wildlife and Fisheries
Danny Breaux	FWS
Mark Jamieson	FWS
James Harris	FWS
Janet Ertel	FWS
Chuck Hunter	FWS
Yancy Magee	FWS
Randy Wilson	FWS

Visitor Services Review Team

The visitors services review team is responsible for determining the status, trends, and condition of the refuge's visitor resources and facilities. The visitor services review for Bogue Chitto NWR took place in 2008 and resulted in a report dated June 2008 (USFWS 2008). The following individuals serve on the visitor services review team:

Garry Tucker	Visitor Services and Outreach, FWS
Ray Paterra	Cape Romain National Wildlife Refuge
Sharon Fuller	Black Bayou Lake National Wildlife Refuge

Appendix K. Finding of No Significant Impact

Introduction

The Fish and Wildlife Service will protect and manage certain fish and wildlife resources in St. Tammany and Washington Parishes, Louisiana, and Pearl River County, Mississippi, through the Bogue Chitto National Wildlife Refuge. An Environmental Assessment was prepared to inform the public of the possible environmental consequences of implementing the Comprehensive Conservation Plan for Bogue Chitto National Wildlife Refuge. A description of the alternatives, the rationale for selecting the preferred alternative, the environmental effects of the preferred alternative, the potential adverse effects of the action, and a declaration concerning the factors determining the significance of effects, in compliance with the National Environmental Policy Act of 1969, are outlined below. The supporting information can be found in the Environmental Assessment, which was Section B of the Draft Comprehensive Conservation Plan for Bogue Chitto National Wildlife Refuge.

Alternatives
In developing the Comprehensive Conservation Plan for Bogue Chitto National Wildlife Refuge, the Fish and Wildlife Service evaluated three alternatives:

Alternative A: Current Management Direction (No Action Alternative)
Alternative B: Resource-Focused Management (Preferred Action)
Alternative C: User-Focused Management

Each alternative is summarized below.

Alternative A: No Action (Current Management)

This alternative is required by NEPA and is the “no action” or “status quo” alternative in which no major management changes would be initiated by the Service. This alternative also provides a baseline to compare the current habitat, wildlife, and public use management to the two action alternatives (B and C).

The No Action Alternative would maintain the status quo and was developed using anticipated conditions in the area of Bogue Chitto NWR over the next 15 years. It assumes that current conservation management and land protection programs and activities by the Service, federal, state, and local agencies, and private organizations would continue to follow past trends. Species of federal responsibility, such as threatened and endangered species and migratory birds, would continue to be monitored at present levels. Acquisition of lands into the refuge would occur when funding is appropriated and willing sellers offer land that is quality habitat.

Wildlife population monitoring/surveying would be limited to current, primarily mandated species being monitored without the benefit of additionally focusing on species of concern and species chosen as indicators of a healthy ecosystem. Additional species monitoring would occur as opportunistic events when contacts outside the refuge staff offer support. Restoration efforts would continue as small, experimental projects instead of larger projects that show longer lasting benefits.

The biological environment would remain protected, but certain systems could suffer if not systematically monitored using focused species as indicators. Management under Alternative A would not adversely impact socioeconomic values of the area, but the refuge would not achieve its potential for providing needed educational and wildlife-dependent recreational activities.

All public use programs of fishing, hunting, wildlife observation, wildlife photography, and environmental education and interpretation would continue at present levels and with current facilities, but no programs or facilities would be updated or expanded. Public use programs would not change or increase with demand and would not be adapted based on the effects on refuge resources.

In general, under Alternative A, management and administrative decisions and actions would occur when triggered by demands and sources outside the refuge, with little deliberation and planning being accomplished ahead of time. This alternative, included for the purpose of comparison to baseline conditions, is not considered to be the most effective management strategy for achieving the vision and goals of the refuge.

Alternative B: Resource-Focused Management (Preferred Alternative)

Alternative B, the Service's preferred alternative, emphasizes management of the natural resources of Bogue Chitto NWR based on maintaining and improving wetland habitats, monitoring targeted flora and fauna representative of the Pearl River Basin, and providing quality public use programs and wildlife-dependent recreational activities. All species occurring on the refuge will be considered and certain targeted species will be managed for and monitored in addition to species of federal responsibility. These species will be chosen based on the criteria that they are indicators of the health of important habitat or species of concern. Information gaps in knowledge of refuge aquatic species will be addressed.

Restoration efforts, wetland habitat management, the fire program, and forest management will reflect best management practices determined after examination of historical regimes, soil types and elevation, and the current hydrological system. Management actions will be monitored for effectiveness and adapted to changing conditions, knowledge, and technology. A Habitat Management Plan would be developed for future habitat projects and to evaluate previous actions.

