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October 2005

Lake Ophelia National Wildlife Refuge
Final Comprehensive Conservation Plan
401 Island Road - Marksville, LA 71351
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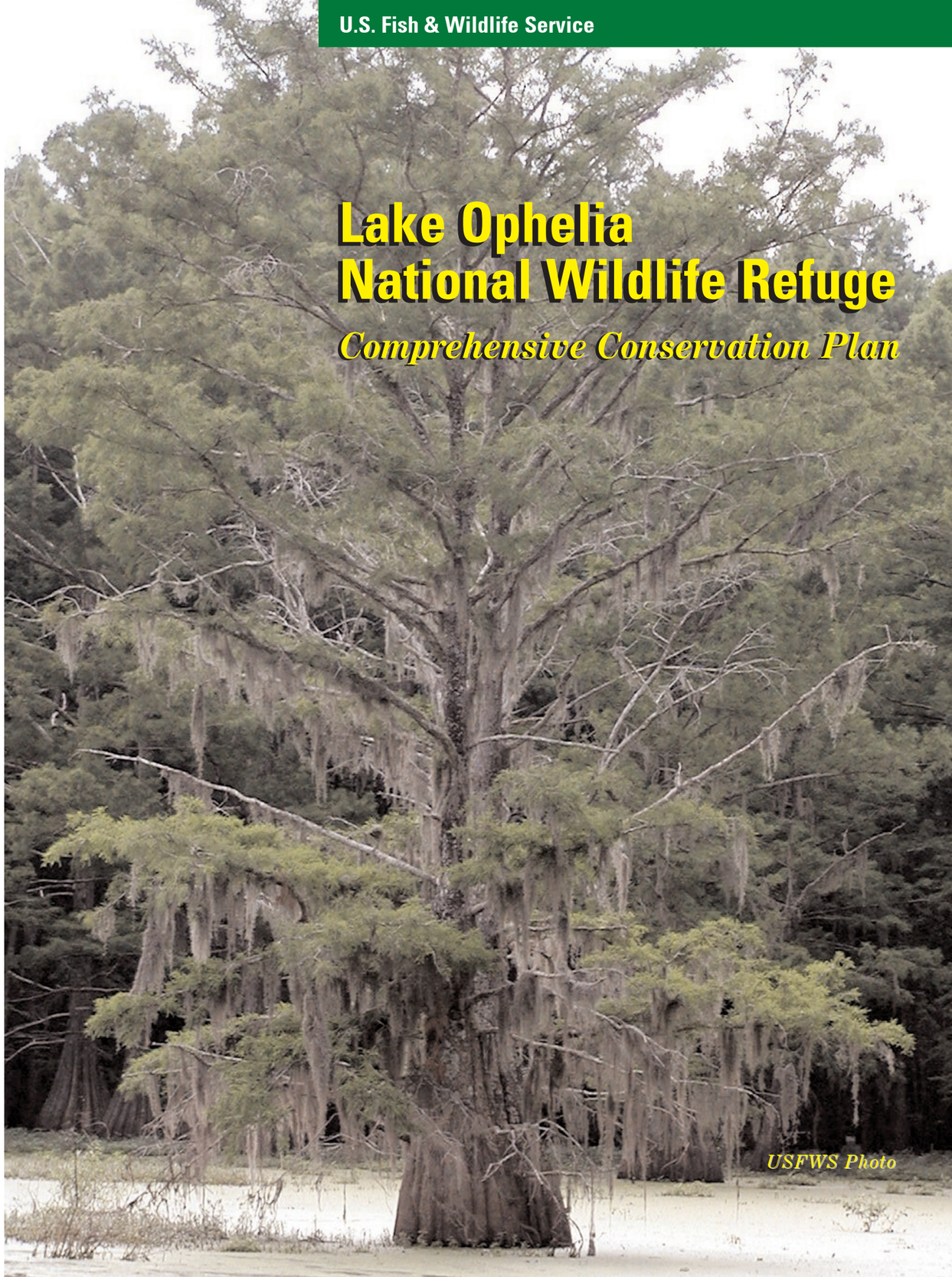
Lake Ophelia National Wildlife Refuge

Comprehensive Conservation Plan



USFWS Photo

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

Lake Ophelia
National Wildlife Refuge
Comprehensive Conservation Plan

Fish and Wildlife Service Southeast Region
September 2005

Submitted by: //S// Mike Chouinard — Date: 9/20/05
Mike Chouinard, Refuge Manager
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Section A. Comprehensive Conservation Plan

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Guiding Principles of the National Wildlife Refuge System

We are land stewards, guided by Aldo Leopold's teachings that land is a community of life and that love and respect for the land is an extension of ethics. We seek to reflect that land ethic in our stewardship and to instill it in others.

Wild lands and the perpetuation of diverse and abundant wildlife are essential to the quality of the American life.

We are public servants. We owe our employers, the American people, hard work, integrity, fairness, and a voice in the protection of their trust resources.

Management, training from preservation to active manipulation of habitats and populations, is necessary to achieve the missions of the National Wildlife Refuge System and the U.S. Fish and Wildlife Service.

Wildlife-dependent uses involving hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation, when compatible, are legitimate and appropriate uses of the National Wildlife Refuge System.

Partnerships with those who want to help us meet our mission are welcome and indeed essential.

Employees are our most valuable resource. They are respected and deserve an empowering, mentoring, and caring work environment.

We respect the rights, beliefs, and opinions of our neighbors.

I. Background

INTRODUCTION

The U.S. Fish and Wildlife Service has developed this Comprehensive Conservation Plan (CCP) to provide a foundation for the management and use of Lake Ophelia National Wildlife Refuge (Refuge or Lake Ophelia Refuge) in Avoyelles Parish, Louisiana. The plan is intended to serve as a working guide for the Refuge's management programs and actions over the next 15 years.

The plan was developed in compliance with the National Wildlife Refuge System Improvement Act of 1997 and Part 602 (National Wildlife Refuge System Planning) of the Fish and Wildlife Service Manual. The actions described within this plan also meet the requirements of the National Environmental Policy Act of 1969. Compliance with this Act is being achieved through the involvement of the public and the completion of an Environmental Assessment. When fully implemented, this plan will strive to achieve the vision and purposes of Lake Ophelia National Wildlife Refuge.

The plan's overriding consideration is to carry out the purposes for which the Refuge was established. Fish and wildlife are the first priority in Refuge management, and public use (wildlife-dependent recreation) is allowed and encouraged as long as it is compatible with, or does not detract from, the Refuge's mission and purposes.

The plan has been prepared by a planning team composed of representatives from various Service programs, including Refuges, Fisheries, Ecological Services, Realty, Migratory Birds, and Louisiana Department of Wildlife and Fisheries. In developing this plan, the planning team and Refuge staff have incorporated the input of local citizens and the general public through a stakeholder scoping meeting, public scoping meetings, and a series of public meetings following the release of the draft CCP. The Draft Comprehensive Conservation Plan/Environmental Assessment describing the Service's proposed alternative, as well as three other alternatives, considered the effects on the environment and 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 plan. This public involvement, the planning process itself, and the Service response to comments are described in Appendix VII, Public Involvement.

PURPOSE AND NEED FOR THE PLAN

The purpose of this Comprehensive Conservation Plan is to identify the role that Lake Ophelia National Wildlife Refuge will play in support of the mission of the National Wildlife Refuge System (Refuge System), and to provide long-term guidance to the Refuge's management programs and activities. The plan is needed to:

- Provide a clear statement of direction for the future management of the Refuge;
- Provide Refuge neighbors, visitors, and government officials with an understanding of the U.S. Fish and Wildlife Service's management actions on and around the Refuge;
- Ensure that the Service's management actions, including land protection and recreational and educational programs, are consistent with the mandates of the National Wildlife Refuge System Improvement Act of 1997;
- Ensure that the management of the Refuge is consistent with Federal, State, and county or parish plans; and

- Provide a basis for the development of budget requests for the Refuge's operational, maintenance, and capital improvement needs.

Perhaps the greatest need of the Service is to communicate with the public and include public participation in its efforts to carry out the mission of the Refuge System. Many agencies, organizations, institutions, businesses, and private citizens have developed relationships with the Service to advance the goals of the Refuge System. This Comprehensive Conservation Plan supports the Partners in Flight Initiative, Lower Mississippi Valley Migratory Bird Wetland Conservation Initiative, North American Waterfowl Management Plan, Western Hemisphere Shorebird Reserve Network, and National Wetlands Priority Conservation Plan.

THE U.S. FISH AND WILDLIFE SERVICE

The U.S. Fish and Wildlife Service is the primary Federal agency responsible for the conservation, protection, and enhancement of the Nation's fish and wildlife populations and their habitats. Although the Service shares some conservation responsibilities with other Federal, State, tribal, local, and private entities, it has specific trustee obligations for migratory birds, threatened and endangered species, anadromous fish, and certain marine mammals. As part of its mission, the Service administers a national network of lands and waters for the management and protection of these resources.

As part of its mission, the Service manages more than 540 national wildlife refuges covering a total of more than 95 million acres. These areas comprise the Refuge System, the world's largest collection of lands and waters specifically managed for fish and wildlife. The majority of these lands, 77 million acres, lie in Alaska. The remaining 15 million acres are spread across the other 49 states and several island territories.

THE NATIONAL WILDLIFE REFUGE SYSTEM

To date, the Refuge System is comprised of more than 540 national wildlife refuges and over 3,000 small waterfowl breeding and nesting sites covering more than 95 million acres, the world's largest collection of lands and waters specifically managed for fish and wildlife. The majority of these lands, 77 million acres, are in Alaska. The remaining acres are spread across the other 49 states and several island U.S. territories. The mission of the Refuge System is:

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

The National Wildlife Refuge System Improvement Act of 1997 (RIA) established, for the first time, a clear mission of wildlife conservation for the Refuge System. The 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 fish and wildlife first;
- Fulfill the requirement of developing a comprehensive conservation plan for each unit of the Refuge

System, and fully involve the public in the preparation of these plans;

- Maintain the biological integrity, diversity, and environmental health of the Refuge System;
- Recognize that wildlife-dependent recreation activities, including hunting, fishing, wildlife observation and photography, and environmental education and interpretation, are legitimate and priority public uses; and
- Retain the authority of refuge managers to determine compatible public uses.

Following passage of the RIA in 1997, the Service immediately began efforts to carry out the direction of the new legislation, including the preparation of comprehensive conservation plans for all refuges. The development of these plans is now ongoing nationally. Consistent with RIA, all refuge comprehensive conservation plans are being prepared in conjunction with public involvement and each refuge is required to complete its own plan by 2012.

Approximately 37.5 million people visited the country's national wildlife refuges in 1998, mostly to observe wildlife in their natural habitats. As this visitation continues to grow, significant economic benefits are being generated to the local communities that surround the refuges. Economists have reported that national wildlife refuge visitors contribute more than $400 million annually to the local economies. In addition, the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation reports that nearly 40 percent of the country's adults spent $101 billion on wildlife-related recreational pursuits in 1996 (USFWS, 1996).

Volunteerism continues to be a major contributor to the successes of the Refuge System. In 1998, volunteers contributed more than 1.5 million person-hours on the refuges nationwide, a service valued at more than $20.6 million.

The wildlife and habitat vision for national wildlife refuges stresses the following principles:

- The wildlife and habitat vision for the National Wildlife Refuges stresses the following principles:
- Wildlife comes first.
- Ecosystems, biodiversity, and wilderness are vital concepts in refuge management.
- Refuges must be healthy.
- Growth of refuges must be strategic.
- The Refuge System serves as a model for habitat management with broad participation from others.

RELATIONSHIP TO STATE WILDLIFE AGENCY

A provision of the National Wildlife Refuge System Improvement Act of 1997, and subsequent agency policy, is that the Service, during the course of acquiring and managing refuges, shall ensure timely and effective cooperation and collaboration with other Federal agencies and State fish and wildlife agencies. This cooperation is essential in providing the foundation for the protection and sustainment of fish and wildlife throughout the United States.

The Louisiana Department of Wildlife and Fisheries (LDWF) (http://www.wlf.state.la.us) is a State agency which partners with the Service and is charged with enforcement responsibilities for migratory birds and endangered species, as well as managing the State's natural resources. It also manages approximately 1.4 million acres of coastal marshes and wildlife management areas (WMAs) in Louisiana. State officers are deputized to enforce migratory game laws.

The LDWF coordinates the State's wildlife conservation program and provides public recreation opportunities, including an extensive hunting and fishing program, on several WMAs located near Lake Ophelia National Wildlife Refuge (Grassy Lake, Pomme de Terre, Red River, Spring Bayou, and Three Rivers). The LDWF's participation and contribution throughout this Comprehensive Conservation Planning process have been valuable, and the LDWF is continuing its work with the Service to provide ongoing opportunities for an open dialogue with the public to improve the ecological sustainment of fish and wildlife in Louisiana. Not only has the LDWF participated in biological reviews, stakeholder meetings, and field reviews as part of the CCP planning process, they also are a principal partner in black bear repatriation efforts, annual hunt coordination planning, and various wildlife and habitat surveys. In the past two years Lake Ophelia National Wildlife Refuge has expanded hunting opportunities for small game, deer archery, waterfowl, and wild turkey in cooperation with the LDWF. A key part of the comprehensive conservation planning process is the integration of common mission objectives between the Service and the LDWF, where appropriate.

LOWER MISSISSIPPI RIVER VALLEY ECOSYSTEM

OVERVIEW

Lake Ophelia National Wildlife Refuge lies within a physiographic region known as the Mississippi Alluvial Valley (MAV; Figure 1-1). The MAV was once a 25-million-acre complex of forested wetlands that extended along both sides of the Mississippi River from Illinois to Louisiana. Historically, the extent and duration of seasonal flooding from the Mississippi River fluctuated annually, with floods recharging the MAV's aquatic systems and creating a rich diversity of dynamic habitats that supported a vast array of fish and wildlife resources.

THREATS AND PROBLEMS

Forest Loss and Fragmentation

The Mississippi Alluvial Valley has changed markedly over the last 100 years as civilization spread throughout the area. From the 1950's to the 1990's, it has been estimated that 20 million acres of bottomland forested wetlands have been lost (Figure 1-2). The greatest changes to the landscape have been in the form of land clearing for agriculture 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, biological integrity, and environmental health of the Mississippi Alluvial Valley. 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 MAV that have become extinct, endangered, or threatened include the red wolf, Florida panther, ivory-billed woodpecker, Bachman's warbler, and Louisiana black bear.

Figure 1-1. Mississippi Alluvial Valley.

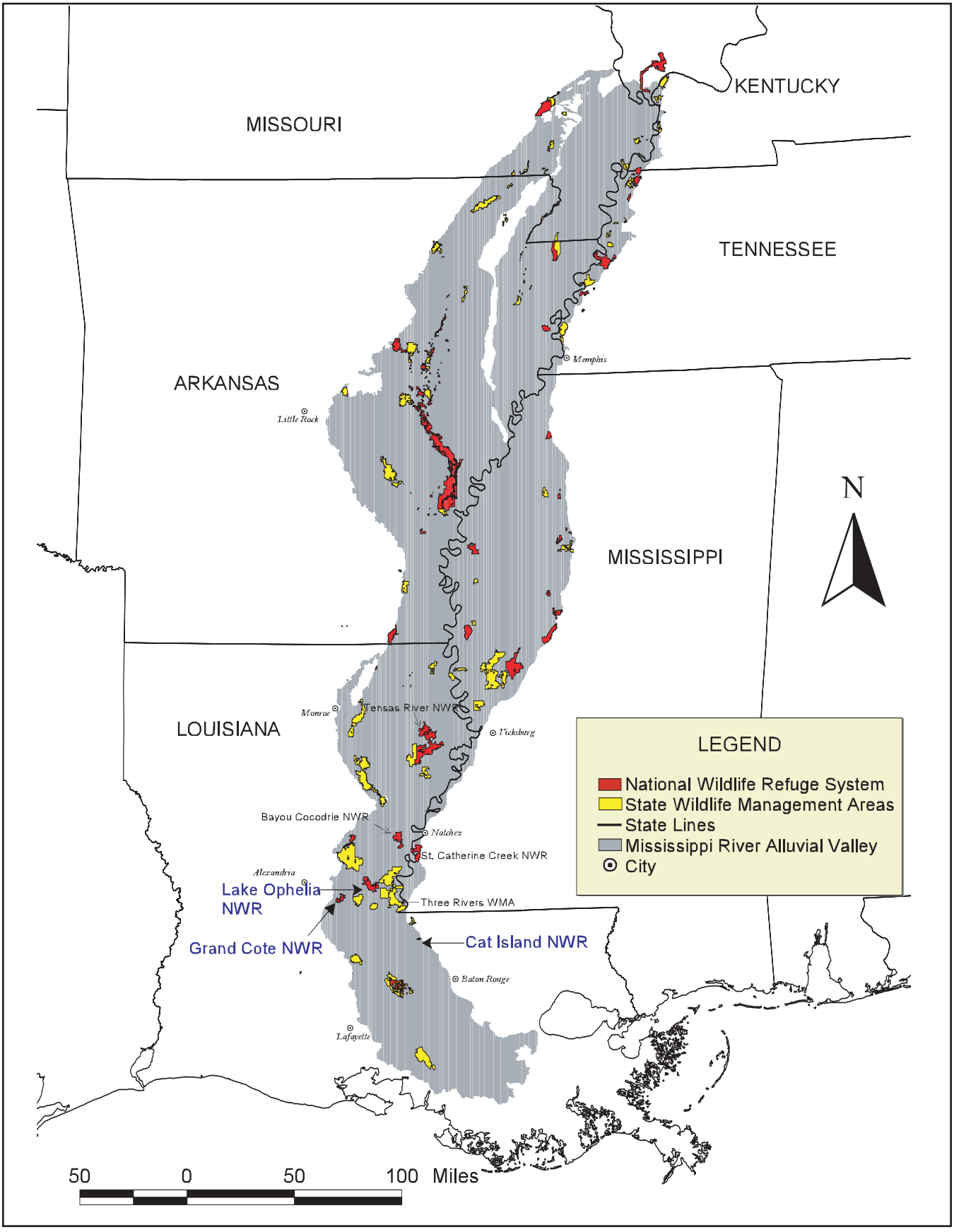
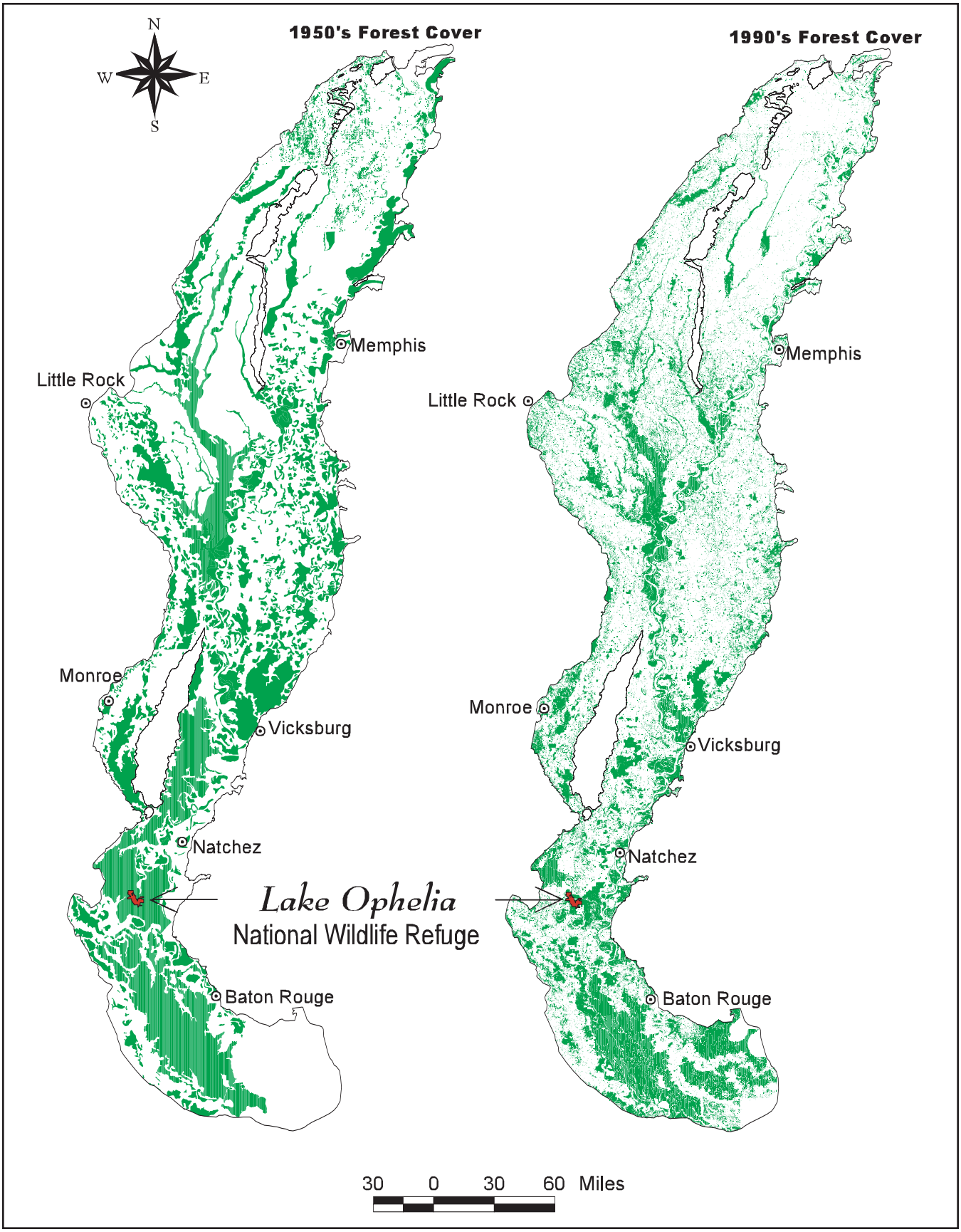


Figure 1-2. Forest cover changes in the Mississippi Alluvial Valley.



Breeding bird surveys show continuing declines in species and species populations. The avian species most adversely affected by forest fragmentation include those that are area-sensitive (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 that 70 species of breeding migratory birds are found in the region. Some of these species, including Swainson's warbler, prothonotary warbler, swallow-tailed kites, wood thrush, and cerulean warbler, 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 (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 parasitic nester 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 nestlings. 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 a sea of agricultural lands. Intensive agriculture has removed most of the forested corridors along sloughs that formerly connected the forest patches. The loss of connectivity between the remaining forested tracts 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.

Alterations to Hydrology

In addition to the loss of vast acreage of bottomland forested wetlands, there have been-significant alterations in the region's hydrology due to urban development, river channel modification, flood control levees, reservoirs, and deforestation, as well as degradation to aquatic systems from excessive sedimentation and contaminants.

The natural hydrology of a region is directly responsible for the connectedness of forested wetlands and indirectly responsible for the complexity and diversity of habitats through its effects on topography and soils. Natural resource managers recognize the importance of dynamic hydrology to forested wetlands and waterfowl-habitat relationships (Fredrickson and Heitmeyer, 1988).

Large-scale man-made hydrological alterations have changed the natural spatial and temporal patterns of flooding throughout the entire MAV. In addition, these alterations have reduced both the extent and the duration of annual seasonal flooding. The loss of this annual flooding regime has had a tremendous effect on the forested wetlands and their associated wetland-dependent species.

In view of the hydrologic changes, it is very difficult–if not impossible–to fully emulate and reconstruct the structure and functions of a natural wetland. According to Mitsch and Gosselink (1993), restoration of wetland functions is especially difficult since wetlands depend on a dynamic interface of hydrologic regimes to maintain water, vegetation, and animal complexes and processes.

Siltation of Aquatic Ecosystems

Aquatic systems, including lakes, rivers, sloughs and bayous, have been degraded as a result of deforestation and hydrologic alteration. Clearing of bottomland hardwood forests has led to an accelerated

accumulation of sediments and contaminants in all aquatic systems. Many water bodies are now filled with sediments, which greatly reduce their surface area and depth. Concurrently, the non-point source runoff of excess nutrients and contaminants is threatening the area's remaining aquatic resources. In Louisiana, the Service lists one fish species as threatened and one fish species as endangered.

Hydrologic alterations have basically eliminated the geomorphological processes that created oxbow lakes, sloughs, and river meander scars. Consequently, the protection, conservation, and restoration of these aquatic resources take on an added importance in light of the alterations associated with flood control and navigation.

Proliferation of Invasive Aquatic Plants

Compounding the problems faced by aquatic systems is the growing threat from invasive aquatic vegetation. Static water levels caused by the lack of annual flooding, and reduced water depths resulting from excessive sedimentation, have created conditions favorable for the establishment and proliferation of several species of invasive aquatic plants. Additionally, the introduction of exotic (nonnative) vegetation capable of aggressive growth is further threatening viability of aquatic systems. These invasive aquatic species threaten the natural aquatic vegetation important to aquatic systems, and choke waterways to a degree that often prevents recreational use.

CONSERVATION PRIORITIES

The declines in the MAV's bottomland hardwood forests and their associated fish and wildlife resources have prompted the Service to designate this forest system as an area of special concern. A collaborative effort involving private, State, and Federal conservation partners is now underway to employ a variety of tools to restore the functions and values of wetlands in the MAV. The goal is to prioritize and manage wetlands to most effectively maintain and possibly restore the biological diversity in the MAV. Some areas are prioritized as focus areas for reforestation.

It is widely recognized, however, that most of the 20+ million acres of forested wetlands that have been cleared and converted to other uses in the MAV will not be reforested. Some areas will have low value for reforestation and are targeted for intensive management for non-forest-dependent species, such as waterfowl and shorebirds. Through cooperative efforts, apportioning resources, and the focusing of available programs, the MAV's biological diversity can be improved.

Several coordinated efforts have been initiated to set priorities and establish focus areas to overcome the impacts of hydrologic changes and forest fragmentation. A cooperative private-State-Federal partnership known as the North American Waterfowl Management Plan, Lower Mississippi Valley Joint Venture (LMVJV), was established in 1986 to help provide sufficient wintering waterfowl habitat throughout the MAV. Partners operating in the LMVJV have helped to establish step-down management objectives (expressed in duck-use days and number of acres of flooded habitat) for public and private lands throughout the MAV.

The initial LMVJV effort for waterfowl has expanded to also establish breeding bird objectives for shorebirds and Neotropical migratory birds. The LMVJV is working with the U.S. Shorebird Conservation Working Group to establish step-down objectives for shorebird foraging habitat for the fall migration period throughout the MAV.

The habitat goals of the Lower Mississippi Valley Joint Venture can only be met through active management of croplands, moist-soil areas, and forested wetlands on both public and private land (Reinecke and

Baxter, 1996). Active management (i.e., vegetation manipulation and hydrology restoration) is required to compensate for the spatial and temporal habitat changes that have been caused by clearing and hydrologic alterations throughout the MAV. Lake Ophelia Refuge uses a system of levees, water control structures, and wells to provide approximately 1,155 acres of dependable seasonally flooded croplands, bottomland hardwood forest, and moist soil areas as part of its waterfowl habitat step-down objectives. If totally reforested, the Lake Ophelia Refuge will not be able to meet its habitat step-down objectives for multi-species of waterfowl. Setting habitat and species objectives from the perspective of the MAV is advantageous because it looks at the big picture and enables managers to plan and provide habitat for a diversity of species throughout their range.

Another cooperative private-State-Federal partnership involving the North American Waterfowl Management Plan, Partners-in-Flight, and the LMVJV has identified a number of Source Population Objective Areas (SPOA). Lake Ophelia National Wildlife Refuge lies within the 100,000-acre Three Rivers SPOA (Figure 1-3), one of the few SPOA in the MAV that is close to its acreage objective. The purpose of identifying these zones is to focus a number of private, State, and Federal restoration programs into specific areas in an effort to provide maximum program benefits for Neotropical migratory birds.

The goal of this collaborative restoration effort is to provide *islands* or blocks of forested habitat in an otherwise highly fragmented landscape. The targeted block sizes range from 10,000 to 100,000 acres. Such areas are large enough to support viable populations of various suites of Neotropical migratory birds. Of course, these areas will also support other species, such as the Louisiana black bear, that depend on large forested blocks.

Most SPOAs encompass an existing or proposed wildlife management area or national wildlife refuge. These public lands serve as anchors of biodiversity that are enhanced and supported by the expansion of forested blocks, through either public or private management.

The Black Bear Conservation Committee (BBCC), a group of Federal, State, and private partners in Mississippi, Louisiana, Arkansas, and east Texas, is dedicated to restoring the federally listed Louisiana black bear to suitable habitat. The recovery of this species in Louisiana will be accomplished when: (1) there are at least two viable subpopulations, one in the Tensas River Basin and one in the Atchafalaya River Basin; (2) immigration and emigration corridors are established between those two subpopulations; and (3) habitat and interconnecting corridors that support those two subpopulations are protected.

Black bear recovery is dependent on the restoration and protection of a series of large forested blocks connected by forested movement corridors to facilitate the bear's natural movements between habitats and thus enhance its genetic viability. These forested blocks typically overlie the SPOAs in the Louisiana portion of the MAV, from Tensas River National Wildlife Refuge in northeast Louisiana through the Three Rivers SPOA in east-central Louisiana to the St. Mary/Iberia Parish area in south-central Louisiana (Figure 1-4, p. 14). In an attempt to speed up the bear recovery process, the Black Bear Repatriation Team is attempting to establish a population of bears within the immigration and emigration corridor between those two subpopulations with a five-year project of releasing adult female black bears and cubs of the year in this area. During the spring of 2003 and 2004, 11 adult female bears (radio-collared) with cubs were successfully relocated to Lake Ophelia Refuge. As of fall 2004, a majority of these bears either are using the Refuge or are on adjacent private lands.

Although reforestation is probably the best solution for restoring the vast forests that have been converted to row-crop agriculture, it must be remembered that hydrology (flooding) drives the ecological system in the MAV. The plant and animal community throughout the MAV is dependent upon the hydrologic cycle. It is incumbent upon land managers to manage hydrology in an effort to restore the ecological

Figure 1-3. Lake Ophelia National Wildlife Refuge in the Context of the Red River/Three Rivers Source Population Objective Area.

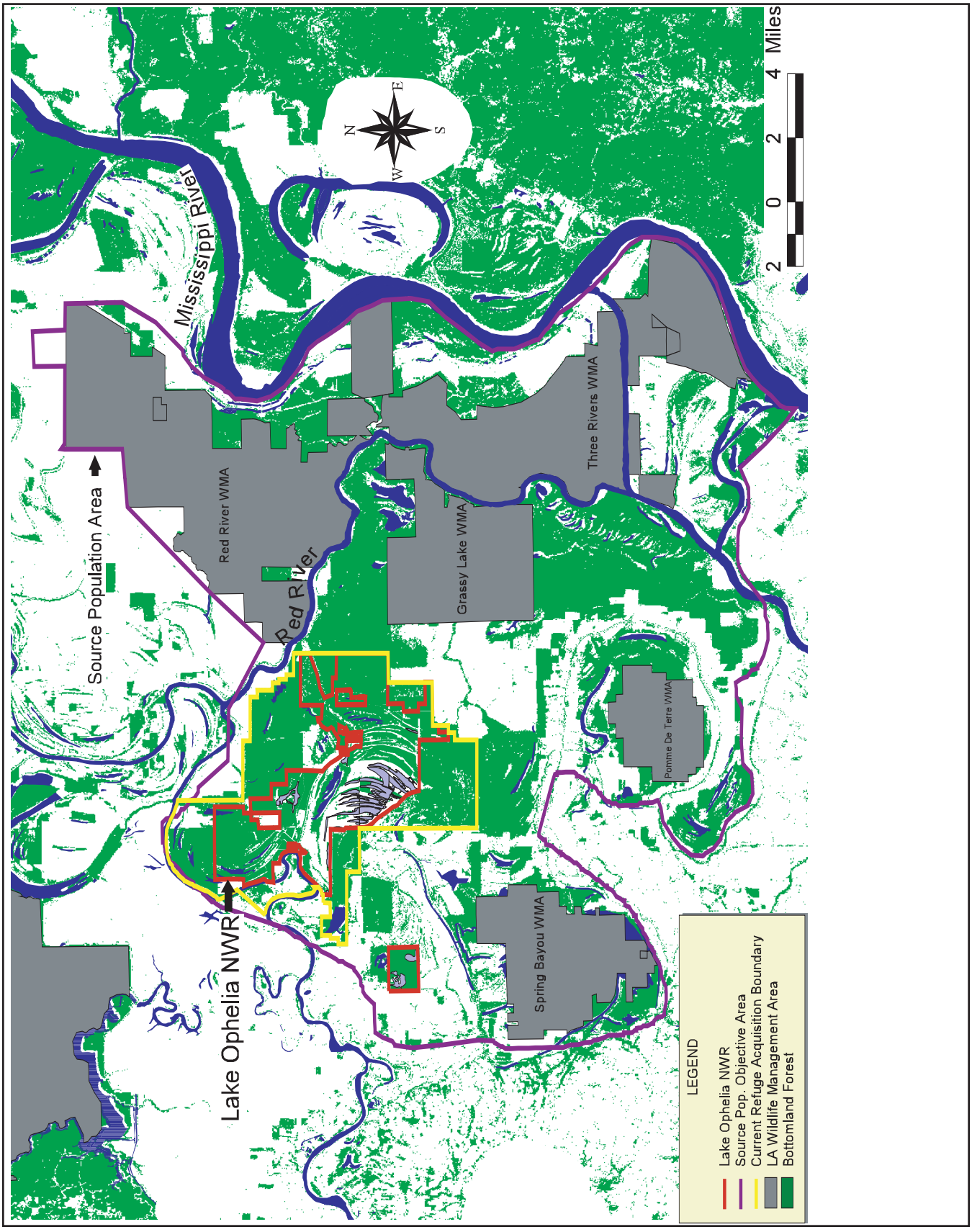
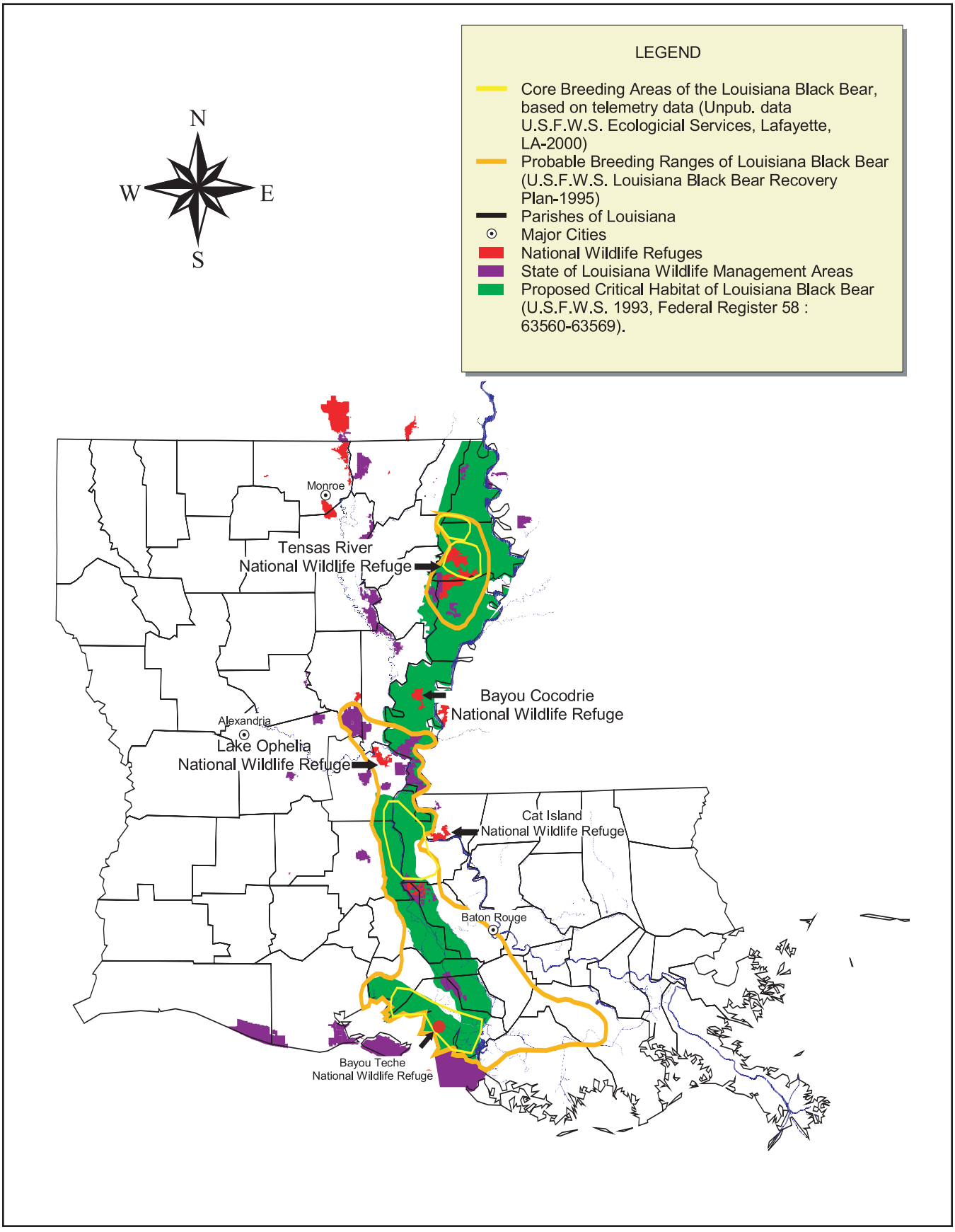


Figure 1-4. Known breeding ranges and proposed critical habitat for the Louisiana black bear.



diversity that once characterized the MAV. Ditches can be plugged and structures installed to control and manage water in an effort to mimic historic flood cycles and to meet waterfowl habitat objectives.

CHALLENGES

One of the biggest challenges to the restoration efforts underway in the MAV, and one that affects refuges in particular, is the need to meet long-term management objectives that address comprehensive ecosystem needs, including those of wintering migratory waterfowl, neotropical migratory birds, shorebirds, bears, and other wide-ranging species. Oftentimes, management for one species or species group conflicts with the management objectives for another species or species group. The tendency is to pursue short-term priorities, but these frequently change as scientific knowledge expands and interests in special resources shift. Caution must be exercised to prevent the start-up of restoration actions that are difficult to reverse and that fail to meet the long-term, comprehensive management needs of the ecosystem or a specific area within the ecosystem. An example might be a project to totally reforest Lake Ophelia National Wildlife Refuge in an effort to reduce fragmentation even though the Three Rivers SPOA already nearly meets its forest block size objective for forest interior-nesting birds. Such an approach will overlook the critical habitat needs of non-forest waterfowl and shorebirds, which require a complex of seasonally flooded croplands, moist soil areas, and forested wetlands.

In order for Lake Ophelia National Wildlife Refuge to meet its multiple objectives of national, regional, and local scope--ranging from the establishment of wintering waterfowl habitat to the reduction of forest fragmentation to providing for public use-it must be funded and staffed well above current levels. Securing adequate funding and personnel and then implementing a variety of programs to achieve the best balance of all objectives, through a system of coordinated planning, is the Refuge's biggest challenge. In the interim, while waiting for program funds and personnel to become available, the Refuge will concentrate on its highest priorities without committing irreversible actions that will preclude future implementation of the desired management programs.

II. The Refuge

INTRODUCTION AND HISTORY

Lake Ophelia National Wildlife Refuge is located in north Avoyelles Parish, Louisiana, about 15 miles northeast of the city of Marksville (population 6,087) and 30 miles southeast of Alexandria (population 46,000) (Figure 2-1). The Refuge covers a total of 17,525 acres within the 38,000-acre acquisition boundary and lies approximately eight miles northwest of where the Red River empties into the Atchafalaya River. This region is part of the Mississippi Alluvial Valley.

Lake Ophelia and the surrounding lands were once part of a vast bottomland hardwood forest that stretched along the Mississippi River. Much of this forested land, including large areas of what would later become the Lake Ophelia National Wildlife Refuge, was cleared for agriculture in the late 1970s. The Refuge was established in 1988 to provide wintering habitat for mallards, northern pintails, and wood ducks, as well as breeding and nesting habitat for wood ducks, and to assist in meeting the goals of the North American Waterfowl Management Plan. The Refuge is also being managed to provide habitat for a natural diversity of plants and animals, and to provide opportunities for compatible wildlife-dependent recreation, including hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

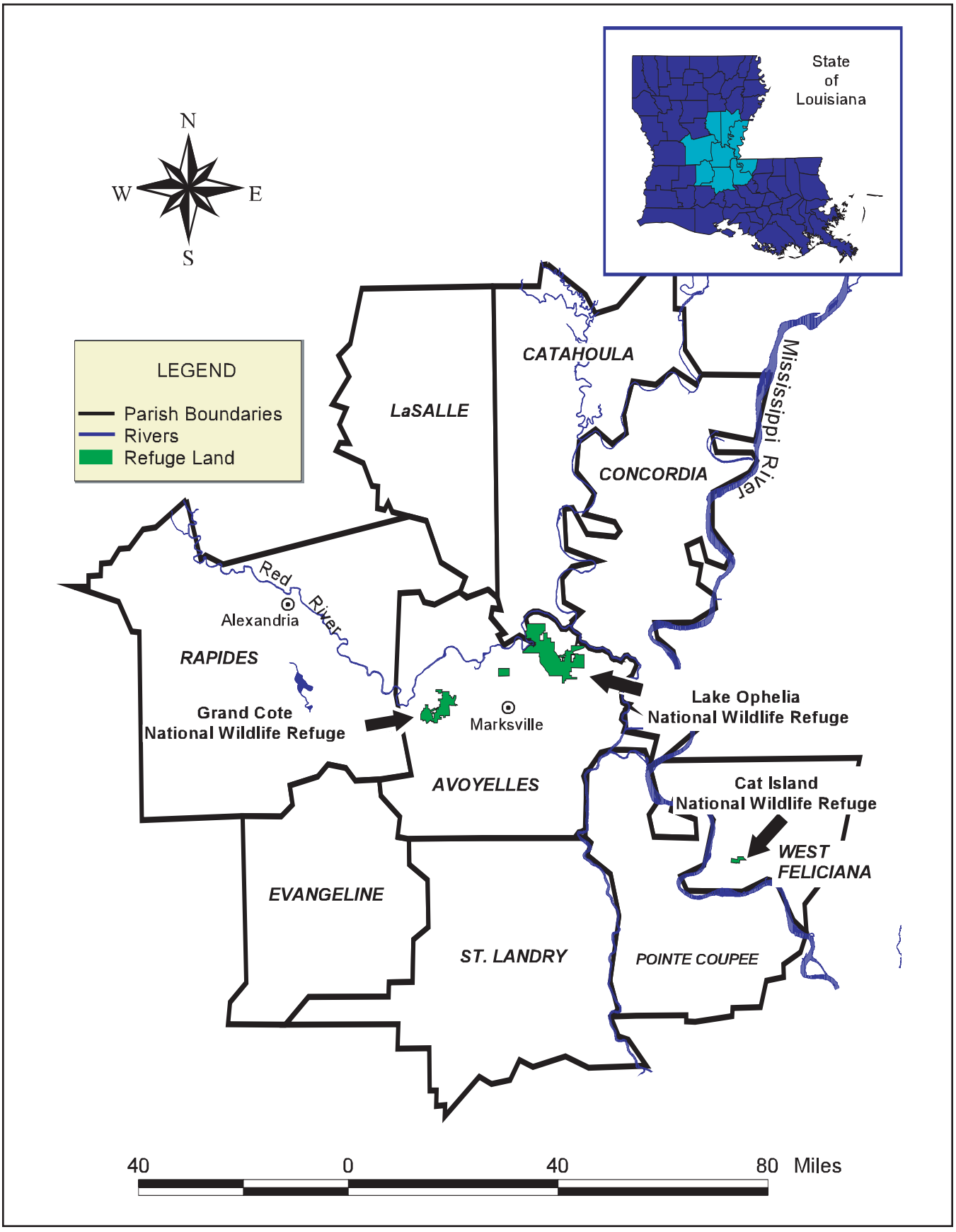
The Refuge is named for Lake Ophelia, a 350-acre, cypress-lined lake formed by a remnant channel of the Red River. The Service's interest in the Lake Ophelia area began in 1977. With support from the Louisiana congressional delegation, the State of Louisiana, and several conservation groups, the Service's Southeast Regional Director approved the first land acquisition for the Refuge in August 1978. At that time the property was rated by the Service as one of the five most important bottomland hardwood tracts for wintering waterfowl in Louisiana, and it was in imminent threat of being cleared for agriculture. Before the Service could begin acquisition, a core 20,000-acre tract was purchased by a private party and 13,000 acres were cleared for soybean production. Toward the end of the clearing operation, the Avoyelles Sportsman's League and Environmental Defense Fund filed suit to have the wetland clearing operation stopped. The lawsuit, which was successful, provided the precedent for the regulation of wetland clearing operations under Section 404 of the Clean Water Act.

The Service's interest in acquiring the property continued with the first land acquisition, which was scheduled for fiscal year 1982. However, the loss of the core tract, the unwillingness of some landowners to sell, and funding limitations, coupled with an emphasis on purchasing intact bottomland forest and other factors, relegated the project to a lower priority. In 1987, the cleared 13,000-acre tract was conveyed to the Federal

Land Bank for indebtedness. At that time, poor agricultural prices made selling farmland attractive, and the Service had refocused its attention on acquiring waterfowl habitat (particularly for northern pintails and mallards) in the MAV. In April 1988, the Service's Southeast Regional Director approved a Preliminary Project Proposal to acquire 38,000 acres for the establishment of Lake Ophelia National Wildlife Refuge. The first 1,536 acres were purchased in June 1988. With the aid of The Nature Conservancy, the Refuge grew to almost 15,000 acres within a few years. The last sizable addition (2,200 acres) was purchased in 1998.

Lake Ophelia National Wildlife Refuge is administered from an office located at Grand Cote National Wildlife Refuge (6,077 acres), about 20 miles southwest. This office, known as the Central Louisiana National Wildlife Refuge Complex, is responsible for managing the Lake Ophelia, Grand Cote, and Cat

Figure 2-1. The location of Central Louisiana National Wildlife Refuge Complex in Avoyelles Parish, Louisiana.



Island Refuges; three Farm Services Agency (FSA) fee title tracts covering a total of 1,990 acres (one each in Avoyelles, Rapides, and St. Landry Parishes); and 12 FSA conservation easements (190 and 74 total acres in Avoyelles and Rapides Parishes, respectively) (Figure 2-1). Although three staff members report for duty at Lake Ophelia Refuge, one at Cat Island and five at Grand Cote, the work responsibilities for each member include duties at all three complex refuges and FSA tracts. The Complex's current staff includes a Project Leader (GS-0485-13), Deputy Project Leader (GS-0485-11/12), Refuge Manager - Lake Ophelia (GS-0485-9/11), Refuge Manager - Cat Island (GS-0485-9/11), an Office Assistant (GS-0303-07), a Park Ranger (GS-0025-09), a Wildlife Biologist (GS-0486-11), a Natural Resource Planner (GS 0401-12), and two Engineering Equipment Operators (WG-5716-10).