Public use programs will be improved by offering more facilities and wildlife observation areas. Public use facilities will undergo annual reviews for maintenance needs and safety concerns. Overall public use will be monitored to determine if any negative impacts are occurring to refuge resources from overuse. Education programs will be reviewed and improved to complement current refuge management and current staffing. Public use programs will be updated to support and teach reasons behind refuge management actions, and to provide quality experiences to refuge visitors. The refuge headquarters will be developed to provide more visitor services. In an increasingly developing region, a balanced program of wildlife-dependent recreational activities and protection of wildlife resources will be strived for under this alternative. Archaeological resources will be surveyed.

Land acquisitions within the approved acquisition boundary will be based on importance of the habitat for target management species. The refuge will offer interpretation of wildlife and habitats, as well as demonstrate habitat improvements for individual landowners. The main interpretive facilities will be housed at the Southeast Louisiana NWR Complex headquarters in Lacombe, with a non-consumptive, user-focused interpretive facility located along Interstate 59 at the Pearl River Turnaround site.

In general, under Alternative B, management decisions and actions will support wildlife species and habitat occurring on the refuge based on well-planned strategies and sound scientific judgment. Quality wildlife-dependent recreational uses, environmental education, and interpretation programs will be offered to support and explain the natural resources of the refuge.

This alternative will add six new positions to current staffing for the entire Complex in order to continue to protect refuge resources, provide visitor services, and attain goals of facilities and equipment maintenance in the future. The biological environment will improve as adaptive and best management practices are utilized. Socioeconomic values should also increase as the refuge offers an oasis of undeveloped green space as a draw for the area's eco-tourist trade and local residents searching for natural landscapes and environments.

Alternative C: User-Focused Management

Alternative C emphasizes managing the refuge for wildlife-dependent recreational uses. The majority of staff time and efforts would support public use activities including: hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. In general, the focus of refuge management would be on expanding public use activities to the fullest extent possible while conducting only mandated resource protection such as conservation of threatened and endangered species, migratory birds, and archaeological resources.

All refuge management programs for conservation of wildlife and habitat such as monitoring, surveying, and marsh management would support species and resources of importance for public use. Emphasis would be placed more on interpreting and demonstrating these programs than actual implementation. Providing access with trails would be maximized as well as providing public use facilities throughout the refuge. Federal trust species and archaeological resources would be monitored as mandated, but other species targeted for management would depend on which ones the public is interested in utilizing. Any negative impacts to soil, water, air, and other physical parameters would be observed only when highly visible effects manifested, because monitoring would not be based on indicator species or species of concern. Habitat restoration efforts would be accomplished to satisfy public use demands, so would not occur using as efficient and timely methods as if planned using an ecosystem approach.

With the majority of staff time and funds supporting a state of the art public use program, wildlife-dependent recreation and environmental education and interpretation could be more successful than in the other alternatives. Refuge resources would be protected from over-use so that quality public use experiences would not be reduced. The socioeconomic value of the refuge to the surrounding area would be the highest of the three alternatives. Land acquisitions within the approved acquisition boundary would be based on importance of the habitat for public use.

Selection Rationale

Alternative B is selected for implementation because it directs the development of programs to best achieve the refuge purpose and goals. Implementing the preferred alternative will result in management based on sound science for the conservation of a structurally and species diverse bottomland hardwood habitat for migratory birds and resident wildlife. A focused effort will be placed on reducing invasive species, which are threatening the biological integrity of the refuge. Baseline inventorying and monitoring of management actions will be completed to gain information on a variety of species, from reptiles and amphibians to migratory birds and several species of concern. Several cooperative projects will be conducted with universities, Louisiana Department of Wildlife and Fisheries, and other agencies and individuals to provide biological information to be used in

management decisions. When compatible, the wildlife-dependent recreational opportunities for hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation will be provided and enhanced, while achieving the refuge purpose and remaining consistent with existing laws, Service policies, and sound biological principles.

Under this alternative, all lands under the management and direction of the refuge will be protected, maintained, and enhanced to best achieve national, ecosystem, and refuge specific goals and objectives within anticipated funding and staffing levels. In addition, the action positively addresses significant issues and concerns expressed by the public.