PURPOSES AND ECOSYSTEM CONTEXT

The purpose of Lake Ophelia National Wildlife Refuge, as reflected in the Refuge's authorizing legislation, is to protect and conserve migratory birds and other wildlife resources through the protection of wetlands, in accordance with the following laws:

> *...the conservation of 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., Sec. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986);
>
> *...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...* 16 U.S.C. Sec. 664 (Migratory Bird Conservation Act of 1929);
>
> *...for the development, advancement, management, conservation, and protection of fish and wildlife resources...* 16 U.S.C. Sec 742f(a)4; and
>
> *...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services...* 16 U.S.C. Sec. 742f(b)1 (Fish and Wildlife Act of 1956).

The Refuge's purpose and importance to migratory birds, particularly waterfowl, were further described in the Service's Environmental Assessment for the proposed establishment of the Refuge (1989): *To preserve wintering habitat for mallards, pintails, and wood ducks and production habitat for wood ducks to meet the habitat goals presented in the Ten-Year Waterfowl Habitat Acquisition Plan and the North American Waterfowl Management Plan.*

The Refuge purpose was further described in the Approval Memorandum for the for the establishment of Lake Ophelia Refuge, where the primary reason for acquisition and inclusion of the area into the Refuge System was to preserve wintering habitat for mallards, pintails, and wood ducks, as well as production habitat for wood ducks (USFWS Southeast Region, Approval Memorandum 1989). Three objectives for which the area will be managed were identified in the Approval Memorandum: to preserve an area which has traditional high use for wintering waterfowl; to provide additional waterfowl habitat through refuge management; and to establish a waterfowl sanctuary.

The North American Waterfowl Management Plan's Lower Mississippi Valley Joint Venture office, working through a collaborative effort with private, State, and Federal agencies, has established certain habitat objectives for the MAV. These objectives have been stepped down for private and public lands throughout the MAV. The minimum step-down objectives for Lake Ophelia Refuge are to provide 1550 acres of managed water, including 350 acres of flooded moist soil plants; 500 acres of flooded timber; 200

acres of unharvested crops; and 500 acres of harvested crops. Managed water is defined as areas that can be flooded through management actions taken by Refuge staff, such as the pumping of water and the closing of gates on water control structures, etc. Lake Ophelia Refuge also has an objective to provide 50 acres of shorebird habitat during the annual fall migration period from July 15 through October 15.

The Three Rivers SPOA, which includes Lake Ophelia Refuge, is a 283,204-acre area with an objective of providing 100,000 acres of bottomland hardwood forest and a core area of 84,000 acres of forest land. A core area is a contiguous block of forest that is 1 kilometer (0.62 mile) from the forest edge. Waterways within forest blocks are included in that acreage. At the present time, the Three Rivers SPOA has a core area of 80,000, only 4,000 acres short of its objective. Reforestation of relatively small areas in appropriate locations could easily meet this objective.

One species of concern, the woodcock, is showing significant long-term declines in the eastern United States. Habitat loss, including the loss of preferred, safe, nocturnal wintering habitats, is likely a key factor. Lake Ophelia National Wildlife Refuge may be important in helping the Service to meet its objectives in the North American and Regional Woodcock Management Plans. The Refuge will maintain a minimum of 200+ acres of open areas or agriculturally manipulated fields that will be available in various stages of plant succession or crop removal to gauge the importance of such habitats for nocturnal wintering use by woodcock. Scrub-shrub and forested wetlands with overhead cover and open below are the woodcock's preferred daytime habitat. Blocks of 25 to 50 acres of scrub-shrub habitat support not only woodcock but several other species of birds, including the white-eyed vireo, painted bunting, and orchard oriole. This habitat is also important as dense cover used by Louisiana black bears and a host of other wildlife species. In addition, scrub-shrub habitat is generally considered to be unattractive to brown-headed cowbirds, which tend to favor more open or forest edge habitats.

The Three Rivers SPOA is considered a prime area for reestablishing populations of the threatened Louisiana black bear, and is an integral part of the effort to recover this high-visibility species. During the spring of 2003 and 2004 the Louisiana black bear repatriation project has successfully relocated 11 adult female bears (radio collared) with cubs on Lake Ophelia Refuge.

LEGAL POLICY

The administration of Lake Ophelia National Wildlife Refuge is guided by a variety of international treaties, Federal laws, and Presidential Executive Orders. Management options under the Refuge's establishing authority (Public Law 104, Stat. 2957, Section 108, H.R. 3338) and the National Wildlife Refuge System Improvement Act of 1997 (the legal and policy guidance for the operation of national wildlife Refuges) are contained in the documents and acts listed in Appendix III.

RESOURCE AND MANAGEMENT DESCRIPTIONS

PHYSICAL ENVIRONMENT

Climate

The climate at the Refuge is humid-subtropical and is primarily influenced by the Refuge's subtropical latitude and proximity to the Gulf of Mexico. The climate is controlled by two principal air masses. Warm, moist air from the Gulf of Mexico generally dominates in the spring and summer, and cooler, drier air from the Central Plains prevails during the winter months. Extended, hot, sultry summers and moderately cool winters are the norm.

The average annual air temperature is 65 degrees Fahrenheit. During winter, the average temperature is 50 degrees, with an average daily minimum of 39 degrees. Average seasonal snowfall is less than one inch. The average temperature is 81 degrees during the summer (Martin, 1986), but temperatures above 90 degrees occur almost daily.

The mean annual precipitation is 60 inches. Half of this rainfall (30 inches) usually falls during April through September. The growing season is about 235 days long and begins in mid-March and ends during early November. Thunderstorms occur on average about 70 days each year, with most occurring during the summer months. The average relative humidity in the mid-afternoon is about 60 percent. Humidities are higher at night, with the average at dawn being 90 percent (Martin, 1986).

The sun shines 60 percent of the time during the summer, and 50 percent during winter. Prevailing wind is from the south. Average wind speed is highest, 9 miles per hour, during the spring months. These climatic values play an important role in influencing the area's hydrologic regime, which subsequently shapes ecosystem process and functions.

Physiography and Geology

As the climate has changed on the Earth, marine and deltaic sediments have been deposited in alternating cycles in Louisiana. Geologists have determined from studying these deposits that a major river system, corresponding to the modern Mississippi River, has persisted here at least since the Gulf of Mexico began to form (Louisiana Geologic Survey, 1990).

The Tertiary period, which extended from 65 to 1.8 million years ago (mya), began with a warming trend in which the sea covered almost the entire Lower Red River Basin. In the early Eocene epoch, which began about 54 mya, the land began to build up again as the continental ice sheets advanced. However, this trend was reversed during the late Eocene, when a second advancement of the sea occurred. With the sea as far inland as Natchitoches Parish, the last cycle began in the early Oligocene Epoch (38 to 23 mya). In Miocene time (23 to 5 mya), the sea level dropped and sedimentation began to extend the land gulfward (U.S. Army Corps of Engineers, 1975).

The Refuge lies within the Mississippi Alluvial Plain section of the Coastal Plain Province (Beccasio et al., 1983), to the west of the confluence of the Mississippi and Red Rivers in Avoyelles Parish. The topography of the Refuge has been greatly influenced by the aggrading Mississippi and Red Rivers, and much of the geology is from Quaternary (1.8 mya to present) alluvial deposits. Although the continental ice sheets did not reach this far south, the lower Mississippi valley carried glacial meltwaters and outwash in a braided-stream pattern that concurrently widened and aggraded the valley during periods of waning glaciation. As each glacial cycle progressed and the sediment loads and stream discharges declined, the river abandoned its braided stream configuration in favor of a single-channel meandering pattern. This alluvium has been sorted, reworked, and deposited many times by riverine processes.

During flood periods prior to human influence, stream channels within the MAV, unable to hold the complete volume of water within their banks, overtopped and spilled onto adjacent floodplains. In this process, the velocity of these sediment-laden waters decreased dramatically. Unable to continue to carry their sediment load, these waters dropped the coarsest particles closest to the stream channel and the finer particles farther away. These deposits formed natural levees, which gained elevation closer to the river channel.

Another result of this localized deposition was the creation of lowlands at the base of these natural levees. These lowlands received only the clay particles held in suspension in flood waters (Fisk, 1940). These lowlands paralleled the meander belt of the stream for great distances and were utilized as seasonal backwater

flood storage areas. Water within the channel will continue to erode the banks, and often will cut through the natural levees. The stream will then change its course and occupy the lowland channel.

The formations of alluvium described above comprise the entire Lake Ophelia Refuge. Relict channels and natural levees, often referred to as ridge and swale topography, are easily seen by visitors to the Refuge. Human disturbances, including the construction of artificial levees and channelization projects, have drastically altered these natural alluvial processes within the Mississippi and Red River floodplains.

The elevation at the Refuge averages about 45 to 50 feet above mean sea level. The topography is complex, with numerous stream channels, small tributaries and depressions, old river meanders and oxbow lakes, multiple river terraces in various stages of erosion and deposition, and adjacent poorly drained lowlands. This subtle but complex topography has given rise to the flora and fauna found on the Refuge.

Soils

The soils at Lake Ophelia Refuge demonstrate the influence that the Mississippi and Red Rivers have had on the terrain. The Refuge contains mostly hydric soils that fall into two broad series of soil groups.

Most of the Refuge consists of Sharkey-Tensas soils, which are level to undulating and are either poorly drained or somewhat poorly drained. These soils have a clayey surface layer and a clayey or loamy subsoil. Many shallow lakes and bayous are found in most areas containing these soils, which are occasionally flooded during the winter months. Most of these soils are formed in Mississippi River alluvium.

Sharkey-Fausse-Moreland soils are found within the Sharkey-Tensas soils in a few areas on the Refuge. These clayey soils are level and either poorly drained or somewhat poorly drained, and are present in low positions on natural levees along the old channels of the Mississippi and Red Rivers.

Only one soil group containing nonhydric soils, the Roxana-Norwood group, is present (in minor amounts) on the Refuge. This series group is found on natural levees along the Lake Long drainage that flows through the center of the Refuge. These level to undulating, well drained, alkaline soils are loamy throughout (Martin, 1986).

Hydrology

In pre-modern times the Mississippi River was a dynamic and changing system. The many courses the river has taken in recent geologic history have been noted by geologists. Fisk (1940) wrote:

> *The youngest pre-modern course of the Mississippi River is the most easily interpreted; it can be traced along the Tensas River in northeastern Louisiana southward to Black River. Black River and Tensas River, which locally reverse the original drainage direction, unite and drain southeastward through a crevasse channel. Red River enters this meander belt in another crevasse channel opening. South of the Red River, the meander is occupied by Lake Long and Bayou des Glaises and continues to the Atchafalaya River, which follows an old meander from Lower Old River, a recent Mississippi cut-off meander, to Simmesport.*

The Refuge lies within the Bayou Natchitoches basin and the Red River alluvial cone, in an area commonly referred to as the Red River backwater area. During flood periods, the Mississippi and Atchafalaya Rivers reach levels that significantly slow and even back up the discharges from the Red River. This water enters the basin and occupies the lowland areas that dominate the Refuge. Statistical

analysis (based on river stage and precipitation data for the period from 1929 to 1975) indicates that somewhat more than half of the tract, at elevations up to 45.8 feet above mean sea level, is subject to the average annual flood, with an average duration of 13 percent of the year, with the entire tract flooding about once a decade (Combs, U.S. Army Corps of Engineers, in U.S. Court of Appeals Briefing, 1982).

The Red River borders the Refuge on the north. The main drainages within the Refuge include Lake Long, Possum Bayou, Palmetto Bayou, Bayou Jeansonne, and Bayou Sans Facon. Numerous lakes are present, including Nicholas, Duck, Long, Ophelia, and West Cut. Numerous unnamed sloughs and seasonal or ephemeral drainages are also found here. Flow into the Refuge enters from Little River to Bayou Jeansonne. Bayou Jeansonne flows south into Bayou Natchitoches. Flow also enters into Bayou Natchitoches from Lake Long, which meanders east and south through the Refuge.

Bayou Jeansonne has been leveed to prevent backwater flooding. A levee is also in place along the Red River east of the Refuge ; it ends a short distance below Lock and Dam Number One. Lake Long is not leveed, but is cut off from the Red River. The elevation of the 100-year flood event has been lowered four feet due to the diversion of Mississippi River flows down the Atchafalaya River through the U.S. Army Corps of Engineers' Old River control structure. The diverted flows have caused the Atchafalaya River bed to incise, thereby lowering the flood stage in the lower end of the Red River (Marcy, pers. comm.). Another contributing factor causing the Atchafalaya River bed to incise is the confinement of its floodplain for approximately 75 miles between levees.

In an effort to mimic the area's historical hydrology, the Service is manipulating the Refuge's hydrology in some areas through the use of levees, ditches, wells, and water control structures. These areas include approximately 850 acres of moist soil and cropland habitat; 340 acres of bottomland hardwoods; and 690 acres of permanent water.

Two distinct aquifer systems underlie Avoyelles Parish: the Quaternary and the upper Tertiary. The water levels in both of these aquifer systems are generally less than 50 feet below the surface. The Quaternary aquifer can supply very large quantities of fresh water to parish residents. The Quaternary aquifer is composed of poorly sorted sand and gravel. It ranges in thickness from 50 to 150 feet. This aquifer offers the greatest potential source of ground water. Water in this aquifer is generally suitable for irrigation, but its hardness and high iron content must be treated for most other uses (Martin, 1986).

Beneath this aquifer is the upper Tertiary system, which can yield moderate to large supplies of fresh water in the Bunkie-Hessmer and Simmesport-Odenburg areas (Marie, 1971). This aquifer system is recharged principally by rainfall. In areas where the aquifer system has been developed for public and industrial supplies, withdrawals from wells have lowered the water level as much as 20 feet (Marie, 1971). Aquifers in this system range from 20 to 80 feet in thickness and are composed principally of well-sorted, fine- to medium-grained sand (Martin, 1986).

Water Quality

Historically, the water quality of the Refuge has not been monitored. Water quality within the Red River north of Lake Ophelia Refuge has been affected by mercury contamination from an unknown source (Louisiana Department of Environmental Quality, 1998).

Recently, Lake Ophelia National Wildlife Refuge was one of 26 refuges in the MAV surveyed for chemical contamination. Samples of water, sediment, and fish were collected, and passive sampling devices deployed. Residues of current-use pesticides, organochlorine pesticides, polychlorinated biphenyls, polycyclic aromatic hydrocarbons, and mercury were measured and limited toxicity testing was done (Shea et

al, 2001). Lake Ophelia Refuge had one of the lowest levels of chemical contamination of all refuges surveyed. Although each of the chemical contaminants surveyed for was detected at Lake Ophelia Refuge, none were detected at levels of concern to human health or fish/wildlife.

The Environmental Protection Agency's *Index of Watershed Indicators* shows that 80 to 100 percent of the water bodies within this area of the lower Red River watershed are meeting designated uses, and characterizes the streams in this area as having good overall water quality and a low vulnerability to problems related to runoff. The EPA has identified a moderate loss of wetlands in this watershed. Wetlands perform many important functions, such as improving water quality, recharging groundwater, providing natural flood control, and supporting a wide variety of fish, wildlife, and plants. The economic importance of wetlands to commercial fisheries and recreational use is also known to be significant. Land clearing, man-made levees, navigation structures, stream channelization projects, and canal and ditch construction have impaired the historic functions of forested wetlands.

BIOLOGICAL ENVIRONMENT

Flora

The Refuge is a 17,525-acre complex of forested wetlands, shrub wetland habitats, recently reforested areas, agricultural lands, moist soil areas, open waters, and dirt access roads and trails (Figure 2-2; Table 2-1). The varied and diverse plant communities that remain on the Refuge reflect slight variations in topography, soils, and hydrologic regimes resulting from the influence of the Mississippi and Red Rivers, as well as the Service's management objectives (Figure 2-3).

Before human settlement, the area's alluvial soils and slight physiographic relief, combined with seasonal backwater inundation, created an extremely productive forested wetland ecosystem with several different habitat types. As the human populations increased in Louisiana, so did the demand for natural resources, and large expanses of bottomland hardwood forests were harvested for lumber and cleared for conversion to agricultural farmlands.

Prior to the establishment of the Refuge, the land was used for timber production and agriculture. During 1978, when worldwide demand for soybeans increased, the former landowners of this tract began clearing timber and draining the land to prepare the site for agricultural use. Much of the timber was pushed into huge windrows and burned. The remaining residue was then spread out, buried in pits, or pushed into cypress sloughs and Bayou Jeansonne.

The remaining natural forest on the Refuge totals 6,745 acres and is in small blocks of woods interspersed with lakes, sloughs, bayous, and fields. Of the remaining forests, most trees are from 20 to 60 years old. On these areas are a mix of even- and uneven-aged groups, likely as a result of previous timbering practices. The bottomland hardwoods occur at scattered locations, and depending upon the elevation and history of disturbance, their overstory vegetation consists of a variety of oaks (Nuttall, water, and willow). Other species include bitter pecan, water locust, green ash, sweetgum, black willow, red maple, box elder, American elm, sycamore, and hackberry. Persimmon, deciduous holly, dogwood, and hawthorn are common mid-story species.

To date, about 4,588 acres of the Refuge have been reforested. Species planted include Nuttall, overcup, water, and willow oaks; bald cypress; green ash; pecan; sweetgum; persimmon; and mayhaw. Natural regeneration of deciduous holly, persimmon, green ash, water hickory, and sweet gum has also occurred within the reforestation areas.

Figure 2-2. Vegetative habitat types of Lake Ophelia National Wildlife Refuge.

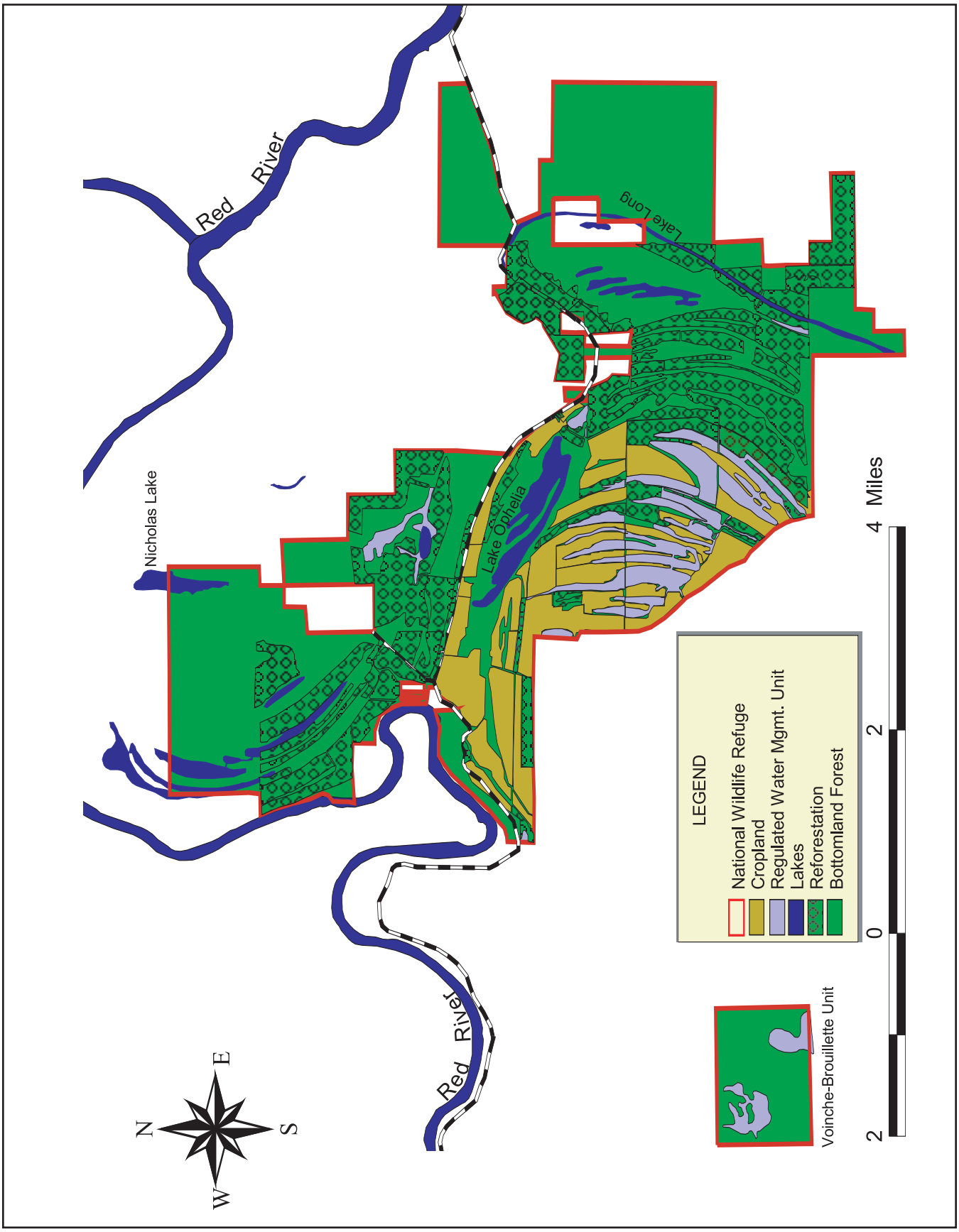
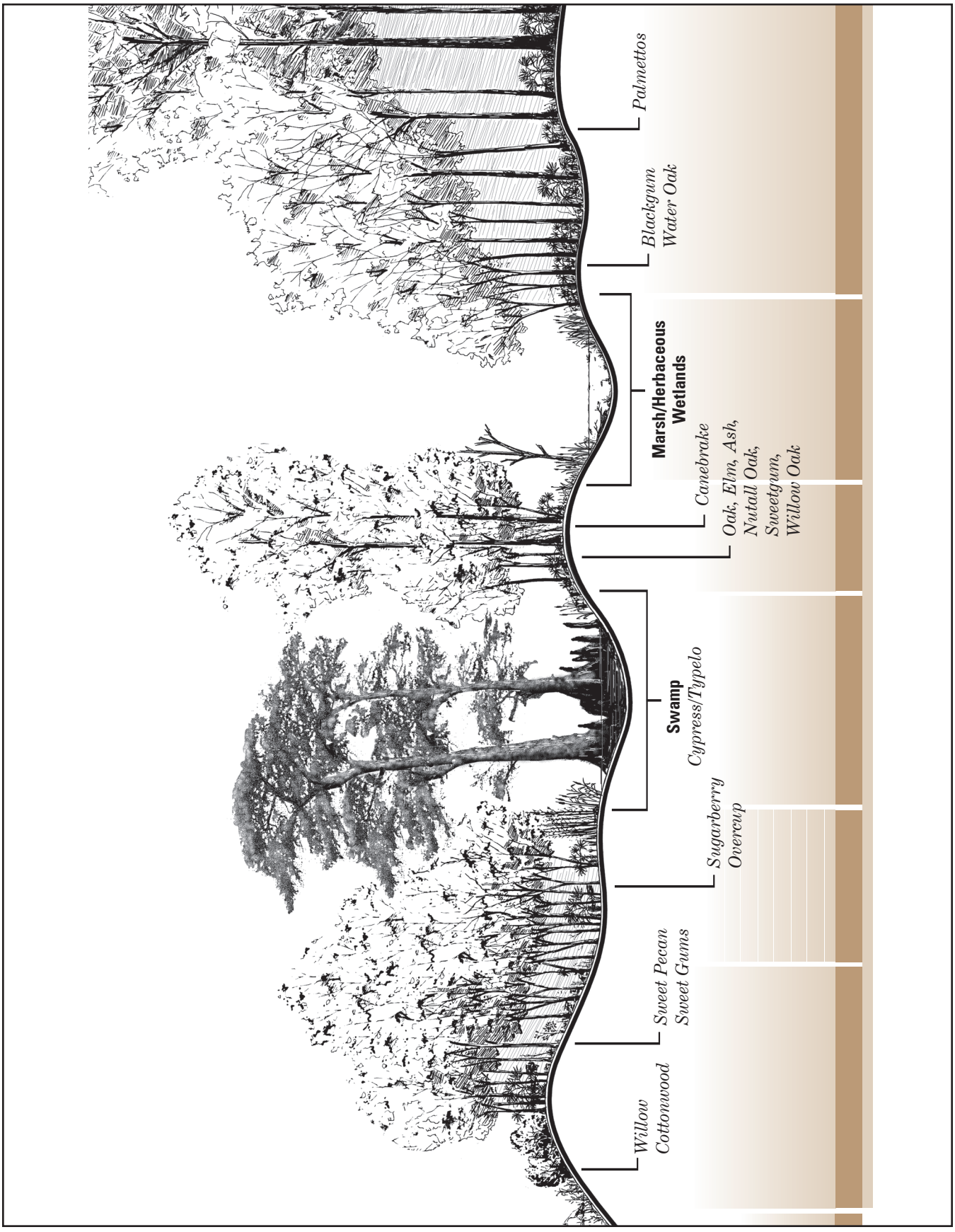


Figure 2-3. Habitat communities of ridge and swale topography.



These bottomland hardwoods may be transected by numerous permanently or semi-permanently wet areas, best described as inland open fresh water, shrub swamp, and wooded swamp. Shrub and wooded swamps are located in the fluvial scars or depressions within the bottomland hardwoods. Most of these depressions retain water throughout the year, and depending upon their depth, support a variety of vegetation, consisting of bald cypress, overcup oak, water tupelo, buttonbush, swamp privet, water elm, water locust, duckweed, American lotus, water hyacinth, smartweed, floating heart, pickerelweed, and several species of grasses and sedges. The open water areas are vegetated with water hyacinth, pennywort, duckweed, arrowhead, smartweed, water primrose, and other emergent aquatic vegetation.

The Refuge currently contains about 3,678 acres of non-forested lands that are managed to provide both natural moist soil plants and agricultural crops. The Refuge's water management capabilities allow seasonal flooding of approximately 1,155 acres of moist soil areas and agricultural fields on an annual basis. Common moist soil plants include smartweed, wild millet, various sedges, coffee bean, cocklebur, sprangletop, and trumpet creeper. Grain sorghum, soybeans, corn, and winter wheat are the agricultural crops.

Table 2-1. Summary of existing habitat types at Lake Ophelia National Wildlife Refuge.

Habitat Type	Existing Acreage
Bottomland Hardwood Forest	6,745
Reforestation	4,588
Non-flooded Cropland	2,523
Floodable Cropland	605-855
Floodable Moist Soil	300-550
Floodable Mud Flat	0
Floodable Bottomland Hardwoods Lakes, Bayous and Seasonally	345*
Flooded Forest Swales	1,879
Roads, Trails, Levees and Facilities	290
TOTAL	17,525

* Includes 68 acres of reforestation.

Fauna

Louisiana's mild climate, long growing season, abundant and varied plant species, rich soils, numerous streams, wet areas, and slight but varying elevations provide a wide variety of habitats and favorable conditions for terrestrial and semi-aquatic animals, including numerous game and nongame species. These animals may be residents, migrants, or transients at the Refuge.
The early explorers to this region sought fur, bear oil, and hides due to their commercial importance. They found an abundance of beaver, mink, otter, muskrat, deer, buffalo, bear, opossum, raccoon, bobcat, cougar, fox, wolf, and skunk (Lower Mississippi Region Comprehensive Study Coordinating Committee,

1974). As more and more settlers moved into the area, the demand for natural resources increased. Large expanses of bottomland hardwood forests were cleared for lumber and converted to agricultural operations. Along with this conversion came the extirpation of the wolf, bison, Florida panther, and several avian species. Game populations went from abundant prior to settlement to points of near or total elimination during the early 1900s (Lower Mississippi Region Comprehensive Study Coordinating Committee, 1974).

While some baseline wildlife surveys have been conducted (for waterfowl, wading birds, deer, furbearers, bear, woodcock, and shorebirds) on the Refuge, a thorough assessment of all wildlife occurrence is not available. Researchers from the U.S. Geological Survey's National Wetlands Research Center have recently begun to conduct baseline surveys of species groups about which little is known (e.g., reptiles, amphibians).

Mammals. The mammals that occur on the Refuge are those typical of bottomland hardwoods: white-tailed deer, fox and gray squirrels, swamp and cottontail rabbits, armadillos, beaver, bobcat, coyotes, opossum, Louisiana black bear, and raccoons. Nonnative feral hogs are abundant.

The Refuge's white-tailed deer population is thought to be near the desired level. While an internal parasite survey conducted by the Southeastern Wildlife Disease Study in fall 1999 suggested the population was near the upper limit of carrying capacity, browse surveys conducted by the Louisiana Department of Wildlife and Fisheries indicate the habitat is not being overbrowsed.

Gray and fox squirrel populations are abundant where mast-producing hardwoods occur. Fox squirrels are more abundant than gray. Due to their high reproductive and natural mortality rates, it is unlikely that any long-term changes in squirrel population densities have occurred.

Swamp rabbits, and to a somewhat lesser extent, cottontail rabbits, are common in this area. Again, their high reproductive and natural mortality rates would lead to the expectation that no long-term population changes have occurred and that rabbits should occupy all suitable habitat.

A number of furbearers, including nutria, raccoon, mink, opossum, coyote, bobcat, beaver, river otter, and striped skunk, are collectively abundant on the Refuge. Among this group, the beaver, muskrat, river otter, nutria, and mink are associated with the more permanently inundated wetlands and riverine systems. The raccoon is well adapted to all existing habitats; and the opossum, coyote, and bobcat are mostly associated with drier forested habitats. Most furbearers are found throughout the ecosystem.

Little or no formal data are available to provide population estimates for these species. However, informal surveys indicate that the population numbers of beaver and raccoon have increased in recent years, likely due to a decrease in the demand for fur. These two species are of concern because of their potential to significantly impact ecosystem functions. Beavers manipulate hydrology both on and off the Refuge by constructing dams that inundate bottomland forests for prolonged periods of time. Predation by raccoons may be adversely affecting populations of breeding Neotropical migratory birds (Cooper and Ford, 1993) and ground-nesting turkeys (Moore, 1993), as well as some bird rookeries in the forested wetlands on the Refuge.

Little is known about the species and populations of bats that may be found on the Refuge. The Rafinesque's big-eared bat, a species of management concern associated with bottomland hardwood forests, may be present on the Refuge.
Problem species include feral swine. Ample scientific evidence exists related to the adverse effects of feral swine on the habitat productivity and reproduction of most native wildlife (Lipscomb, 1989; Belden, 1972; Belden and Pelton, 1976; Scott, 1973; Yarrow, 1987; Jacobi, 1980; Baron, 1980; Lacki and Lancia

,1986; Willy, 1987). Because swine are omnivores, they utilize virtually every component of the habitat, resulting in direct competition with native wildlife, reductions in carrying capacity, and adverse impacts to reproduction/recruitment. In addition, existing documentation indicates feral swine serve as a source for many diseases that impact wildlife as well as domestic livestock and swine.

The Louisiana black bear is a threatened species protected under the Endangered Species Act. It is likely that male Louisiana black bears move through Refuge lands. As a part of the Recovery Plan for the bear, the Service and other partners have developed plans and have begun relocating females to protected lands within this area of Louisiana, in order to establish a new breeding population of bears in the State. The initial relocation effort took place in March 2001, when four female bears with cubs were relocated from existing breeding populations in north and south Louisiana to the Red River WMA, located directly across the Red River from Lake Ophelia National Wildlife Refuge. During the spring of 2003 and 2004, 11 adult female bears (radio-collared) with cubs were successfully relocated to Lake Ophelia National Wildlife Refuge.

Birds. The bottomland hardwood forests, moist-soil impoundments, open water, and early successional vegetation on Lake Ophelia Refuge provide outstanding habitat for a variety of bird life. The location of the Refuge within the Lower Mississippi River Valley migratory flyway adds to the value of the habitat for migratory birds. The Refuge's forested wetlands, moist soil units, flooded agricultural fields, and open water provide wintering and migrating waterfowl an area to rest, feed, and winter. Waterfowl found here include wood ducks, mallards, gadwall, hooded mergansers, blue- and green-winged teal, widgeon, northern pintail, and northern shoveler.

Some resident bird species also use the varying habitats at the Refuge year-round. The resident wood duck population derives essential life support elements from the bottomland hardwoods interspersed with other wetlands and interconnecting water bodies. Woodcock are a common winter resident in forested fields and scrub-shrub habitat. The northern bobwhite quail uses the Refuge's early successional habitats.

Forested wetlands offer a haven to many songbirds (Appendix IV). Recent bird surveys indicate that a minimum of 110 species inhabit or migrate through the Refuge (Lichtenberg, pers. comm.). Neotropical migratory birds use these habitats for breeding in the spring and summer and during their migrations in the spring and fall. Many species of songbirds are experiencing long-term declines as a result of widespread habitat loss. Bottomland hardwood forests and riparian woodlands have been identified as high priorities for restoration and management throughout the southeastern United States (Hunter et al., 1992). These critical areas on the Refuge will enhance the breeding, wintering, and transitional habitats for many species of migratory and resident songbirds.

Some of the more common year-round residents include the Carolina chickadee, tufted titmouse, northern cardinal, northern mockingbird, downy woodpecker, and red-winged blackbird. Several species of shorebirds, wading birds, and raptors are also common. Wading birds are often seen on the edges of open water in the Refuge. Common wading birds include the great blue heron, little blue heron, green heron, tricolored heron, white ibis, snowy egret, and great egret.

The bald eagle has been known to occur here, and the Refuge was once used as a hacking site. One unsuccessful starter nest was documented on the Refuge after the hacking project, and other nesting attempts are possible; however, none have been officially documented. Wintering eagles are occasionally observed on the Refuge and future nesting efforts are possible.

Amphibians and Reptiles. Amphibians and reptiles require quality wetland habitat for their survival, and they often serve as important indicators of environmental health. The Refuge's moist, forested bottomland hardwood habitat is conducive to an abundant and diverse reptile and amphibian community.

Amphibians present include salamanders, toads, and frogs, while reptiles include turtles, alligators, lizards, skinks, and snakes. As with other wildlife groups, detailed information is lacking. However, recent inventories have documented nine species of frogs and one species of toad (Appendix IV), although additional species are likely to exist (King, pers. comm.).

Fish. The topographical and inundation characteristics that create the Refuge's productive terrestrial habitat are also largely responsible for its excellent aquatic systems. The lakes, streams, and bayous of the Red River backwater area historically supported extensive populations of sport and commercial fish, such as crappie, largemouth bass, and bream.

The seasonal flooding that usually occurs in the late spring provides a timely increase in fish spawning areas that perpetuate a natural restocking of the fishery. Several species have adapted their spawning activities for this spring event, including black crappie, pickerel, carp, gar, and bigmouth buffalo. Zooplankton and phytoplankton counts are usually high during and following periods of flooding as compared with periods of normal water flow, supplying a critical food source for recently hatched fish.

During the summer 1999, a survey of Frazier/Whitehorse Lake (a Red River bend cut-off lake west of the Refuge), conducted by U.S. Army Corps of Engineers biologists, identified 39 species of fish. By number, the most abundant fishes included several species of sunfish; mosquito fish; and numerous species of shads, herrings, minnows, and shiners. Other less common species included paddlefish, spotted gar, channel catfish, and buffalo. While freshwater shrimp, crawfish, and shellfish are also known to occur, their specific occurrences and abundance are unknown.

Socioeconomic Environment

Lake Ophelia National Wildlife Refuge lies in the northern portion of Avoyelles Parish. Avoyelles Parish is located near the center of Louisiana and is bounded by Rapides Parish on the west; LaSalle and Catahoula Parishes on the north; Concordia Parish on the northwest; Pointe Coupee Parish to the southeast; St. Landry Parish to the south; and Evangeline Parish to the southwest. The Old River and Atchafalaya River form the southeastern boundary of Avoyelles Parish. The Red River flows through the northern portion of the parish and forms part of the Refuge's northeastern boundary.

Traditionally, Avoyelles Parish has not been in the forefront of economic growth or development in the State of Louisiana, and historically, unemployment figures in the double digits have been common. Instead, much of the economic and social life of the area centers on neighboring Rapides Parish and the City of Alexandria.

Avoyelles Parish is predominantly rural, with the largest town and parish seat being Marksville (1998 population: 6,087). As in other rural areas throughout the country, outdoor activities are both popular and necessary. Hunting and recreational fishing are popular pastimes, and farming, commercial fishing, and forestry are important elements of the economy.

Early Settlement of Avoyelles Parish

Avoyelles Parish received its name from the tribe of Avoyelles Indians that resided there when the first European settlers arrived. Native Americans play an important role in Avoyelles Parish, as the Tunica-Biloxi Indians are the largest employer, employing 1,100 employees out of an estimated labor force of 15,860 in 1997 (Louisiana Department of Economic Development, Avoyelles Parish Profile, 1998).
The first European settlers in Avoyelles Parish were the French. In Avoyelles Parish, the prairie land was settled first. The early settlers were primarily self-sufficient. Game and fish were plentiful. Cattle and pigs were allowed to roam the woods freely, and along with poultry, could be raised at little expense.

Corn, rice, and fruit were grown for personal consumption, while indigo was the primary cash crop, with some tobacco cultivation.

Around 1780, the area became known as Avoyelles Post. The post became an important center for trade, first between European settlers and Indians, then later as a merchandising center for the area (Avoyelles Parish Planning Board, 1947:11). Later settlers settled along the streams, where the land was very fertile and the streams could serve as sources of transportation. Canoes and flatboats were used to carry merchandise and were the primary methods of transportation.

In the early 1800s cotton began to replace indigo as the main money crop, and in 1804 a cotton gin was built in Avoyelles Parish (Saucier, 1943:23). The cotton farms were primarily small farms in the highlands. Although these higher lands were safe from floods, transporting the cotton to the river landings was sometimes a problem.

In 1815 the first steamboat went up the Red River, and by 1875, when navigation on the river began to decline, there were 52 boats traveling the Red River (Saucier, 1943:173). The Old River, the Bayou des Glaises, Lake Long, and Bayou Rouge were other navigable streams that were also used to transport cotton bales.

Land Use

Avoyelles Parish is predominantly rural. In 1990, 66.4 percent of the population lived in rural areas, with 6 percent of these living on farms (U.S. Department of Commerce, 1990). In 1992, 48 percent of the total land area was utilized by farms (U.S. Department of Commerce, U.S.A. Counties, 1996). There were 953 farms, with an average size of 269 acres. This is slightly smaller than the average size of a farm in Louisiana (306 acres; U.S. Department of Commerce, Census of Agriculture, 1992).

The number of farms, along with the total acreage in farmland, has declined over the past 10 years. At the same time, the average size of a farm has increased, mirroring a trend that is occurring across the nation.

As in much of the nation, agriculture has proved to be a volatile commodity in Avoyelles Parish. While cotton was king in the early days of the parish and enjoyed a resurgence in the early 1990s, its importance today has diminished considerably. With the decline of cotton, sugarcane has risen in importance to become the largest cash crop in 1998. Perhaps nothing has disrupted farming practices, and indeed land use in general, as much as the volatile nature of the soybean market. High soybean prices in the 1970s and 1980s led to the clearing of marginal lands, and the almost ruinous recent price decline has resulted in serious trouble for many farmers.

Demographics

Avoyelles Parish is primarily rural, with a total estimated population of 41,860 in 1998 (Louisiana Department of Economic Development, 1998). The parish actually lost population between 1980 and 1990. The 1980 population of Avoyelles Parish was 41,393, but by 1990 the population had declined to 38,159 (U.S. Department of Commerce, 1980, 1990). Marksville, the parish seat, is the largest town.

Most of the population is White, 27 percent is Black, 1.6 percent is Hispanic, and 0.3 percent is Native American (1990). In 1990, the median family income was $16,803, with 37.1 percent of the population falling below the poverty level. This compares unfavorably with the State of Louisiana's poverty rate of 23.6 percent (U.S. Department of Commerce, 1990). By 1996, the parish's median family income had risen to $20,252, and only 30.1 percent of the population was below the poverty level (U.S. Department of Commerce, 1999).

Employment

The service industry is the largest employer in Avoyelles Parish, employing 4,016 of 7,998 employees, with an annual payroll of $58.5 million in 1996 (U.S. Department of Commerce, County Business Patterns, 1996). This is due in large part to the Paragon Casino (the largest single employer) which employs over 1,000 employees (Louisiana Department of Economic Development, Avoyelles Parish Profile, 1998).

Employment in the parish in other economic sectors generally has been stable. In both 1993 and 1996, the sectors employing the largest numbers of persons were in decreasing order as follows: the service industry, retail trade, manufacturing, finance, construction, wholesale trade, and transportation (U.S. Department of Commerce, County Business Patterns, 1993, 1996).

Forestry

Timber has always been a source of wealth for Avoyelles Parish. In the years following the purchase of Louisiana from France (about 1815), cotton and lumber were the staples for Avoyelles Parish (Saucier, 1943:237). However, much of the timber was cleared in order to cultivate the land for cotton and other crops.

Today, Avoyelles Parish is approximately 27 percent forested, with 147,300 acres of timberland. In contrast, 52 percent of Louisiana is forested. Ninety percent of the parish's forest is in oak, gum, and cypress (USDA Forest Service, 1991).

In 1990, corporations were the largest forest landowner and owned 30 percent of the parish's forested land. The forest industry leased or owned 20 percent, and parish or municipal entities, private individuals, farmers, and miscellaneous Federal and State governments owned 17 percent, 13 percent, 10 percent, 3 percent, and 3 percent, respectively (USDA Forest Service, 1991).

Despite the diminished wooded acreage, timber is still a large source of income for Avoyelles Parish. In 1998, landowner income from the sale of timber was $3.3 million. In fact, income from the sale of timber increased 161 percent from 1988 to 1998 (Table 2-2). This is comparable with figures for the State of Louisiana, where landowner income from the sale of timber increased 162 percent during the same time period (Louisiana Department of Agriculture and Forestry, 1999).

Table 2-2: Summary of Avoyelles Parish, Louisiana, timber harvest and landowner income 1993 to 2003.

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Saw Timber (million board feet)	10.6	8.5	6.9	13.4	8.9	9.4	3.9	2.4	7.6	7.7	10.0
Pine and Hardwood Pulpwood (thousand cords)	18.9	16.2	19.2	32.3	23.1	33.3	16.8	12.3	42.0	30.2	46.3
Landowner Income ($1,000,000)	1.73	2.26	2.24	4.14	2.32	3.33	1.39	0.95	2.52	3.01	4.05

Source: http://www.ldaf.state.la.us/divisions/forestry/reports/timberpulpwood/default.asp

Recreation

Avoyelles Parish has always had an abundance of fish and game, due to its diversity of lands and waters. As early as 1939 a sportsmen's club was created in Avoyelles Parish for the purpose of protecting game and wildlife (Saucier, 1943:303). Later, as part of a comprehensive wildlife management program, Lake Ophelia National Wildlife Refuge was created to preserve and restore habitat for native wildlife and migratory birds (U.S. Fish and Wildlife Service, n.d.). In addition to the Refuge, three State wildlife management areas are located within the parish: Grassy Lake (13,300 acres), Pomme de Terre (7,100 acres), and Spring Bayou (12,100 acres).

Refuge Recreational Use. Lake Ophelia Refuge contains large populations of fish and wildlife, including a number of game species. Indeed, these provide the primary recreational activities occurring on the Refuge, namely public hunting and fishing. Hunting and fishing on the Refuge are provided in accordance with Federal, State, and Refuge regulations.

Hunting is the most popular activity, with more than 1,500 hunters using the Refuge in 1998 (Lake Ophelia Refuge Management Information System, 2000). Deer, rabbits, squirrels, raccoons, waterfowl, woodcock, and snipe may be taken on the Refuge during the appropriate seasons. Feral swine may be taken during game seasons. Large portions of the Refuge are accessible for hunting only by all-terrain vehicle (ATV) trails, which are open only during the hunting season.

Fishing is the second most popular activity on the Refuge, with 1,000 participants in 1998 (Lake Ophelia Refuge Management Information System, 2000). There are three lakes suitable for fishing, with boat ramps on Duck Lake and Lake Ophelia.

Although Lake Ophelia Refuge is largely undeveloped (Figures 2-4 and 2-5), it received over 10,000 annual visits in both 2000 and 2001 (Lake Ophelia Refuge Management Information System, 2001). The Refuge has no camping facilities.

Outdoor Recreation Economics. In addition to those on the Refuge, the fish and game of Avoyelles Parish are economically important in two ways. First, a considerable commercial fishery is present in both the Red and Atchafalaya Rivers, along with local aquaculture operations. Crawfish and catfish are the major species harvested, and the buffalo fish is also important (Table 2-3). Secondly, hunting and fishing are economically important to local businesses, both directly as the local population spends money and indirectly as an attraction that draws sportsmen from outside the parish.

Unfortunately, a general lack of regard for the preservation of fish and wildlife resources, combined with wetland clearing and draining, has led to the loss of valuable fishery spawning grounds and to the loss of habitat for many wildlife species. In the attempt to restore and protect some of these resources, Lake Ophelia Refuge serves an important role, not only by providing habitat for a diversity of plant and wildlife species, but also as a place where people can go to enjoy these resources, either through observation or, more directly, through hunting or fishing.

When improved access, facilities, and staffing are added, Lake Ophelia Refuge can serve as an important commodity in the economic life of the community. Ecotourism, hunting, fishing, wildlife observation and photography, and environmental education and interpretation are increasingly being seen as a desirable industry. As the population increases and the number of places left to enjoy wildlife decreases, the Refuge may become even more important to the local community. It can benefit the community directly by providing recreational opportunities for the local population, and indirectly by attracting tourists from outside the parish to generate additional dollars to the local economy.

Tourism

With the opening of the Grand Casino Avoyelles (later renamed Paragon Casino) in May of 1994, tourism began to play a larger role in the local economy. Although tourism-related employment in Avoyelles Parish had been stagnant for a number of years, within two years after the opening of the Casino the parish's tourism employment increased 70 percent, along with a 53 percent increase in revenues and an 84 percent increase in payrolls. This compares with increases of 22 percent, 38 percent, and 37 percent, respectively, for the State (University of New Orleans, 1999; Table 2-4).

Because of its proximity to the Marksville community (and the casino), it is possible that Lake Ophelia Refuge could serve as an additional attraction to tourists visiting the area. If better roads and more facilities were provided within the Refuge, tourists might be enticed to stay longer in the area to enjoy the opportunities provided for wildlife-dependent recreation and environmental education. This could generate more income for the local economy.

Table 2-3. Major commercial fisheries harvest (pounds) in Avoyelles Parish, Louisiana, 1994-1998.

Fish	1994	1995	1996	1997	1998
Crawfish (Farm)	360,000	168,000	140,000	82,500	146,250
Catfish (Farm)	19,000	50,000	19,500	19,300	21,000
Crawfish (Wild)	295,000	297,000	287,000	306,000	311,000
Catfish (Wild)	64,000	65,000	63,000	147,000	150,200
Buffalo	86,000	89,000	87,000	105,000	105,200

Source: Louisiana Summary of Agriculture and Natural Resources

Table 2-4. Effects of tourism (revenue [$1000], payroll [$1000], and employment) on Avoyelles Parish, Louisiana, and the State of Louisiana 1992 to 1996.