Environmental Effects
Implementation of the Service's management action is expected to result in environmental, social, and economic effects as outlined in the comprehensive conservation plan. Habitat management, wildlife population management, resource protection, and visitor service activities on Bogue Chitto National Wildlife Refuge will result in increased migratory bird utilization and production; increased protection for threatened and endangered species; enhanced wildlife populations; bottomland hardwood forest management; and enhanced opportunities for wildlife-dependent recreation and environmental education. These effects are detailed as follows:

1. Wood duck population numbers and habitat use will be monitored and managed and will be expected to increase.

2. Migratory bird production will increase by enhancing forest habitat quality availability for neotropical migratory birds. Forest management practices such as selective harvests and conservation of mature stand components will benefit nesting and feeding habitat for neotropical migratory birds.

3. Refuge land acquisition, management, and protection will benefit the recovery of threatened and endangered species. All habitat management and protection, including upland pine forest treatments, will be beneficial to most wildlife, including gopher tortoise, ringed map turtle, and Louisiana black bear. Gulf sturgeon will also benefit from increased monitoring and protection.

4. The management of upland pine and bottomland hardwood forest will improve food and cover for resident wildlife species and enhance wetland communities within the refuge.

5. Habitat restoration and management, along with a focus on accessibility and facility maintenance, will result in improved wildlife-dependent recreational opportunities. While public use will result in some minimal, short-term adverse effects on wildlife and user conflicts may occur at certain times of the year, these effects are minimized by site design, time zoning, and implementing refuge regulations. Anticipated long-term impacts to wildlife and wildlife habitats of implementing the management action are positive. In the long run, wildlife habitat and increased opportunities for wildlife-dependent recreation opportunities could result in an increase in economic benefits to the local community.

6. Implementing the comprehensive conservation plan is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988, as actions will not result in development of buildings and/or structures within floodplain areas, nor will they result in irrevocable, long-term adverse impacts. In fact, a major thrust of the management action is to implement upland pine and bottomland hardwood forest management within the wildlife communities of the refuge that have been severely impacted by actions prior to establishment of the refuge. Implementing the management action will result in substantial enhancement of forest communities and net increases to the Nation's bottomland hardwood forest acreage and quality.

Potential Adverse Effects and Mitigation Measures

Water Quality from Soil Disturbance and Use of Herbicides

Soil disturbance and siltation due to water management activities; road and levee maintenance; and the construction of observation towers, boat ramps, and a headquarters and visitor center are expected to be minor and of short duration. To further reduce potential effects, the refuge will use best management practices to minimize the erosion of soils into water bodies.

Foot traffic on new and extended foot trails is expected to have a negligible effect on soil erosion. To minimize the effects from public use, the refuge will include informational signs that request trail users to remain on the trails, in order to avoid causing potential erosion problems.

Long-term herbicide use for exotic plant control could result in a slight decrease in water quality in areas prone to exotic plant infestation. Through the proper application of herbicides, however, this is expected to have a minor effect on the environment, with the benefit of reducing or eliminating exotic plant infestations.

Forest management activities can alter water quantity and quality. Intensity of management activities determines the effect on aquatic communities. Water quantity generally applies to the size and frequency of storm flows, while water quality generally refers to the physical, chemical, and biological characteristics of the water.

Intermediate thinnings in forested stands could increase surface runoff within managed areas. This increase in surface water runoff will be temporary, lasting only until growth of existing vegetation and the establishment of new vegetation take place. Establishment of new vegetation and increased growth of existing vegetation should occur soon after the thinning operations as vegetation responds to increased sunlight reaching the forest floor and the increased open space in the canopy. Increased surface water runoff resulting from a decrease in infiltration rates of the soils due to compaction should be negligible after thinning treatments. Skid trails and log landings will be areas most susceptible to compaction, but they represent a small percentage of the treatment area. Disking and/or seeding skid trails and log landings will minimize the effects of compaction and soil disturbance. Slash, litter, and duff will buffer the soil against vehicle pressure, thus reducing compaction. Any thinning within streamside zones will be conducted during the dry times of the year, and skid trails will not be allowed to run parallel to streams. Crossings designated by refuge personnel will be placed perpendicular to streams to minimize stream bank erosion. Log landings will be located on ridge tops to further avoid erosion.

Regeneration and restoration of forested habitat could involve intensive site preparation activities possibly including mechanical chopping, mechanical mulching, herbicide treatments, and prescribed burning, plus frequent burning thereafter to reduce competition. Increased frequency of burns can decrease soil productivity by causing loss of nutrients, particularly phosphorus. Reduction of the litter cover could cause increased risk of soil damage through surface runoff and consequent erosion. Taking care that areas with sensitive soils do not receive excessive disturbance or high-intensity burns could reduce the possibility of high erosion or impairment of soil productivity.