		1992	1993	1994	1995	1996
Revenue	Louisiana	4,704,480	4,845,070	5,547,050	6,070,100	6,495,380
	Avoyelles	9,980	10,110	11,550	12,460	15,270
Payroll	Louisiana	977,110	999,120	1,162,960	1,270,970	1,337,530
	Avoyelles	1,150	1,180	1,430	1,590	2,120
Employment	Louisiana	77,480	77,310	85,230	91,120	94,190
	Avoyelles	100	100	100	120	170

Source: University of New Orleans, Division of Business Research

Transportation

In its early days, Avoyelles Parish relied on water transportation. The rivers and bayous which criss-cross the parish served as a means for transportation, trade, and communication for almost every community within the parish (Avoyelles Parish Planning Board, 1947:13). Some of the important waterways

Figure 2-4. Current visitor facilities at the northern end of Lake Ophelia National Wildlife Refuge.

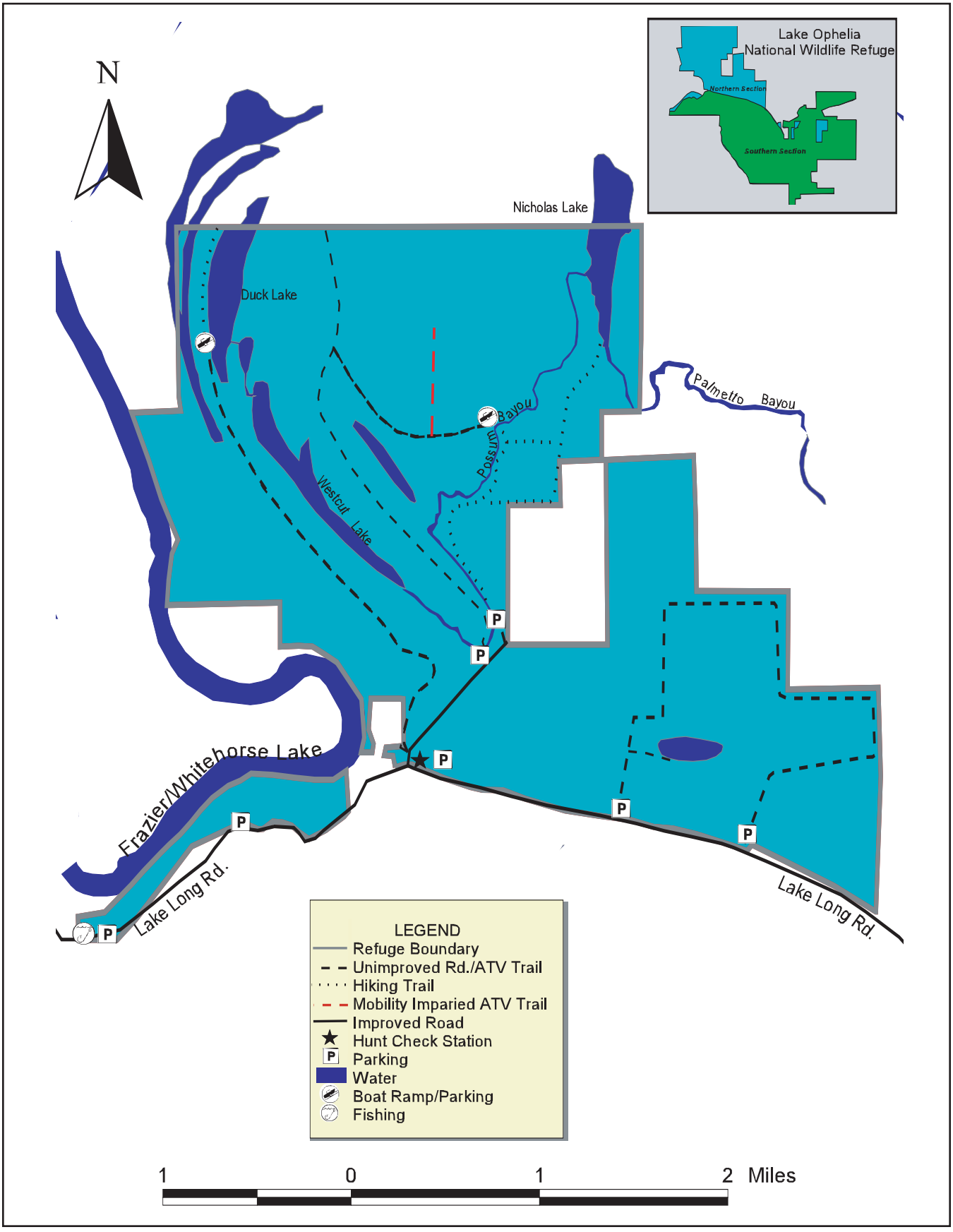
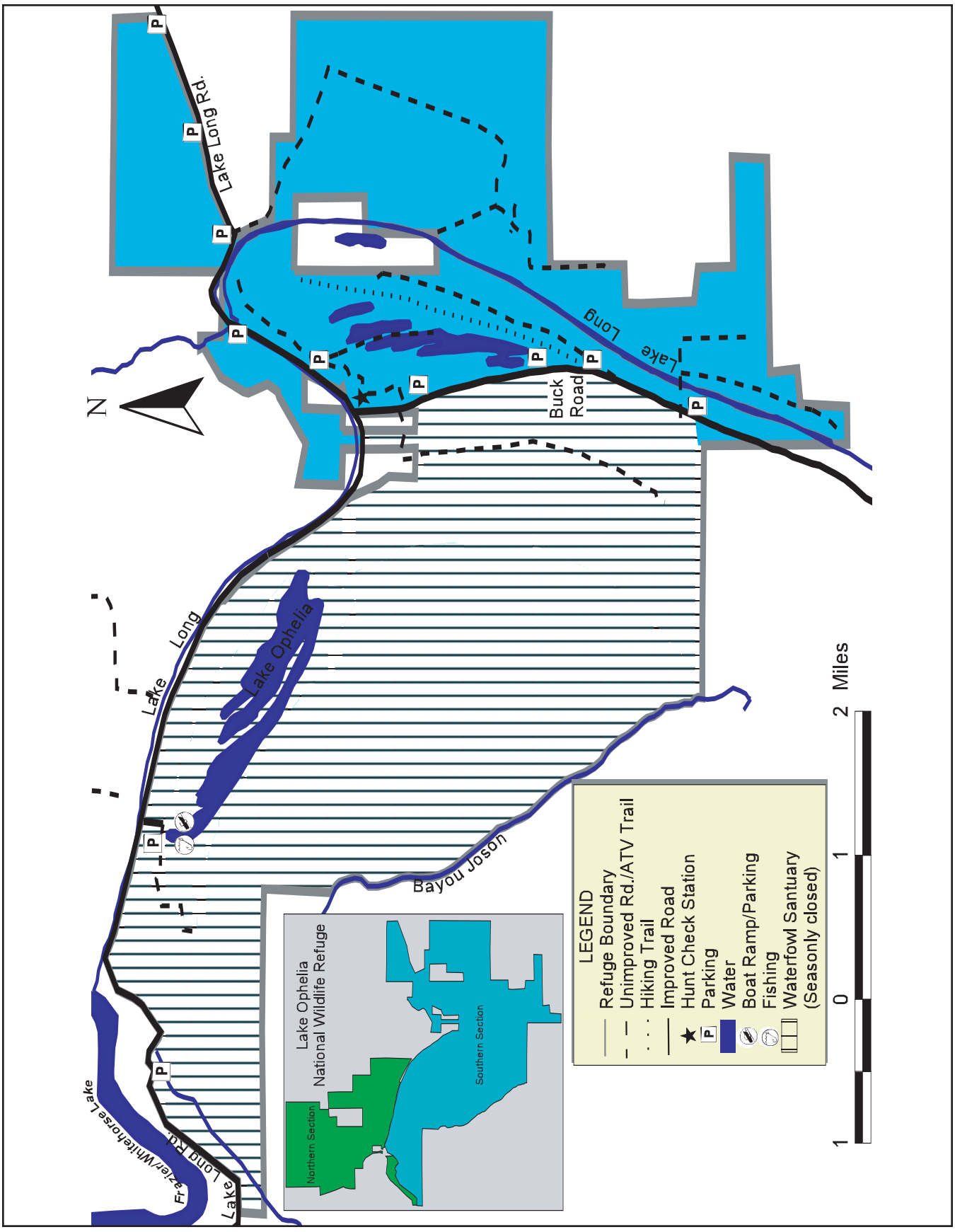


Figure 2-5. Current visitor facilities at the southern end of Lake Ophelia National Wildlife Refuge.



within the parish were the Red, Old, and Atchafalaya Rivers, and the Rouge, Des Glaises, Choctaw, and Boef Bayous. While today these waterways are no longer necessary for most of the transportation needs within the parish, they are still important as sources of income and for recreation.

Interstate Highway 49 and U.S. Highway 71 run through the southwestern portion of the parish, while Louisiana State Highway 1 runs through the center. A number of smaller roads connect the various communities within the parish.

Lake Ophelia National Wildlife Refuge, located in the northeastern part of Avoyelles Parish, can be reached via Louisiana Highway 452, a mostly paved road from Marksville. All roads within the Refuge are unpaved and are unsuitable for some vehicles. This is one of the primary factors limiting recreational use on the Refuge.

CULTURAL ENVIRONMENT

Archaeological investigations within the Refuge have been very limited and, with the exception of Gibson (1989), have occurred prior to the establishment of the Refuge. Eight archaeological sites have been recorded on the Refuge. The majority of the sites were occupied between 400 and1700 A.D. (Coles Creek and Plaquemine periods) and range from village sites to mound complexes. Two sites are 20th-century hunting and fishing camps. Sites from before 2000 B.C., if present on the Refuge, may be deeply buried or limited to the relict Pleistocene surfaces, such as the Avoyelles Terrace and Sicily Island. The meandering of the Red River's course over the last 12,000 years has essentially erased or buried earlier surfaces (Saucier, 1994).

III. Plan Development

OVERVIEW

Early in the process of developing this plan, and after having held public scoping meetings, the planning team identified a list of issues and concerns that were likely to be associated with the conservation and management of Lake Ophelia National Wildlife Refuge.

ISSUES AND CONCERNS

A number of issues and concerns were generated from the input of local citizens and public agencies, the team members' knowledge of the area, and the resource needs identified by the Refuge staff. A Fish and Wildlife Service planning team (see Appendix VII) was assembled to evaluate the resource needs. The team then developed a list of goals, objectives and strategies to shape the management of the Refuge for the next 15 years.

The identification of these issues provided the basis for developing the Refuge's management objectives and strategies. These issues played a role in determining the desired future conditions for the Refuge and were considered in the preparation of the long-term Comprehensive Conservation Plan. The issues and concerns described below are of local, regional, and national significance and they reflect the public's concerns as expressed at the planning meetings.

FISH AND WILDLIFE POPULATIONS

Threatened and Endangered Species

Recovery and protection of threatened and endangered plants and animals is an important responsibility delegated to the Service and its national wildlife refuges. Three threatened or endangered animals are thought to use (or historically used) Lake Ophelia Refuge: the bald eagle, Louisiana black bear, ivory-billed woodpecker, and pallid sturgeon.

Bald eagles have historically nested on Lake Ophelia Refuge. In the past, the Refuge has attempted to restore nesting bald eagles by hacking eaglets collected from coastal Louisiana. This project was carried out for three years and terminated, after 32 eaglets were successfully fledged. The Refuge's habitat restoration and protection activities do provide suitable habitat for nesting eagles.

Louisiana black bears have been relocated to Lake Ophelia Refuge as part of the recovery plan to establish a population within suitable habitat. The Refuge can continue to support the recovery of this species by providing suitable habitats (including the interior forest and forest corridor) and by providing personnel to monitor the bears, conduct education programs, and handle nuisance complaints. In order to ensure the success of local recovery efforts, an effective pubic outreach program aimed at educating the local community about the black bears needs to be conducted.

The Refuge can support pallid sturgeon recovery efforts by restoring riverine habitat and recovery efforts for the recently re-discovered ivory-billed woodpecker by restoring forested habitat with minimal disturbance as well as provide technical assistance to other Service divisions or resource management agencies.

Waterfowl

The Refuge's waterfowl purpose guides the primary operation and management actions on the Refuge. A portion of the Refuge is dedicated to providing seasonally flooded cropland, moist soil, and forested wetlands to meet the feeding, resting, and breeding needs of migratory and resident waterfowl. The Louisiana Waterfowl Step-Down Plan identified the following minimum habitat objectives needed to provide sufficient winter water, food, sanctuary, and resting/loafing areas to meet the needs of waterfowl in the core waterfowl sanctuary area: 500 acres of bottomland hardwood forest providing 56,000 duck-use days; 500 acres of harvested crop providing 336,500 duck-use days; 200 acres of unharvested crop providing 4,258,000 duck-use days; and 350 acres of moist soil providing 485,100 duck-use days. Additional waterfowl habitat will be preserved and managed in nonsanctuary areas of the Refuge to support wintering waterfowl and provide public waterfowl hunting opportunities.

Reforesting all Refuge cropland and expanding waterfowl hunting opportunities are wishes identified during the scoping process. But in order to meet its waterfowl purpose, the Refuge must maintain enough cropland/moist soil areas to meet multi-species waterfowl habitat needs and must provide sufficient sanctuary areas to provide undisturbed resting and feeding areas for waterfowl. Some additional reforestation can be accomplished, but the Refuge must maintain enough cropland/moist soil habitat to meet the needs of waterfowl. Additional waterfowl hunting opportunities can be provided as the Refuge acquires additional land, but the core waterfowl sanctuary needs to remain intact to meet the undisturbed resting and feeding needs of waterfowl.

Neotropical Migratory Birds

Neotropical migratory birds are a species group of special management concern. Providing interior forest habitat (i.e., core forest area at least 1 kilometer [0.62 mile] from forest edge) for forest-dwelling Neotropical migratory birds is one of the Refuge's major objectives. Strategic reforestation of cropland surplus to the Refuge's waterfowl habitat objectives will contribute to the interior forest needs of Neotropical migratory birds. Management of existing bottomland hardwood forests will also create structural elements required by forest-dwelling Neotropical migratory birds.

HABITATS

Bottomland Hardwood Restoration

Lake Ophelia National Wildlife Refuge is situated near several large forested tracts in the Three Rivers Source Population Objective Area. A cooperative private-State-Federal partnership under the North American Waterfowl Management Plan, Partners in Flight, and the LMVJV calls for public lands in this zone to be managed to provide 84,000 acres of interior forest habitat (forest more than one kilometer [0.62 mile] from edge). The largest amount of unforested public land in the Three Rivers SPOA is located on the Refuge. With strategic reforestation, significant amounts of interior forest can be created by reforesting certain agricultural areas on the Refuge that are not needed to meet waterfowl and shorebird objectives.

Approximately 12,000 acres of the Refuge are forested. Of this, 4,588 acres have been reforested since Refuge establishment. Sites were restored by planting both seeds and seedlings (by hand and machine). Restoration on some sites is incomplete, and further planting efforts are required. Currently, no active forest management, other than reforestation, inventory, and survivability checks, occurs. Also, there is a need to manage existing forests to simulate old-age type conditions within several of the current mid-aged stands. In these stands, management actions should be directed toward providing a more complex

forest stand structure with large tree crowns interspersed with openings to promote vertical structure in the mid-story and understory. Forest management practices may include set-aside forested areas in which no or minimal disturbance would occur to benefit species such as the recently re-discovered ivory-billed woodpecker.

The local community was an integral part of the court decision that stopped land-clearing operations (specifically, those that occurred on the property that would become Lake Ophelia National Wildlife Refuge) under Section 404 of the Clean Water Act. As a result of this involvement, the community is very concerned about bottomland hardwood restoration. Some in the community believe that the Refuge was established to restore the forest that had been removed. More than 10 years after Refuge establishment, there is still significant local interest in reforesting the entire Refuge. The area's cultural tradition has a strong history of fishing and hunting, and forest restoration is seen as a first step toward increasing the opportunities for hunting (primarily for white-tailed deer). Because providing multi-species waterfowl habitat, including sanctuary areas, is a primary Refuge purpose, total reforestation is not suitable. However, approximately 1,178 acres, or 32 percent, of the existing Refuge cropland is being recommended for future reforestation in this plan.

Agriculture

Reforesting the majority of the current Refuge cropland acreage will not result in a corresponding increase in huntable acres because land is needed to provide a core waterfowl sanctuary area, protected from disturbance, for migratory waterfowl. Most of the current Refuge cropland lies within the core waterfowl sanctuary. During the November-to-February time period, the sanctuary area is closed to most public entry in order to minimize disturbance to migratory birds. However, 13,325 acres, or 76 percent of the existing Refuge acreage, is open to various forms of hunting, including waterfowl hunting.

The Refuge currently farms approximately 3,700 acres on Lake Ophelia Refuge. Cooperative farming is used to fulfill the Refuge's waterfowl, resident wildlife, and threatened and endangered species trust responsibilities. This is a mutually beneficial arrangement where the farmer is allowed to farm Refuge land (with restrictions on crop type, pesticide use, techniques, etc.), while the Refuge receives 20 percent of the crop or an equivalent value in services (e.g., mowing or discing moist-soil areas, maintenance of water control facilities). Cooperative farming also infuses money into the local economy by providing jobs and supporting local businesses.

Typically the Refuge grows a combination of corn, soybeans, wheat, milo, and millet. In combination, each provides significant benefits to the species (waterfowl, Louisiana black bears) that the Service is entrusted to protect. However, ancillary benefits also include improved habitat conditions for the American woodcock, white-tailed deer, wild turkey, and numerous other resident wildlife species.

Most of the current cropland lies within the core waterfowl sanctuary. During the November-to-February time period, the sanctuary area is closed to public entry in order to minimize disturbance to migratory birds. However, 13,325 acres, or 76 percent of the existing Refuge acreage, is open to various forms of hunting, including waterfowl hunting.

VISITOR SERVICES

Visitor Services and Education

Currently, little public use occurs besides hunting and fishing. The complex does not have the staff or facilities to provide on- or off-Refuge environmental education or interpretive or other wildlife-dependent

recreational programs. The lack of exposure and awareness resulting from the absence of non-consumptive public use negatively affects all Refuge programs.

The Refuge is located in Avoyelles Parish (population 41,860), within 15 miles of Marksville, Louisiana (population 6,087). The Tunica-Biloxi Paragon Casino is a major tourist attraction in the parish, attracting over 200,000 overnight visitors annually. Many of the casino's overnight hotel and recreational vehicle (RV) resort guests are interested in half-day tourist destinations. Visitor facilities in association with a proposed Grand Cote National Wildlife Refuge visitor center annex would provide wildlife-dependent environmental education, interpretation, and recreation opportunities currently not available in Avoyelles Parish.

Hunting

Hunting and fishing are integral parts of Louisiana culture. It is not surprising that there is a considerable State and local interest in expanding hunting opportunities. Any additional hunting opportunities will be dependent on providing safe, quality experiences that are compatible with Refuge purposes. However, hunting opportunities will be made available to a greater number of people over a larger land base through the Refuge's continuation of a land acquisition program, within the current acquisition boundary.

There is some interest in a modern gun hunt for white-tailed deer. However, much of Lake Ophelia Refuge's hunting areas are open habitat (early succession and/or recently reforested areas), and a modern gun hunt cannot be conducted there safely. Furthermore, recent surveys indicate that the Refuge's deer herd is in balance with the habitat, indicating that the current hunting strategies (either-sex deer archery, youth gun, and muzzleloader hunts only) are biologically sound. While the deer herd could be controlled with modern firearms, relying on the current program provides more hunting opportunities (primitive weapons are less efficient, requiring more units of effort to harvest a sustainable number of individuals). As forest stands mature, opportunities for a modern gun hunt will be explored.

Fishing

Under current conditions, the area available for fishing opportunities cannot be greatly expanded without compromising the Refuge's waterfowl habitat objectives (i.e., allowing fishing in Lake Ophelia during the current closed season, October 15- February 28). However, fishing could be expanded by developing bank fishing areas, improving or expanding fishing piers, and controlling aquatic weeds. A recent acquisition has provided the potential to allow public access to 300-acre Frazier-Whitehorse Lake. Also, the U.S. Army Corps of Engineers' preliminary surveys for the Spring Bayou Reconnaissance Study indicate that Lake Long could be reconnected to the Red River, thus possibly restoring a historic fishery.

Roads and Trails, Exterior and Interior

In general, lack of access, both interior and exterior, limits all public use on the Refuge. No all-weather roads or trails exist.

The Refuge's only exterior access route is Louisiana Highway 452. The paved section of this road ends approximately 2 miles from the Refuge. Avoyelles Parish is responsible for maintaining Highway 452, 2 miles after the pavement ends. The Service is responsible for maintaining most of the remaining 38 miles of roads and trails that exist within the Refuge. Seasonal weather limits access (including that by Refuge staff) to four-wheel-drive and high-clearance vehicles. Access will remain limited until all-weather roads are provided and maintained.

Access to many of the interior areas within the Refuge is also limited. Because no all-weather interior roads exist, access to much of the Refuge is by foot or by all-terrain vehicles (ATVs). During wet conditions, visitors must use a four-wheel drive vehicle to access one of several parking areas and proceed on foot or ATV. With heavy use, ATV trails quickly become unsuitable for foot travel, limiting those visitors without ATVs to areas served by designated hiking trails.

FSA Fee Title Tract Access

Three Farm Services Agency fee title tracts large enough to provide public use opportunities are managed by this Refuge complex. Lack of ingress and egress routes and poor quality roads have prevented compatible public use. Future Refuge land acquisition and development of public ingress will allow compatible public use opportunities on these tracts.

GENERAL ADMINISTRATION

Funding and Staffing

Additional funding is needed to support Refuge programs. Increases for staff, facilities, and equipment will help the Refuge realize its purpose and management objectives. Currently, the Refuge is not meeting its waterfowl and shorebird habitat objectives; has few public use facilities; has incomplete habitat/wildlife management plans; provides few wildlife-dependent environmental education, interpretation, or wildlife viewing opportunities; and has degrading facilities (e.g., water control infrastructure, roads, public access).

Cultural Resources

Archaeological investigations within the Refuge have been limited and, with the exception of Gibson (1989), have occurred prior to its establishment. Eight archaeological sites have been documented in previous archaeological investigations. While few known cultural resources exist on Lake Ophelia National Wildlife Refuge, management activities must be conducted so as to avoid compromising sensitive sites.

The Tunica-Biloxi Native American tribe is located in the local community (tribal lands and Paragon Casino). The Tunica-Biloxi are strong supporters of natural resource issues and could be a valuable partner.

LAND PROTECTION AND CONSERVATION

Land Acquisition and Forest Fragmentation

When the Refuge was established, its role in providing bottomland hardwood forest and a mix of other habitat types was seen mostly as an opportunity to provide an additional habitat type for wintering waterfowl (i.e., flooded woodlands in addition to agricultural and moist soil areas). Reevaluation has determined that supplying interior forest (in cooperation with Partners in Flight) and forested corridors between forested blocks (in support of Louisiana black bear recovery) is as important as simply providing forest. The Refuge's current acquisition boundary does not reflect the importance of restoring and protecting interior or corridor forest. Several properties lie between the publicly owned forests in the Three Rivers SPOA, but they are outside the Refuge acquisition boundary. To help maintain the potential to protect these lands, the Service will need either the authority to restore and protect (through land acquisition or conservation easements) the habitat between the Refuge's current acquisition boundary and other public natural resource areas or to direct partners to protect these priority areas of conservation. However, new land acquisitions would provide

expanded public hunting opportunities; whereas conservation easements will not. Refuge planning policy requires a Wilderness review concurrent with the comprehensive conservation planning process. The Service inventoried refuge lands within the planning area and found no areas that meet the eligibility criteria for a Wilderness Study Area as defined by the Wilderness Act. Therefore, the suitability of refuge lands for wilderness designation is not analyzed further in this plan.

IV. Management Direction

INTRODUCTION

Described below is the Comprehensive Conservation Plan for managing Lake Ophelia National Wildlife Refuge over the next 15 years. This plan contains the goals, objectives, and strategies that will be used to achieve the Refuge vision.

Implementation of the action will result in restoring the largest amount of interior bottomland hardwood forest possible while meeting the Refuge's primary purpose of providing habitat for multiple species of migratory waterfowl. Specific results will include increased waterfowl and songbird use and production; enhanced habitat and increased protection for the Louisiana black bear and other forest interior-dependent wildlife; enhanced resident wildlife populations; restored wetlands and hydrology; and greater opportunities for a variety of compatible wildlife-dependent recreational activities.

An overriding concern reflected in this plan is that wildlife conservation is the first priority in Refuge management. Public uses are allowed if they are compatible and appropriate with wildlife and habitat conservation. Wildlife-dependent public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) will be emphasized.

VISION

The vision for the Refuge is as follows:

Lake Ophelia National Wildlife Refuge will become a highly productive bottomland hardwood forest and open wetland ecosystem, which will provide a diverse complex of habitats that protect and restore biological diversity for the enjoyment and benefit of present and future generations. Habitat restoration and management activities will be directed toward waterfowl, Neotropical migratory birds, the threatened Louisiana black bear, and other resident and migratory wildlife. To these ends, the Refuge will foster new partnerships with the community and provide opportunities for wildlife-dependent recreation.

COMPREHENSIVE CONSERVATION PLAN

SUMMARY

Refuge lands will be protected, maintained, restored, and enhanced for resident wildlife, waterfowl, migratory game birds, migratory nongame birds, and threatened and endangered species. Extensive wildlife and plant census and inventory activities will be initiated to develop the baseline biological information needed to implement management programs on the Refuge.

Refuge management actions will be directed towards achieving the Refuge's primary purposes: (1) preserving wintering habitat for mallards, pintails, and wood ducks; (2) providing production habitat for wood ducks; and (3) helping to meet the habitat conservation goals of the North American Waterfowl Management Plan. In addition, the Refuge will be managed to contribute to other national, regional, and State goals for protecting and restoring populations of shorebirds, Neotropical migratory birds, woodcock, and the threatened Louisiana black bear.

Active habitat management will be implemented through water level manipulations, moist soil and cropland management, reforestation, and forest management designed to provide a historically diverse complex of habitats that meets the foraging, resting, and breeding requirements of a variety of species. An extensive system of levees, water control structures, and pumps will be developed and used in an effort to mimic historic flooding regimes and provide approximately 1,500 acres of seasonally flooded habitats for a variety of wetland-dependent species.

The Refuge will continue to seek acquisition of all willing seller inholdings within the current approved acquisition boundary, however, additional. Land protection and conservation efforts are needed in the MAV. Additional protection could be pursued through prioritizing lands outside the boundary according to national, ecosystem, and refuge-specific goals and objectives within anticipated funding and staffing levels, and then working with partners to achieve those goals. This action positively addresses some concerns expressed by the public.

Currently, the Refuge is pursuing acquisition from willing sellers within the current acquisition boundary as an option that will be used to improve conservation efforts. Also, the Refuge will use outreach programs and seek partnerships with State, Federal, and private landowners. In seeking partnerships with adjacent landowners and hunting clubs the Refuge will use conservation easements and cooperative agreements, and work to promote other Federal programs such as the Wetland Reserve Program (WRP), to link bottomland hardwood forest tracts and provide wildlife and soil and water conservation benefits. The primary purpose of these efforts in targeting new lands is to provide a bottomland forest system of sufficient size and carrying capacity to reach regional objectives associated with area-sensitive Neotropical migratory birds, Louisiana black bears, forest-associated waterfowl, and wetland forest landscapes (Figure 4-1). Land acquired as part of the Refuge will be available for compatible wildlife-dependent recreation.

During the fifteen-year life of this plan, 1,178 acres of existing Refuge cropland will be reforested to achieve wildlife habitat objectives. A forest management plan, designed to create spatially and specifically diverse bottomland hardwood forest (with little negative effect to waterfowl objectives), will be developed and implemented.

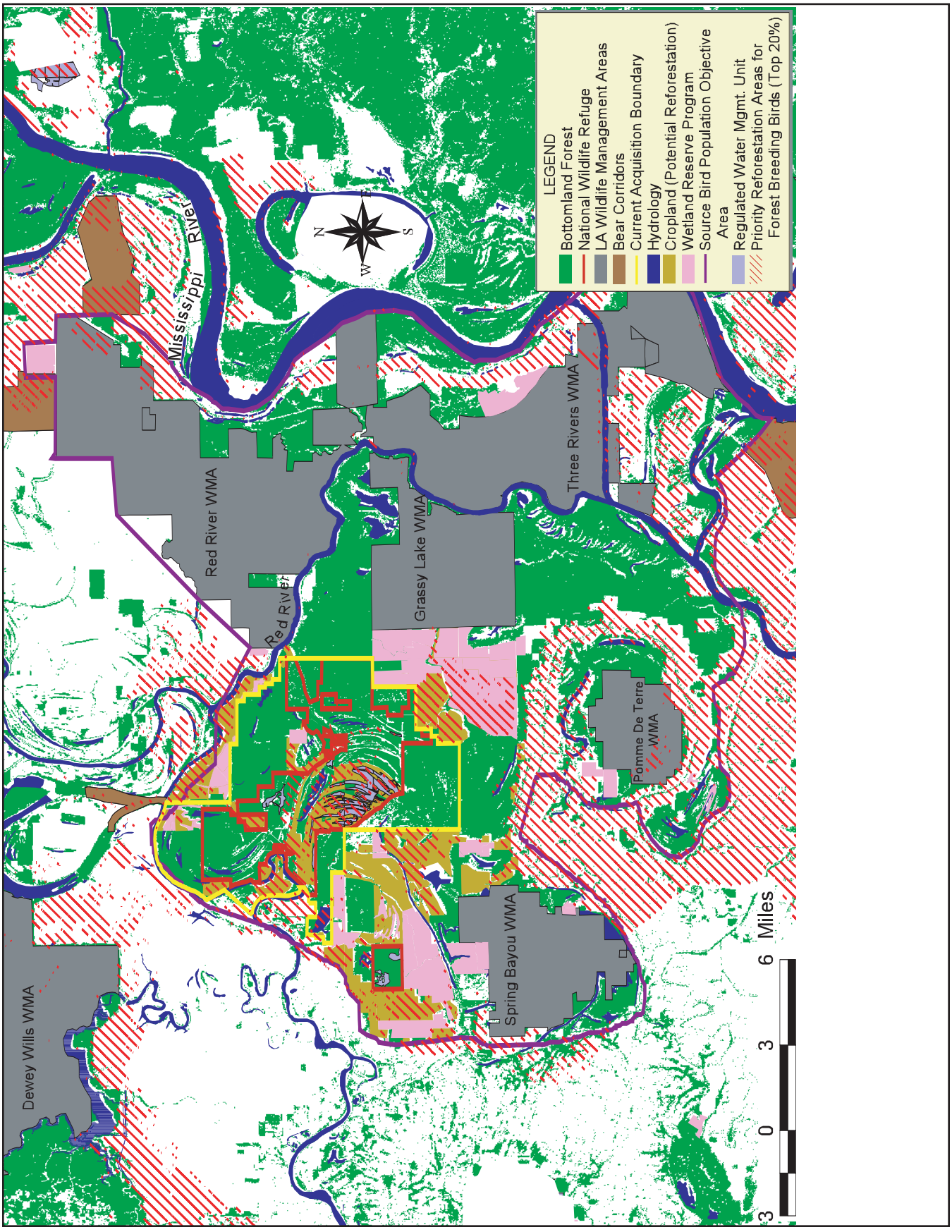
In the early stages of the conservation plan implementation, cooperative farming will be used to manage and maintain approximately 3,678 acres of cropland and moist soil habitats. As reforestation of cropland proceeds, the cropland acreage will ultimately be reduced to 2,500 acres.

During the drafting of this plan, serious consideration was given to the concept of "in-house" farming to meet Refuge purposes. Under this concept, a larger percentage of the existing cropland could be reforested, provided adequate resources (staffing, equipment, and Operation and Maintenance) were acquired that allowed the Refuge to provide the wetland/waterfowl habitat requirements as set forth in the North American Waterfowl Management Plan and Louisiana step-down objectives.

In the end, given the unlikelihood of these resources becoming available and the economic benefit to the local community, the Service will continue the practice of cooperative farming for the lifespan of the current CCP. However, another comprehensive review should be undertaken at the end of this plan to determine if cooperative farming is still the most practical and viable mechanism to meet Refuge purposes.

Opportunities for high quality wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) will be provided. Improvements will be made to the Refuge's exterior and interior access roads to provide all-weather vehicular access to a broad segment of the public. Opportunities for hiking and ATV use will be provided to support wildlife-

Figure 4-1. Priority areas of protection at Lake Ophelia National Wildlife Refuge.



dependent recreation to the extent that these activities do not significantly interfere with or detract from the achievement of wildlife conservation. Wildlife observation sites and platforms; interpretive trails, boardwalks, and kiosks; and restrooms will be provided at specific sites to allow for fully accessible environmental education and interpretation programs. Quality fishing and hunting programs will be provided, consistent with sound biological principles with sufficient focus on waterfowl/waterbird sanctuary, loafing, feeding, and courting requirements. Fishing will be permitted on Lake Ophelia, Duck Lake, Westcut Lake, Nicholas Lake, Possum Bayou, and Frazier-Whitehorse Lake. A visitor services plan, incorporating an aggressive and proactive promotion of both on- and off-site programs, will be developed and implemented.

GOALS, OBJECTIVES, AND STRATEGIES

The goals, objectives, and strategies addressed below are the Service's response to the issues, concerns, and needs expressed by the planning team, the Refuge staff, and the public. These goals, objectives, and strategies reflect the Service's commitment to achieving the mandates of the National Wildlife Refuge System Improvement Act of 1997, the mission of the National Wildlife Refuge System, the North American Waterfowl Management Plan, Louisiana Black Bear Recovery Plan, and the purpose and vision for Lake Ophelia National Wildlife Refuge. Depending upon the availability of funds and staff, the Service intends to accomplish these goals, objectives, and strategies during the next 15 years.

Goal 1. Fish and Wildlife Populations

Maintain viable, historically diverse populations of native fish and wildlife species consistent with sound biological principles.

Discussion: Population management activities will focus on establishing, inventorying, and monitoring procedures to document species occurrence, habitat association, recruitment, and diversity. Species will be managed as populations rather than individuals. Threatened and endangered species will be protected and managed toward recovery. All population management activities will strive to protect, maintain, and enhance species diversity in the broad context of the Refuge and/or ecosystem.

Objective 1: Work with partners in the Three Rivers SPOA to contribute to the creation of a 100,000-acre forest block to provide sufficient habitat to support 80 nesting pairs of swallow-tailed kites, 7,000 nesting pairs of prothonotary warblers, 3,000 nesting pairs of Swainson's warblers, 350 nesting pairs of red-shouldered hawks, and 200 pairs of broad-winged hawks.

Discussion: Priority forest blocks, known as Source Population Objective Areas, were mapped to guide establishment of sustainable populations of priority forest interior-nesting migratory songbirds. Lake Ophelia Refuge is located in the Three Rivers SPOA, one of only thirteen 100,000-acre forest blocks designated within the MAV (refer to Figure 1-3. This is the largest block size recognized using current methodology (Refer to Appendix VI, Management Methods). A 100,000-acre block contains 84,000 acres of core habitat capable of supporting the species most dependent upon large forest blocks, including swallow-tailed kites, red-shouldered hawks, broad-winged hawks, pileated woodpeckers, and Cooper's hawk (Mueller et al., 1999). The Three Rivers SPOA currently has a core area of 80,261 acres, only 3,739 acres short of the core area objective (84,000 acres) (USFWS, Lower Mississippi Joint Venture, 1998). These large forest blocks also are expected to support other less area-sensitive forest-nesting migrants.

Strategies:

1. Survey the Refuge and determine baseline populations for forest-breeding migratory songbirds and nongame birds.

2. Establish point-count stations to determine population size changes and species occurrence over time.

3. Conduct nest productivity studies, including predator disturbance, during the nesting season both in existing forests and in areas undergoing reforestation, to determine actual population health for as many species as possible, especially high priority species. If population objectives are not met, then evaluate management actions and other possible causes to take appropriate corrective measures.

Objective 2: Provide 50 acres of shallowly flooded mudflat habitats to support 4,000 shorebird forage use-days during the period of fall migration, July 15 through October 15.

Discussion: Shorebirds annually migrate through the MAV from the southernmost parts of South America to the northernmost parts of North America. They typically probe in soft mud (mudflats) and shallow water for worms and small crustaceans. In the MAV, these distant migrants typically move through during spring and fall, foraging as they migrate. Few shorebirds overwinter or nest in the MAV. During migration, different species move through at different times, all searching for similar habitat and foods.

Foraging habitat (mudflats and shallow water areas) objectives were recommended for fall migrating shorebirds by the U.S. Shorebird Working Group and a smaller group of shorebird experts working in the MAV (Loesch et al., 1999). These ecosystem-wide objectives were then stepped down to private and public lands. The step-down objective for Lake Ophelia Refuge is 4,000 shorebird forage use-days during the fall migration period. This objective can be met on a 50-acre area. Foraging habitat is not considered limiting during the spring migration, when river stages are typically falling and mudflats are common throughout the MAV.

Strategies:

1. Conduct shorebird surveys of the Refuge at 10-day intervals during the migration period to establish baseline information on species occurrence, numbers, and chronology, and provide these data to a national program (e.g., Manomet Bird Observatory) designed to monitor species numbers and migration chronology.

2. Survey the food resources available in the shorebird habitat and the shorebird response to the availability of those foods. If shorebird food production objectives are not being met or if existing resources are being underutilized, then evaluate management actions and other possible causes to take appropriate corrective measures.

Objective 3: Support the North American Waterfowl Management Plan and Louisiana Step-down Plan by providing habitat capable of supporting a minimum of 2.5 million duck-use days in the core waterfowl sanctuary area each year for dabbler species including mallards, pintails, and wood ducks.

Discussion: The Refuge is strategically located on the lower Red River, near the confluence of the Red, Atchafalaya, and Mississippi Rivers. This area is an important wintering area for waterfowl within the Mississippi Flyway. The Refuge was established with its primary purposes to preserve wintering habitat for mallards, pintails, and wood ducks; to provide production habitat for wood ducks; and to help meet the habitat conservation goals of the North American Waterfowl Management Plan.

Waterfowl habitat requirements for feeding, breeding, and resting are specific. The temporal and spatial distribution of these habitats needs to match the migration chronologies of migratory species and meet the year-round needs of resident species. Use of the Refuge by migratory waterfowl is determined by several factors, including the availability of flooded habitat and food supply, absence of disturbance on the Refuge, and unfavorable weather and water conditions in the more northern parts of the flyways.

Guidelines for minimum duck-use days were developed based on a series of stepped-down plans starting with the North American Waterfowl Management Plan population objectives. These objectives were stepped down to the Lower Mississippi Valley Joint Venture, which in turn determined minimum foraging requirements that needed to be met to support the North American goals. These foraging requirements were then allocated to each State within the Joint Venture. Within each State, coordination meetings were held to determine who could provide the habitat requirements among management units on public and private lands. Taking into account sanctuary requirements (in addition to foraging requirements), public land managers determined what potential there was to meet State objectives. For Lake Ophelia National Wildlife Refuge, these potential objectives were adjusted based on multi-species, duck life-history requirements (molting, pairing, courtship, foraging, etc.), other Refuge waterfowl (pintail, teal, goose) requirements, and a more refined assessment of Refuge purposes and capabilities.

Strategies:

1. Prepare a Biological Inventory/Monitoring Plan by 2006 which includes Refuge-specific waterfowl inventory and monitoring protocols, standardized routes, and computerized databases.

2. Conduct waterfowl inventories at least twice monthly (October to mid-March) with emphasis in the more visible areas of the Refuge where ground/ocular surveys can be made using standard techniques and survey routes.

3. Conduct a special August/September survey for blue-winged teal within key wetlands using standardized technique and routes.

4. Maintain the current core waterfowl management area (6,000 acres) as an inviolate sanctuary for migratory game birds where few to no disturbance factors are allowed during the critical winter period (November to mid-March).

5. Provide, monitor, and maintain a minimum of 75 wood duck nest boxes following Regional wood duck program guidelines.

6. Help meet flyway and State banding goals by annually banding the Refuge's wood duck quota.

Objective 4: Provide wintering habitat for woodcock in support of the National Woodcock Management Plan, and for other bird species preferring shrub habitat.

Woodcock are showing significant long-term declines in the eastern United States. Habitat loss, including the loss of preferred, safe nocturnal wintering habitats, is likely a key factor. Quality daytime habitat such as mature bottomland hardwood forest with a dense understory that provides overhead cover from predators yet is open underneath is lacking at Lake Ophelia Refuge. Diurnal scrub-shrub and nocturnal fields are also important woodcock habitats that need to be quantified and managed on the Refuge. Lake Ophelia Refuge will assist the Service in meeting the national and regional objectives outlined in the North American Woodcock and regional woodcock management plans.

Woodcock use moist areas in non-disced farm fields or fallow fields that have vertical structure as nocturnal foraging and singing/breeding habitat. These early successional stage fields generally must be within .5 miles of diurnal habitat for maximum use.

Strategies:

1. Complete Habitat Management Plan, which includes a digital habitat map and database created from National Wetland Inventory declinations (habitat polygons) and Continuous Forest Inventory Data. This digital map will be used to assess optimal nocturnal and diurnal habitat quality, size, and justipostion. Habitat management activities that maximize benefits to woodcock, bears, and other species but minimize negative impacts on Neotropical migratory birds. The decision-making processes of where and how many acres to reforest should include woodcock.

2. Continue to assess the woodcock use of Lake Ophelia Refuge and relate information to available cover and foraging habitat.

3. Utilize the more than 4,000 acres of reforested land as diurnal scrub-shrub habitat for woodcock on the Refuge.

4. Assess the use of scrub-shrub habitats by other wintering birds to monitor species occurrence and population levels.

5. Provide open areas or agriculturally manipulated fields in various stages of plant succession or crop removal for nocturnal woodcock habitat.

6. Restrict fall plowing by cooperative farming to maximize earthworm production in agricultural fields.

Objective 5: Provide quality bottomland hardwood forest, scrub-shrub, and open agricultural areas in addition to lakes and bayous to sustain balanced resident wildlife populations.

Discussion: Because of their high productivity, the Refuge's bottomland hardwood forests support relatively high populations of resident wildlife. Sound biological principles will be used to maintain natural population parameters for resident species. Management efforts will be directed at maintaining viable populations of all resident species, rather than favoring certain species, age classes, or sexes.

Strategies:

1. Develop and implement a Biological Inventory and Monitoring Plan by 2006. This plan will include key indicator resident wildlife species, e.g., white-tailed deer. Integrate population objectives for resident species into the Refuge's habitat management plans.

2. Monitor the deer populations through deer spotlight surveys, deer harvest data collection and analysis, and deer herd health checks. Maintain a healthy deer population through public deer hunts. Deer harvest objectives will be determined with population data in coordination with Louisiana Department of Wildlife and Fisheries.

Objective 6: Manage furbearer populations to levels that are not negatively impacting bottomland hardwood forests and ground-nesting birds.

Discussion: In Louisiana, animals classified as furbearers include: beaver, bobcat, coyote, gray fox, mink, muskrat, nutria, opossum, river otter, red fox, raccoon, and skunk. Beaver and raccoon populations can reach population levels that adversely affect ecosystem functions. Beaver have caused deterioration and loss of bottomland hardwoods throughout the Refuge.

Excessive numbers of raccoons can cause negative impacts on the reproduction of breeding nongame birds and wild turkeys. Trapping and hunting remain the only viable methods to reduce furbearer population levels. Trapping will be regulated on a permit basis, as needed to regulate furbearers that are adversely affecting ecosystem functions.

Strategies:

1. Conduct a baseline study of furbearer populations and their effects on the ecosystem, and develop effective population management plans that promote diversity and stability in flora and fauna.

2. Develop management guidelines (contracts, special use permits, special conditions) to administer a trapping program consistent with sound biology, Service guidelines, Refuge purposes, and the conservation of ecosystem functions. Trapping may be permitted in accordance with State of Louisiana regulations and licensing requirements. A Refuge special use permit containing conditions designed to meet wildlife population goals and requiring, among other things, careful harvest reporting will be required for trapping.

3. Monitor the effects of furbearer management measures on population status and habitat protection and restoration efforts.

Objective 7: Reduce nonnative invasive plants such as water hyacinth and hydrilla and animal populations such as feral swine to minimize negative effects to native bottomland hardwood forest and wildlife.

Discussion: Water hyacinth and hydrilla are two exotic species found in Refuge lakes and sloughs. These plants form dense mats that impede water flow and recreational use. They also retard the growth of desirable submersed aquatic plants. Approximately 700 acres of the Refuge's lakes and bayous are currently infested with water hyacinth and hydrilla.

Feral swine are a major nonnative animal pest found throughout the Refuge and on adjoining lands. These wild pigs have an adverse effect on the habitat and productivity of most native wildlife. They are omnivorous and use virtually all components of the habitat, directly competing for food and reducing the carrying capacities, reproduction, and recruitment of native wildlife. In addition, feral swine are documented as a source of several infectious diseases that adversely affect wildlife as well as domestic livestock.

Strategies:

1. Inventory and map the distributions of nonnative invasive plant species, and develop an Integrated Pest Management Plan (IPM) by 2007.

2. Use IPM techniques to reduce the water hyacinth and hydrilla infestations to levels that do not negatively affect trust resources or impede recreational use of water bodies.

3. Require the use of IPM techniques in all cooperative farming agreements and assist the farmers with information transfer, experimental approaches, and a range of approved control options.

4. Revise the Nuisance Animal Control Plan by 2006.

5. Inventory feral swine numbers and monitor their effects on natural habitats and crop depredations.

6. Allow public opportunities on the Refuge to take feral swine by including swine as a miscellaneous species during any established Refuge hunt. This provision will help reduce the number of feral swine on the Refuge.

7. Use Refuge staff and contracted animal damage control experts to maintain feral swine at acceptable population levels in closed areas and in other parts of the Refuge as needed.

8. Work cooperatively with the Aquatic Plants Division of the Louisiana Department of Wildlife and Fisheries to implement control programs.

9. Disseminate information concerning success/failure of control treatments to regional office and other appropriate entities, especially in regard to hydrilla control.

Objective 8: Inventory the distribution and habitat use of all threatened and endangered species, especially the bald eagle, pallid sturgeon, and Louisiana black bear, on the Refuge and follow appropriate management/recovery plans to contribute to their recovery.

Discussion: The only known federally listed threatened or endangered species that occur on the Refuge are the bald eagle and Louisiana black bear. However, complete flora and fauna inventories have not been conducted for the Refuge.

Historically, bald eagles have nested in the lower Red River area, but nesting populations are now found primarily in the Atchafalaya River Basin. During 2003 and 2004 a pair of eagles produced some false nests within the closed waterfowl sanctuary area.