Roads are the most common source of forest erosion and sedimentation. As miles of roads increase in a given watershed, so does the potential for watershed damage. Effects on water quality from sediment are the primary concern of road-associated erosion. Primary sources of road sediment are run-off from cut and fill areas, stream crossings, and ditches. Erosion and sedimentation (50-75 percent) from roads usually occur during and immediately after construction. There will likely be no

new road construction with the preferred alternative. Maintenance of existing roads could cause some slight sedimentation during treatment, but the removal of ruts, washouts, and reshaping of the roadbed should reduce the existing sedimentation caused by run-off.

The main effects of prescribed burning on water resources will be the potential for increased runoff due to rainfall events. When surface runoff increases after burning, it may carry suspended soil particles, dissolved inorganic nutrients, and other materials into adjacent streams and other water bodies, thus reducing water quality. These effects seldom occur after prescribed burns in the southeastern coastal plains. Generally, a properly planned prescribed burn will not adversely affect water quality or quantity of ground or surface water on coastal plain soils. Nutrients released from forest litter and plants during prescribed burns are readily soluble in water. Runoff could transport those nutrients to water bodies, thus increasing their nutrient concentrations. Most nutrients, however, are retained through plant uptake. This beneficial effect can be greater for growing season burns than dormant season burns.

Wildlife Disturbance

Disturbance to wildlife is an unavoidable consequence of any public use program, regardless of the activity involved. While some activities, such as wildlife observation, may be less disturbing than others, all of the public use activities under the proposed alternative will be planned to avoid unacceptable environmental effects.

The known and anticipated levels of disturbance from the preferred alternative are not considered to be significant. Nevertheless, the refuge will manage public use activities to reduce effects. Providing access for fishing opportunities allows the use of a renewable natural resource without adversely affecting other resources. Hunting will also be managed with restrictions that ensure minimal effect on other resources. General wildlife observation may result in minimal disturbance to wildlife. If the refuge determines that effects from the expected additional visitor uses are above the levels that are anticipated, those uses will be discontinued, restricted, or rerouted to other less-sensitive areas.

Forest management with the use of intermediate silvicultural treatments, prescribed burning, and various habitat restoration treatments may cause harm to wildlife or incidental loss of some individuals. Care will be taken to ensure that treatments are done at the correct time of year, in selected locations, and with the proper intensity to avoid potential effects to wildlife. The vast majority of wildlife will receive long-term benefits from forest habitat management and restoration.

Vegetation Disturbance

Negative effects could result from the creation, extension, and maintenance of trails that require the clearing of non-sensitive vegetation along their length. This is expected to be a minor short-term effect. The level of camping will be closely evaluated to reduce disturbance and litter, and to regulate the proper removal of camping debris and supplies.

More visitor use may increase the potential for the introduction of new exotic species into areas when visitors do not comply with boating regulations at the boat ramps and other access points, or with requests to stay on trails. The refuge will minimize this effect by enforcing the regulations for access to the refuge's water bodies, and by installing informational signs that request users to stay on the trails.

Effects to vegetation from forest management and prescribed fire will have long-term benefits for the human and natural environment. Some vegetation will be removed or harmed due to forest management activities; however, long-term benefits to forest health and productivity will exceed

losses. Effects to visual quality in the human environment due to forest management activities will be temporary and dissipate within less than one year.

User-Group Conflicts

As public use increases, unanticipated conflicts between different user groups could occur. If this should happen, the refuge will adjust its programs, as needed, to eliminate or minimize any public use issues. The refuge 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. Restrictions on hunting methods (for example, restricting dog use during turkey, dove, and deer seasons to ensure conflicts do not arise) and restrictions on hunting near designated public use facilities and trails will aid in reducing potential conflicts. If serious conflicts arise, considerations will be given to chronological and spatial scheduling and/or zoning.

Sport fishing and hunting activities will overlap to some degree. No conflicts of consequence are expected between sport fishermen and deer and game hunters. Conflicts between sport fishermen and migratory bird hunters may arise, but are expected to be minimal due to the dissimilar nature of these activities and the areas of the refuge where these activities may be expected to occur. It is expected that the majority of waterfowl hunting will occur in shallow waters and at times of year when the refuge is less likely to be used by sport fishermen.

Effects on Adjacent Landowners

Implementation of the preferred alternative is not expected to negatively affect the owners of private lands adjacent to the refuge. Positive effects that will be expected include higher property values, less intrusion of invasive exotic plants, and increased opportunities for viewing more diverse wildlife.