The Service's recovery plan for the Louisiana black bear identifies two viable subpopulations in need of recovery. These separated populations, one each in the Atchafalaya and Tensas river basins, have immigration and emigration corridors between them (refer to Figure 1-4, p. 14). The Red River/Three Rivers Complex (which contains Lake Ophelia National Wildlife Refuge) is the largest unoccupied forested area between these two subpopulations. During the spring of 2003 and 2004 the Louisiana black bear repatriation project has successfully relocated 11 adult female bears (radio-collared) with cubs on Lake Ophelia Refuge. As of fall 2004, a majority of these bears either are using the Refuge or are on adjacent private lands. Refuge staff assisted in implementing all phases of repatriation and will continue to assist in black bear management, nuisance control, and public outreach.

Strategies:

1. Prepare a Biological Inventory and Monitoring Plan and Habitat Management Plan by 2006.

2. Monitor and document bald eagle use on the Refuge. Provide protective zones around any bald eagle nests to minimize disturbance during the nesting season.

3. Implement vertebrate and invertebrate species inventories on the Refuge to identify the presence, population status, and distribution of threatened and endangered species.

4. Continue to support the recovery of the Louisiana black bear by assisting in all efforts to increase the bear population in the repatriation area between the two current subpopulations.

5. Provide technical support for surveys of endangered and threatened species within the Refuge watershed, including, but not limited to, the pallid sturgeon and ivory-billed woodpecker.

6. Provide habitat to support the recovery of the threatened Louisiana black bear and bald eagle within the existing Refuge.

7. Enhance, restore, protect, and manage imperiled species' habitat using available conservation tools, including habitat management on existing lands (Federal, State, and private), conservation easements, partnership agreements, conservation agreements, and land acquisition from willing sellers. Conduct outreach with adjacent landowners to convey the importance of Louisiana black bear, their habitats, and reduce nuisance bear human conflicts.

8. Monitor the population status of species of special concern and candidate species.

9. Work with partners to update the Louisiana black bear recovery plan as appropriate.

Objective 9: Develop inventory and monitoring program to protect and conserve populations of amphibians and reptiles in hardwood habitats in support of Partners in Amphibian and Reptile Conservation.

Discussion: Reptiles and amphibians are abundant and functionally important in most freshwater and terrestrial habitats and are significant components of their ecosystem. Many species of herpetofauna are wide-ranging and may serve as key indicator species in evaluating the environmental health of an ecosystem. Knowledge of which species occur on Lake Ophelia Refuge is fundamental to an understanding of the biological diversity of the area.

Strategies:

1. Prepare a Biological Inventory and Monitoring Plan by 2006, which includes inventorying, monitoring, and standardized data collection procedures for amphibians and reptiles.

2. Expand on the amphibian and reptile inventories conducted by the U.S. Geological Survey to establish baseline information on species occurrence and habitat utilization.

3. Develop population estimates for the American alligator and monitor their effects on other trust species.

Objective 10: Protect and promote self-sustaining fish populations such as crappie, largemouth bass, and bream fish in Lake Ophelia, Duck Lake, Westcut Lake, and Possum Bayou for the benefit of the ecosystem and public within five years of the plan's approval.

Discussion: Fish are an important component of the lower Mississippi River ecosystem. Historically, the fishery in this system has supported a great diversity of fish adapted to the seasonal flooding of a large river. While the inherent productivity of the fishery has not changed significantly, hydrological alterations have isolated habitats outside the main river levees and favored species of fish that are less adapted to riverine habitats with dynamic seasonal flooding regimes. Except during extreme flood events, most areas of the Refuge are separated from the influence of the Red River. Because it is impractical to reestablish or mimic the river's influence on the majority of the Refuge's aquatic habitats, these areas will be managed to provide a native recreational fishery. Those areas that can be reconnected to the Red River will be managed to restore a more historical fishery.

Strategies:

1. Develop and implement fisheries management with emphasis on maintaining balanced and healthy sport fish populations using proportional stock density (PSD) and relative weight (Wr) measurements.

2. Conduct annual fishery, creel, and water quality surveys.

3. Enhance sport fish populations in Duck and West Cut lakes by retrofitting the water control structure to provide greater seasonal water depths.

4. Implement the Lake Ophelia Restoration Plan to allow successful stocking of sport fish and promote a stable population.

Goal 2. Habitats

Conserve, restore, and manage the functions and values associated with diverse bottomland hardwood forest and open wetland systems in order to achieve Refuge purposes and wildlife population objectives.

Discussion: Habitat management will be used to restore the biological integrity, diversity, and environmental health of all Refuge lands, while providing benefits to a wide range of resident, migratory, and threatened and endangered species. The Refuge's habitat management procedures, including activities ranging from no intervention to intensive manipulation of soils, water, topography, and vegetation, will be consistent with the Service Regulations and Policy.

Objective 1: In cooperation with private, State, and Federal partners, assemble a 100,000-acre block of contiguous bottomland hardwood forest and forested corridors between existing forest blocks in the Three Rivers SPOA.

Discussion: Prior to settlement, the MAV contained over 24 million acres of bottomland hardwood forest that supported a wide variety of wildlife species. Today over 75 percent of the original forest has been lost to land clearing for agriculture, transportation, industrialization, and urbanization. The remaining 4.8 million acres of this bottomland hardwood forest is composed of numerous isolated islands that are often surrounded by a sea of agriculture. Because most Neotropical migratory birds and the Louisiana black bear are generally associated with large blocks of forest, fragmentation has been detrimental to these species.

The Mississippi Alluvial Valley Migratory Bird Conservation Plan has identified 101 patches that, with varying amounts of reforestation, could provide forest patches of 10,000, 20,000, or 100,000 acres in size. Forest patches of these size categories are believed to be the minimum sizes suitable to support breeding populations of Neotropical migratory birds. The shape and continuity of each forest patch may dictate the need for additional forest in patches that superficially appear to meet forest patch size goals. The Three Rivers SPOA, which includes Lake Ophelia National Wildlife Refuge, encompasses 283,000 acres, of which 172,000 acres is forest (refer to Figure 1-3, p. 12). This area contains just over 80,000 acres of core forest (an interior forest that is at least one kilometer (0.62 mile) from a non-forested edge). Because a typical 100,000-acre forest block provides approximately 84,000 acres of core forest, an additional 4,000 acres of core forest is needed to meet this standard. Since the Migratory Bird Conservation Plan was written, a geospatial decision support model (DSM) was developed (and refined) that prioritizes reforestation of every "available" ha in the MAV from 1 - 255 based on how that piece of real-estate will benefit area sensitive forest breeding birds. This CCP uses the top 20 percent of highest priority lands that need to be reforested to protect forest breeding birds in the Three Rivers SPOA (See Figure 4-1).

Refuge croplands that are surplus to planned waterfowl and shorebird habitat objectives will be reforested as the Refuge obtains the necessary staff, equipment, and funding to manage and maintain these habitats. Other areas outside the current boundary will be prioritized for reforestation and conservation in order to contribute to the 100,000-acre forest block goal and provide forested travel corridors between the Refuge and two State WMAs for the threatened Louisiana black bear and other forest dependent wildlife (See Figure 4-1).

Strategies:

1. Use a diversity of bottomland hardwood seedling species appropriate to reforest approximately 1,178 acres of existing Refuge croplands over the next 15 years in a phased management approach. At the end of the third phase, the Refuge will contain approximately 5,766 acres of reforested lands (Table 4-1).

2. Seek funding opportunities and partners to assist in reforesting Refuge lands and marginal croplands to create a 100,000-acre forest block for Neotropical migratory birds and bear travel corridors that connect Refuge and State Wildlife Management Areas (Figure 4-1).

3. Work cooperatively with private landowners, State agencies, and other Federal agencies to accomplish reforestation on private lands in the Three Rivers SPOA. Focus partnership efforts on areas desirable for black bear and Neotropical migratory birds as shown on Figure 4-1.

4. Provide technical assistance on reforestation priorities and planting methodologies based on regional conservation objectives and Service reforestation experience.

5. Monitor the survival, growth, and species composition of all reforestation sites.

6. Maintain the GIS databases of all forest and reforestation management actions within the Refuge acquisition boundary.

Objective 2: Protect, restore, and manage the functions and values on 11,678 acres of current Refuge bottomland hardwood forests and reforested land as well as any future acquired forests to support viable populations of native flora and fauna consistent with sound biological principles and other objectives of this plan.

Discussion: The Refuge's current forest consists of approximately 7,000 acres of mid-aged (20- to 60-year-old) woodlands interspersed with 4,588 acres of recently reforested areas. The area's characteristic ridge and swale topography and associated high plant diversity provide habitat for a variety of resident and migratory wildlife. The forest is a mix of even- and uneven-aged stands, probably a result of timber harvest events that occurred at different times prior to the establishment of the Refuge.

Because of the large amount of early successional forest due to recent and planned reforestation, there is a need to create and manage for mature forest conditions within several of the current mid-aged stands. In these stands, forest management actions, including timber stand improvement and selective harvest, will be implemented to provide a more complex forest stand structure that contains large tree crowns interspersed with openings to promote vertical structure and desirable species composition in the mid-story and understory.

Table 4-1. Summary of existing and planned habitat types at Lake Ophelia National Wildlife Refuge.

Habitat Type	Existing Acreage	Planned Acreage
Bottomland Hardwood Forest	6,745	6,745
Reforestation	4,588	5,766
Nonflooded Cropland	2,523	1,345
Floodable Cropland	605-855	405-775
Floodable Moist Soil	300-550	330-700
Floodable Mud Flat	0	50
Floodable Bottomland Hardwoods Lakes, Bayous and Seasonally	345*	345
Flooded Forest Swales	1,879	1,879
Roads, Trails, Levee and Facilities	290	290
TOTAL	**17,525**	**17,525**

* Includes 68 acres of reforestation.

Strategies:

1. Develop and implement a Forest Habitat Management Plan designed to mimic and maintain a historic diversity of forest cover types, tree species, and tree size-class distributions.

2. Analyze continuous forest inventory data/habitat maps that will be used in a Forest Habitat Management Plan to make sound timber management decisions that will benefit Neotropical migratory birds, woodcock, Louisiana black bears, and other wildlife species.

3. Monitor survival and growth of all current and future reforestation sites.

4. Implement forest management actions that result in the maintenance and development of understory, mid-story, and overstory stand components (i.e., a complex vertical forest stand structure) to meet the needs of forest-dwelling nongame birds. The development and maintenance of a dominant and/or emergent tree crown class component will aid in establishing or maintaining species such as the swallow-tailed kite and cerulean warbler.

5. Manage the forests to provide hard and soft mast, escape cover, den trees, and forested travel corridors for the Louisiana black bear using the Louisiana Black Bear Management Handbook as a guide.

6. Manage existing mature forests to provide diurnal habitat for wintering woodcock and vertical structure of Neotropical migratory birds.

7. Revise and implement a Fire Management Plan that provides adequate wildfire protection.

Objective 3: Conserve, restore, and manage up to 850 acres of open water wetlands (e.g., lakes, sloughs, and bayous) in areas such as Lake Ophelia, Westcut Lake, Duck Lake, Nicholas Lake, and Doom's Lake to provide resting, foraging, and breeding habitats for resident and migratory wetland-dependent wildlife species.

Discussion: The Refuge lies within the floodplain of the Red River, a tributary of the Mississippi River. Prior to the construction of man-made levees and navigation projects, these rivers experienced overbank flooding that created the area's distinct ridge and swale topography and depressional lakes. This seasonal flooding was the dynamic force that created not only the topography of the area, but also the highly diverse flora and fauna associated with bottomland hardwood ecosystems. The area's natural hydrology has been altered to such an extent that the dynamic processes that were continually creating new oxbow lakes and sloughs are no longer occurring. Overbank flooding now occurs less frequently, but when it does occur it is marked by heavy sediment loads that cause accelerated sedimentation in lakes and sloughs.

Strategies:

1. Develop a GIS database of all open water wetlands to include: surface acres, submerged and emergent vegetation, and sedimentation rates.

2. Use best management practices (BMPs) in all forest, cropland, and Refuge management activities to reduce or eliminate sediment deposition in open water wetlands, and implement restoration techniques that are compatible with the Refuge's overall goals and objectives.

3. Control invasive exotic plants in open water wetlands through integrated pest management techniques.

4. In cooperation with other conservation partners, work to protect, restore, and enhance the biological integrity and environmental health of the Red River.

5. Pursue cooperative efforts (e.g., COE 1135 Restoration Funds) to restore the hydrology in Lake Long, Bayou Jonsonne, and other water bodies associated with the Red River.

Objective 4: Manage 1,155 acres of prior-converted agricultural lands and 345 acres of bottomland hardwood forest as a wetland complex to provide variable water depths and vegetative composition capable of supporting the foraging, resting, pairing, and breeding requirements of a diverse suite of wildlife species.

Discussion: Large-scale hydrological alterations (e.g., flood control and navigation projects) and intensive clearing of bottomland hardwoods have changed the spatial and temporal flooding patterns and vegetative composition of the entire MAV. To meet the habitat requirements of resident and migratory wetland-dependent wildlife, active management techniques must be used in an effort to mimic the hydrological processes and vegetative composition that were largely self-perpetuating in the ecosystem before its hydrology was altered. These management techniques may include levees, water control structures, pumping, water level manipulations, discing, mowing, burning, or herbicide applications. Currently, moist-soil management activities and fall flooding for migrating waterfowl, shorebirds, and wading birds are severely limited due to lack of wells, underground pipe, and additional water control structures. Ultimately, a diverse complex of seasonally flooded cropland and moist-soil wetlands will be provided to meet the seasonal needs of a diverse suite of wetland-dependent wildlife species.

Strategies:

1. Develop and implement a water management plan by 2006 that will mimic the Refuge area's historic hydrological conditions while providing dependable flooded habitats to meet national, State, and regional objectives for waterfowl, shorebirds and wading birds.

2. Maintain a GIS database of all water management units that includes: floodable acreage and water depth based on gauge reading, water control structure types, soil types, annual vegetation cover type and seed production, flood chronologies, and vegetation manipulations and responses. Monitor waterfowl and other wader bird use to correlate management practices and adjust management activities to maximize benefit for these wildlife species.

3. Add infrastructure, such as wells, underground pipe, water control structures, and levees, to more efficiently manage waterfowl impoundments.

4. Provide flooded habitats that correspond to the migration chronologies of migratory species and the resting and brood-rearing needs of resident species.

5. Provide 330-700 acres of diverse moist-soil habitat in areas with water management capabilities in support of Louisiana Step-Down Plan and Mississippi Flyway objectives stemming from the North American Waterfowl Management Plan.

6. Provide 50 acres of very shallowly flooded mudflat habitat for the fall shorebird migration period (July 15 to October 15) in support of Louisiana Step-Down objectives and stemming from the North American Waterfowl Management Plan.

7. Provide 405-775 acres of harvested and unharvested cropland habitat in areas with water management capabilities in support of Louisiana Step-Down objectives stemming from the North American Waterfowl Management Plan.

8. Provide 345 acres of floodable bottomland hardwood forest in support of Louisiana Step-Down objectives stemming from the North American Waterfowl Management Plan.

Objective 5: Manage 2,500 acres of Refuge cooperative farming agreements, of which 500 acres (or 20 percent) will be left as Refuge share to support Louisiana Step-Down Plan and Mississippi Flyway objectives stemming from the North American Waterfowl Management Plan.

Discussion: Cooperative farming has been and will continue to be a cost-effective mechanism to provide the high quality "hot foods" required by wintering waterfowl. Management of a cooperative farming program not only reduces dependence on Refuge staff and equipment, it also creates jobs and infuses money into the local economy. Over the course of the plan and dependent on funding, the Refuge will reduce the existing cropland from 3,678 to 2,500 acres, the minimum acreage necessary to sustain the Refuge's waterfowl objectives.

Strategies:

1. Provide 300 - 350 acres of unharvested crops (milo, corn, rice, soybeans, or millet) in areas with the necessary water management capabilities in support of the Louisiana Step-down objectives stemming from the North American Waterfowl Management Plan.

2. Provide 50 acres of unharvested corn on ridges or non-floodable cropland to support Louisiana black bear, American woodcock, and other migratory and resident wildlife.

3. Provide at least 50 - 100 acres of winter wheat to support Louisiana black bear recovery and population objectives.

4. Provide 100 -150 acres of millet in areas with the required water management capabilities in support of Louisiana step-down objectives stemming from the North American Waterfowl Management Plan.

5. Revise and implement a Cropland Management Plan that will guide agricultural production and describe the role of cooperative farming in meeting Refuge habitat objectives.

6. Incorporate BMPs and integrated pest management practices into the Cropland Management Plan to ensure soil and water conservation, wildlife habitat, and environmental health benefits.

7. Rotate agricultural crops into moist-soil units as needed to control invasion of undesirable woody vegetation.

8. Maintain vegetated filter strips and grass waterways around all drainage areas and field borders to provide wildlife habitat and soil and water conservation benefits.

Goal 3. Land Protection and Conservation

Conserve natural and cultural resources through partnerships, protection, and land acquisition from willing sellers.

Discussion: Critical to the achievement of the vision for this Refuge is the protection of cultural resources, purchase of additional lands within the Refuge acquisition boundary, and development of partnerships with landowners and conservation organizations to improve wildlife habitat within the Three Rivers SPOA.

Objective 1: Continue to pursue the purchase of land that is not currently part of the Refuge but that is within the current 38,000-acre approved acquisition boundary and identify lands of conservation priority outside the acquisition boundary to facilitate habitat objectives for trust resources and provide additional wildlife-dependent recreational opportunities.

Discussion: As described earlier, the Three Rivers SPOA is identified as a high priority area for the establishment of a 100,000-acre contiguous forest block to support Neotropical migratory bird objectives. Additionally, the protection and reforestation of marginal agricultural lands between Lake Ophelia Refuge and the Grassy Lake and Spring Bayou WMAs will provide forested corridors that will contribute to Louisiana black bear recovery efforts (refer to Figure 4-1). Acquisition of additional lands (from willing sellers) within the current acquisition boundary will be based on the Refuge's habitat conservation priorities. These priorities will consider the existing threats to these habitats, their linkages to other protected habitats, the value of these habitats to trust species, their accessibility, and their potential in providing opportunities for wildlife-dependent environmental education and recreation. In addition to land protection within the current acquisition boundary, other conservation tools (i.e., partnership agreements

and technical assistance) will be used to protect, restore, and manage high-priority habitats outside the acquisition boundary.

Strategies:

1. Establish land acquisition priorities within the current Refuge acquisition boundary based upon the habitat values and the threats to existing resources.

2. Initiate contacts with all landowners within the current Refuge acquisition boundary to determine their interest in conservation easements, partnerships, technical assistance, or selling their land for inclusion into the Refuge System.

3. Develop partnerships with conservation organizations and agencies such as The Nature Conservancy, The Trust for Public Land, The Conservation Fund, Red River Waterway Commission, and the U.S. Army Corps of Engineers to support land acquisition needs.

4. Work with private, State, and Federal partners to protect high priority lands within the Three Rivers SPOA (See Figure 4-1).

Objective 2: Provide technical assistance, and, where appropriate, use private lands conservation programs to develop partnerships with landowners within the current acquisition boundary and prioritized areas of protection, to achieve wildlife and habitat objectives.

Discussion: Over 90 percent of the land in the MAV is privately owned, making private land a critical part of any landscape conservation initiative. The Service can provide technical and financial assistance to private landowners interested in protecting, restoring, or managing fish and wildlife habitats on their property. Conservation tools (i.e., conservation easements, partnership agreements, and technical assistance) will be used to protect, restore, and manage high priority habitats within this area. These priorities will consider the existing threats to these habitats, their linkages to other protected habitats, the value of these habitats to trust species, their accessibility, and their potential in providing opportunities for wildlife-dependent environmental education and recreation. Refuge staff also can help deliver land protection and conservation assistance in concert with other Federal, State, and private agencies. Providing assistance to private landowners is a critical element in achieving the landscape habitat initiatives in the MAV.

Strategies:

1. Use the Refuge as a showcase for aquatic and terrestrial habitat conservation, highlighting projects related to restoration and management.

2. Identify sources of funds which may support Refuge, ecosystem, and Service objectives related to habitat conservation.

3. Establish partnerships with agencies and organizations interested in habitat conservation within the Three Rivers SPOA.

4. Establish partnerships with landowners within the Refuge acquisition boundary to achieve Refuge, ecosystem, and Service habitat conservation objectives.

5. Assist agencies of the U.S. Department of Agriculture in the delivery of various private lands programs, including the Wetland Reserve Program, Conservation Reserve Program, Environmental Quality Incentive Program, and other such programs that emphasize habitat conservation and restoration.

6. Develop and distribute public information and outreach materials related to the private lands conservation program in Louisiana. Develop and employ outreach initiatives to enroll private landowners in conservation programs.

Objective 3: Protect cultural and historic resources from disturbance or inadvertent damage that could occur as a result of Refuge activities.

Discussion: Lake Ophelia Refuge contains several archaeological sites which represent a diverse and rich cultural history. Most sites have been identified by earlier preliminary archaeological surveys; however, detailed surveys and studies have not been conducted to determine their cultural and historic significance. The Tunica-Biloxi Indian Tribe, located in Avoyelles Parish, has an association with the area and can be a valuable partner in any efforts to protect, study, and interpret these sites.

Strategies:

1. Secure funding and develop a comprehensive archaeological survey of all Refuge lands.

2. Develop a Geographic Information System layer for the Refuge's archaeological and historic sites.

3. Develop a partnership with the Tunica-Biloxi Indian Tribe to interpret the significance of the Refuge's archaeological sites to Native Americans and the general public.

4. Comply with all regulations and policy set forth in the National Historic Preservation Act, Archaeological Resources Protection Act, and Native American Grave Protection and Repatriation Act.

Goal 4. Education and Visitor Services

Develop and implement a quality wildlife-dependent recreation program that leads to a greater understanding and appreciation of fish and wildlife resources and enjoyable recreation experiences.

Discussion: The National Wildlife Refuge Improvement Act of 1997 identifies six high priority, wildlife-dependent public use activities: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Fundamental to the provision of these uses are viable and diverse fish and wildlife populations and the habitats upon which they depend. These priority uses, along with all other proposed uses, must be compatible with the Refuge purpose and the mission of the National Wildlife Refuge System. The current and planned education and visitor facilities are illustrated in Figures 4-2, 4-3, 4-4 and 4-5.

Objective 1: Develop a community-based environmental education program in coordination with area schools and other area educational organizations.

Figure 4-2. Current and planned visitor facilities at the northern end of Lake Ophelia National Wildlife Refuge.