However, some negative effects that could occur include a higher frequency of trespass onto adjacent private lands, and noise associated with increased traffic. To minimize these potential effects, the refuge will provide informational signs that clearly mark refuge boundaries, maintain the refuge's existing parking facilities, use law enforcement, and provide increased educational efforts at the visitor center.

Land Ownership and Site Development

Land acquisition efforts by the Service could lead to changes in land use and recreational use patterns. However, most of the non-Service-owned lands within the refuge's approved acquisition boundary are currently undeveloped. If these lands are acquired as additions to the refuge, they will be maintained in a natural state, managed for native wildlife populations, and opened to wildlife-compatible public uses, where feasible.

Potential development of the refuge's buildings, trails, and other improvements could lead to minor, short-term negative effects on plants, soils, and some wildlife species. When building public use facilities, efforts will be made to use recycled products and environmentally sensitive treated lumber. The visitor center will be constructed to be aesthetically pleasing to the community and to avoid any additional effects to native plant communities. All construction activities will comply with the requirements of Section 404 of the Clean Water Act; the National Historic Preservation Act; Executive Order 11988, Floodplain Management; and other applicable regulatory requirements.

As indicated earlier, one of the direct effects of site development is increased public use; this increased use may lead to littering, noise, and vehicle traffic. While funding and personnel resources will be allocated to minimize these effects, such allocations make these resources unavailable for other programs.

The management action is not expected to have significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988.

Coordination
The management action has been thoroughly coordinated with all interested and/or affected parties. Parties contacted include:

Congressional representatives
Governor of Louisiana
Governor of Mississippi
The Mississippi Department of Wildlife, Fisheries, and Parks
Louisiana Department of Wildlife and Fisheries
Louisiana State Historic Preservation Officer
Mississippi State Historic Preservation Officer
Friends of Louisiana Wildlife Refuges, Inc.
USACE
National Audubon Society
Jena Band of Choctaw Indians
Tunica-Biloxi Indians of Louisiana
Quapaw Tribe
Caddo Nation of Oklahoma
Local community officials
Interested citizens

Findings
It is my determination that the management action does not constitute a major federal action significantly affecting the quality of the human environment under the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969 (as amended). As such, an environmental impact statement is not required. This determination is based on the following factors (40 C.F.R. 1508.27), as addressed in the Environmental Assessment, which was Section B of the Draft Comprehensive Conservation Plan for Bogue Chitto National Wildlife Refuge:

1. Both beneficial and adverse effects have been considered and this action will not have a significant effect on the human environment. (Environmental Assessment, pages 109-129)

2. The actions will not have a significant effect on public health and safety. (Environmental Assessment, pages 109-129)

3. The project will not significantly affect any unique characteristics of the geographic area, such as proximity to historical or cultural resources, wild and scenic rivers, or ecologically critical areas. (Environmental Assessment, pages 109-129)

4. The effects on the quality of the human environment are not likely to be highly controversial. (Environmental Assessment, pages 109-129)

5. The actions do not involve highly uncertain, unique, or unknown environmental risks to the human environment. (Environmental Assessment, pages 109-129)

6. The actions will not establish a precedent for future actions with significant effects nor do they represent a decision in principle about a future consideration. (Environmental Assessment, pages 109-129)

7. There will be no cumulatively significant impacts on the environment. Cumulative impacts have been analyzed with consideration of other similar activities on adjacent lands, in past action, and in foreseeable future actions. (Environmental Assessment, pages 119-129)

8. The actions will not significantly affect any site listed in, or eligible for listing in, the National Register of Historic Places, nor will they cause loss or destruction of significant scientific, cultural, or historic resources. (Environmental Assessment, page 109-129)

9. The actions are not likely to adversely affect threatened or endangered species, or their habitats. (Environmental Assessment, pages 109-129)

10. The actions will not lead to a violation of federal, state, or local laws imposed for the protection of the environment. (Environmental Assessment, pages 109-129)

Supporting References
US Fish and Wildlife Service. 2011. Draft Comprehensive Conservation Plan and Environmental Assessment for Bogue Chitto National Wildlife Refuges, St. Tammany and Washington Parishes, Louisiana, and Pearl River County, Mississippi. U.S. Department of the Interior, Fish and Wildlife Service, Southeast Region.

Document Availability
The Environmental Assessment was Section B of the Draft Comprehensive Conservation Plan for Bogue Chitto National Wildlife Refuge and was made available May 27, to June 27, 2011. Additional copies are available by writing: Southeast Louisiana National Wildlife Refuge Complex, 61389 Highway 434, Lacombe, LA 70445.

Signed

"for" Cynthia K. Dohner
Regional Director, Southeast Region

SEP 27 2011

Date