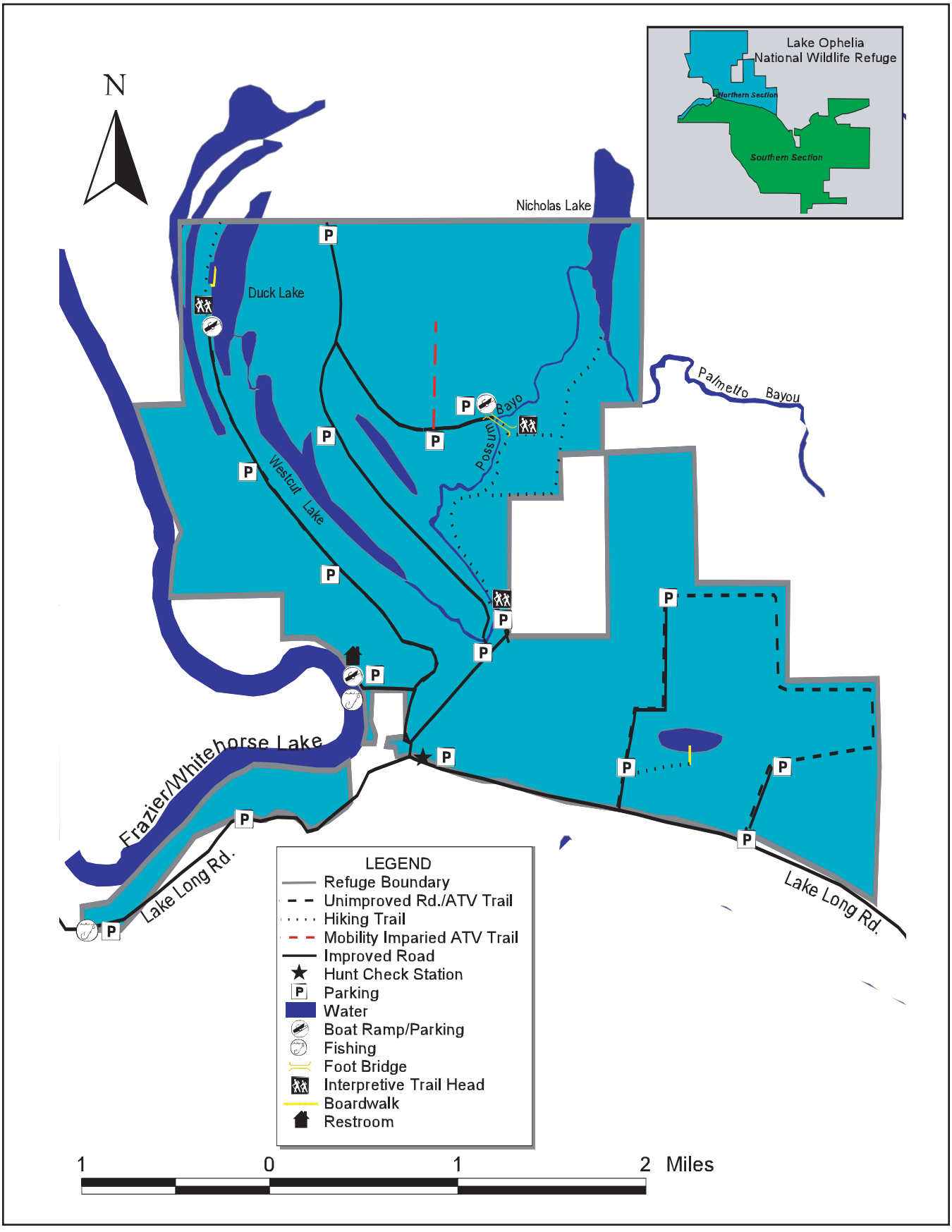


Figure 4-3. Current and planned visitor facilities at the southern end of Lake Ophelia National Wildlife Refuge.

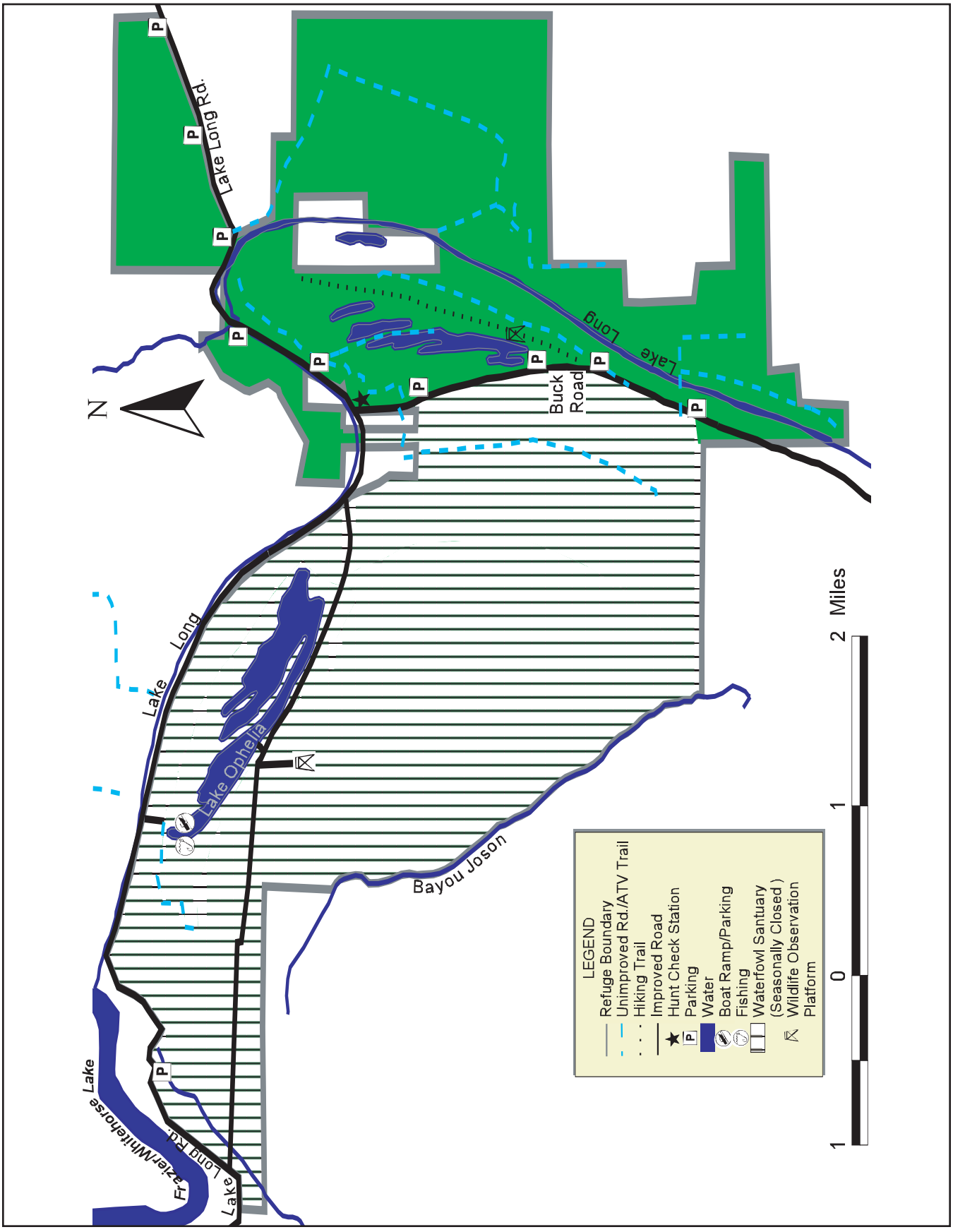


Figure 4-4. Planned visitor facilities at Duck Lake on Lake Ophelia National Wildlife Refuge.

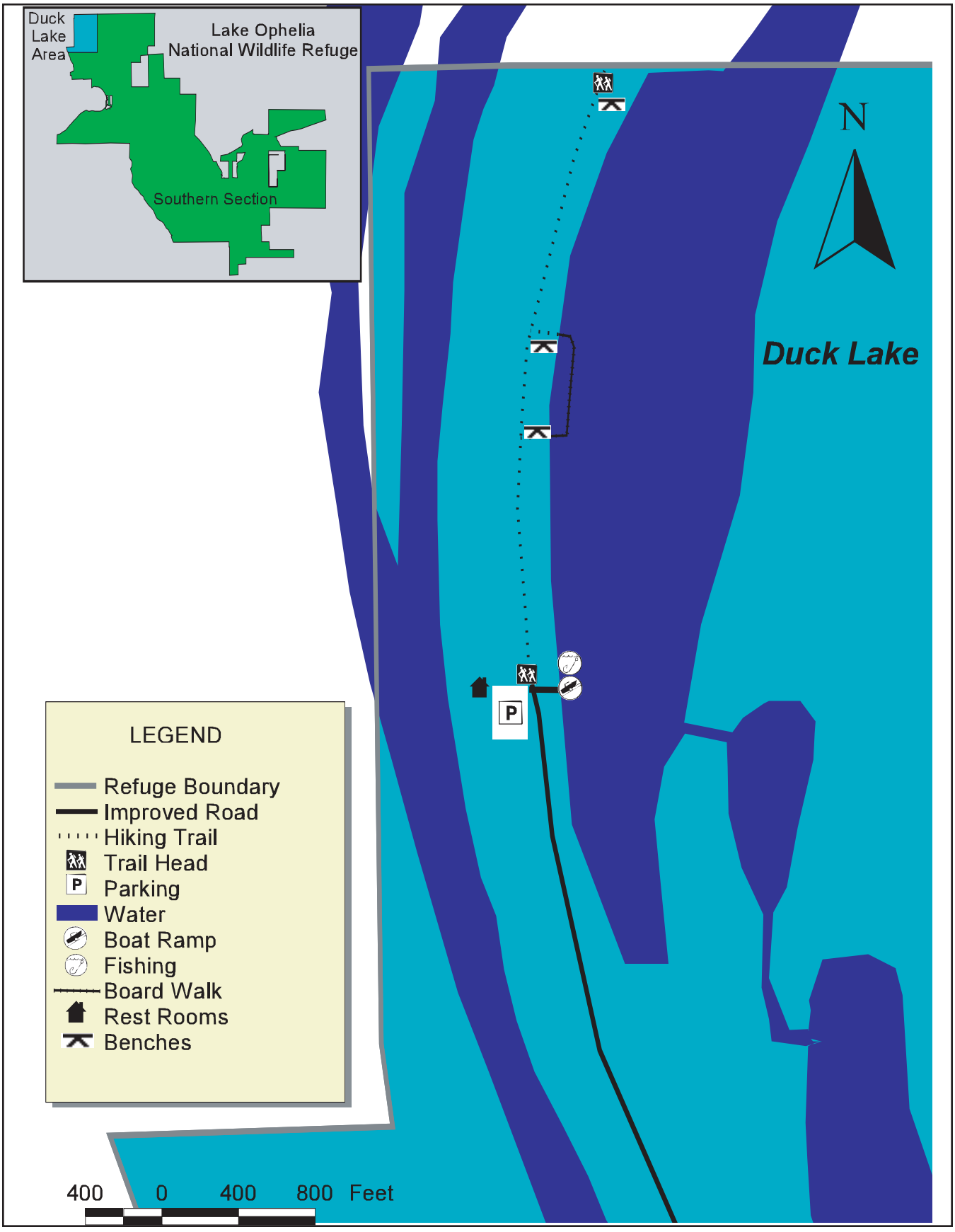
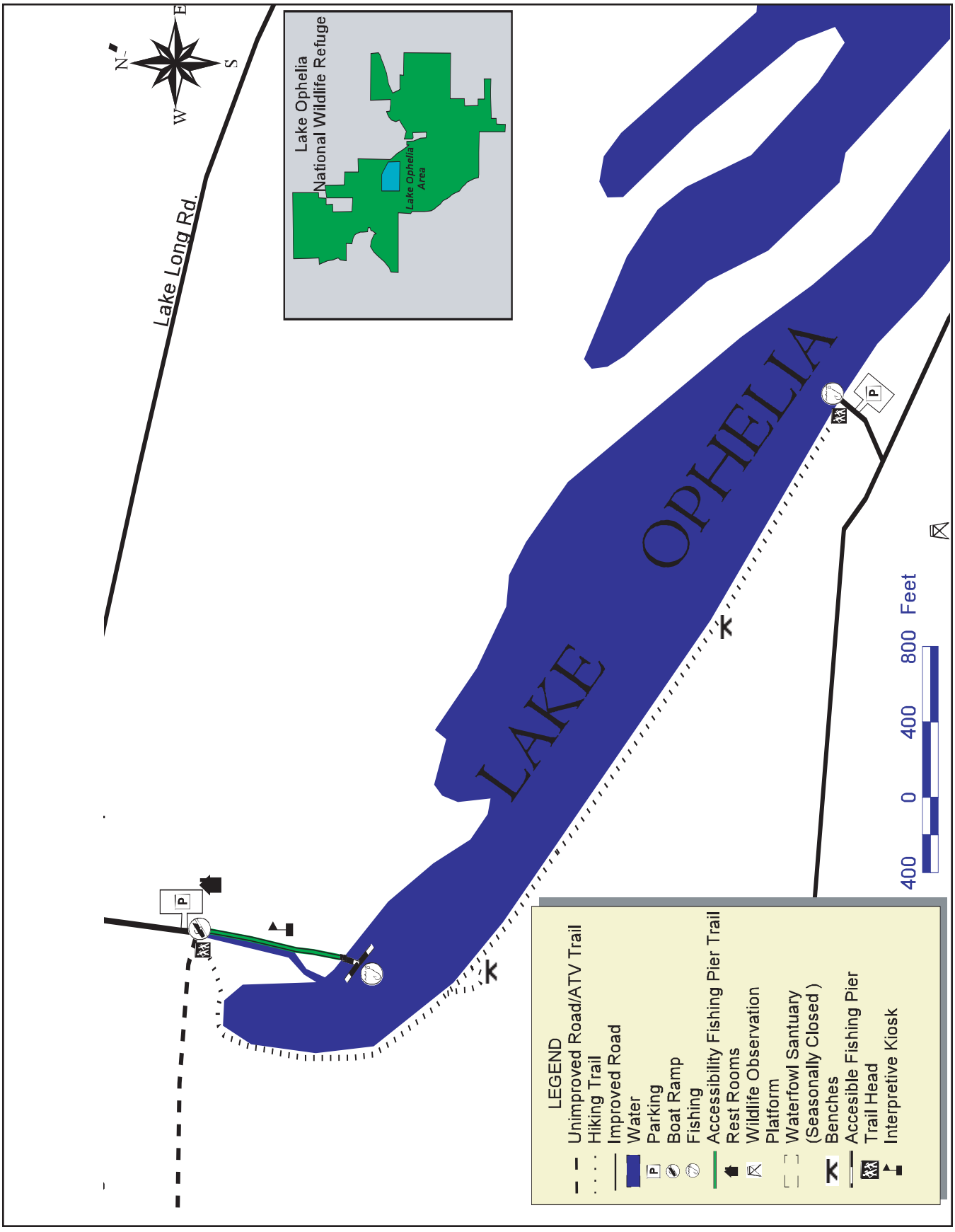


Figure 4-5. Planned visitor facilities on Lake Ophelia National Wildlife Refuge.



Discussion: A quality environmental education program can lead to increased awareness and stewardship of the environment, and can strengthen the connection between wildlife and people. It is very important to instill a land ethic in the local youth. Because of the Refuge's location and proximity to local schools (18 schools with a total of 8,500 students), there will be numerous opportunities for on-site environmental education.

Strategies:

1. Develop and provide curriculum and support materials to area teachers for use both on and off the Refuge.

2. Develop an outdoor classroom or gathering site, possibly at the existing fishing access (or other suitable site) on Lake Ophelia.

3. Develop an accessible foot trail with activity stations and associated curriculum materials.

4. Develop and provide additional environmental education activity sites along with associated curriculum at Duck Lake, at a ridge/swale auto drive, and at a wildlife observation platform.

Objective 2: Within 10 years of Plans approval, provide high quality fishing opportunities consistent with sound biological principles for approximately 5,000 visitors in Lake Ophelia, Duck Lake, Westcut Lake, Possum Bayou, and Frazier-Whitehorse Lake.

Discussion: Before increasing fishing opportunities at the Refuge, additional funding must be provided to assess its fishery resources and ensure that the ecological integrity of native fish populations is in balance with sportfishing opportunities. Due to lack of funding and staff, very little is known about the fisheries resources at the Refuge. As a result, sport fishing has not been a priority of the Refuge.

Strategies:

1. Implement recreation fee collection for anglers at Lake Ophelia Refuge to provide funding to manage sport fishing, i.e. road and trail access, trash pickup, etc.

2. Provide fishing opportunities for youth.

3. Working with the Service Fisheries Program, reestablish a recreational fishery in Lake Ophelia.

4. Increase fishing opportunities by improving vehicular access to Lake Ophelia and other Refuge waters.

5. Enhance public access to Lake Ophelia by providing additional bank fishing opportunities (Figure 4-5). Provide additional bank fishing facilities that are universally accessible at both Lake Ophelia and Duck Lake.

6. Evaluate the costs, logistics, and safety considerations in creating suitable bank fishing sites on Frazier/Whitehorse Lake.

7. Develop boat access to Frazier/Whitehorse Lake.

8. Inventory and evaluate the Refuge's fishery potential by consulting with the Service's Baton Rouge Fishery Resource Office.

9. Develop and implement a Sport Fishing Management Plan in consultation with State and Federal partners to ensure a quality fishing experience.

10. Control exotic plant species in all Refuge lakes.

Objective 3: Within 2 years of the plan's approval, provide high quality hunting opportunities to approximately 10,000 visitors per year, providing participants with reasonable harvest opportunities, minimal conflicts with users, and an opportunity to use various hunting techniques.

Discussion: In order to provide high quality hunting experiences, the Refuge must first achieve its wildlife habitat and population objectives. High quality habitat is the key to wildlife abundance, but some wildlife populations (e.g., white-tailed deer) may exceed the capacity of the habitat to support them. When this occurs, the effects are detrimental not only to the habitat, but also to other wildlife.

Hunting, when conducted under carefully controlled conditions, is not detrimental to most wildlife populations. In addition, hunting is an opportunity to participate in one of the identified high priority wildlife-dependent recreational uses. Development of a hunt plan, based on sound biological information, is a vital component for assuring quality hunting experiences and viable wildlife populations.

Hunting on newly acquired lands will be conducted in accordance with Refuge purposes reflected in the authorizing legislation and Refuge System policy. If all lands within the current Refuge acquisition boundary are acquired, the number of hunting opportunities and hunting visits, could be increased.

Hunting seasons will be scheduled and managed to ensure that negative effects to nongame wildlife and migratory birds are minimized during critical periods. Hunting season will be set in close coordination with the Louisiana Department of Wildlife and Fisheries.

Strategies:

1. Establish hunting regulations for resident wildlife to maintain population health and stable habitat relationships.

2. Implement recreation fee collection for hunters at Lake Ophelia to provide funding to maintain and enhance hunting opportunities, i.e., waterfowl hunting blinds, trail access, etc.

3. Manage hunt programs to achieve population and wildlife habitat objectives. Deer harvest strategies will consist primarily of optimal sustained yields, as opposed to maximum sustained yields, to allow more bucks and does to reach older age classes and thus mimic a more natural population.

4. Provide deer gun hunting opportunities as existing reforested area reaches pole timber stage.

5. Increase hunting opportunities as additional land acquisition permits.

6. Improve access to allow for expanded hunting opportunities.

7. Provide additional youth hunting opportunities for deer, doves, and waterfowl.

8. Manage hunt programs to achieve population and wildlife habitat objectives.

9. When and where necessary, limit the number of hunters to ensure a high quality hunt and a safe hunting experience.

10. Evaluate the potential impacts of hunting on other Refuge activities and programs, including management, maintenance, staffing, and funding.

11. Develop deer and waterfowl blinds for persons with disabilities.

Objective 4: Develop a Refuge interpretive program that will increase awareness of the habitat features, wildlife values, and management programs on the Refuge.

Discussion: Education and interpretation are vital programs needed to achieve the goals and objectives of this plan. These programs create public understanding and appreciation of the natural environment and the fish and wildlife that live within it. Not only are the programs vital to the implementation of this plan, but they also often lead to greater support for refuges at both the local and national levels.

Strategies:

1. Define the key resource issues and concerns of the Refuge that need to be addressed in the interpretive program and determine the best methods of delivery.

2. At every major entrance and parking area, provide a kiosk with information regarding the Service and the Refuge System, and orient the visitor to the Refuge.

3. At all observation sites (towers, platforms, and pull-offs) provide appropriate interpretive panels that describe ongoing management practices and their benefits to fish and wildlife.

4. Develop and update the Refuge's visitor brochures to include, at a minimum, a general Refuge information brochure, a hunting and fishing brochure, and a bird checklist.

Objective 5: Provide opportunities and facilities for wildlife observation and photography.

Discussion: Wildlife observation, wildlife photography, and other related non-consumptive activities such as hiking and birdwatching are minimal on the Refuge at this time. Regionally, opportunities for public wildlife viewing and photography are limited. However, an increase in these types of uses is anticipated over the next few years, as more facilities become available on the Refuge and the public becomes aware of the opportunities.

Strategies:

1. Develop an accessible waterfowl observation and photography platform off of Shop Road.

2. Develop an accessible wading bird rookery observation and photography facility along Buck Road.

3. Develop an observation and photography boardwalk and pier at Duck Lake and a foot trail leading from the parking and boat launching area.

4. Promote and encourage wildlife observation and photography on the Refuge through brochures, news releases, displays, and special events.

Objective 6: Develop and improve access, facilities, and program support to promote year-round environmental education within five years of plan.

Discussion: Facilities and structures will enhance opportunities for the visiting public and accommodate a range of interests and abilities. Trails, boardwalks, parking areas, observation platforms, signs, and kiosks will provide managed access into and information about the Refuge. Presently, there are no designated trails or observation areas. Some fishing access is provided into Lake Ophelia, but it does not meet National Wildlife Refuge System public use standards.

Support facilities and access are needed to provide the Refuge visitor with safe access into the Refuge and to enhance their visit. Access into the Refuge is limited due somewhat to the surrounding land ownership patterns and road conditions, especially during wet weather. Access and programs will focus on waterfowl, fisheries, and bottomland hardwood forest ecosystems.

Strategies:

1. Develop and implement a Visitor Services Management Plan.

2. Construct and maintain wildlife observation facilities, including an observation platform, boat and canoe launch, boardwalk trail, improved fishing access, hiking trails, parking areas, and kiosks.

3. Enhance observation sites to attract wildlife.

4. Work with local community partners to secure funding to improve the four-mile stretch of Lake Long Road that belongs to Avoyelles Parish.

5. Secure funding through the Transportation Equity Act - Refuge Roads Program - to improve Lake Long, Boones, Shop, and Buck Roads within the Refuge.

6. Secure funding through the Transportation Equity Act - Refuge Roads Program to upgrade 9 miles of dirt vehicle roads/ATV trails to gravel roads capable of providing all-weather vehicular access to Duck, Westcut, and Dooms Lakes.

7. Work with local transportation entities to improve directional signing to the Refuge.

8. Update and implement a Sign Plan to provide better access and directions for the visiting public.
9. Provide restroom facilities at the main parking lot at the Lake Ophelia access point.
10. Develop and distribute Refuge brochures, including a general brochure, hunting and fishing brochure, and bird checklist.
11. Establish partnerships with local educational institutions.
12. Establish a Refuge friends group.
13. Establish an active volunteer program to assist in Refuge wildlife surveys, community-based Refuge projects, and Refuge management activities where appropriate.

Goal 5. Refuge Administration

Provide administrative support to ensure that the goals and objectives for Refuge habitats, fish and wildlife populations, land conservation, and visitor services are achieved.

Discussion: The administrative functions associated with a Refuge include a wide array of activities that are critical to the mission of the NWR System and the purpose of each Refuge. These functions include staffing, training, budgeting, planning, Refuge access, law enforcement, facilities, community relations, partnering, and maintenance. Refuges must have appropriate staff, facilities, equipment, and funding in order to accomplish their overall goals and objectives.

Objective 1: Develop nine new staff positions to accomplish a comprehensive Refuge management program and as complexity of staff, projects, and management increases upgrade Project Leader, Deputy Project Leader, and Supervisory Wildlife Biologist positions'.

Discussion: The Refuge does not have a sufficient number of staff to achieve its management goals and objectives. Critical needs are in the areas of Refuge management, resource specialists, outdoor recreation planners, law enforcement, and maintenance. Currently, there is no staff assigned directly to the Refuge.

Strategies:

1. Increase Refuge staff positions with primary responsibilities on Lake Ophelia Refuge to include a refuge operations specialist and maintenance worker.
2. Increase staff positions with shared responsibilities on all three refuges to include a clerk, wildlife biologist, private lands biologist, forester, forest technician, park ranger, and outdoor recreation planner.
3. Provide continuing education and training opportunities to all staff to ensure a highly competent and motivated team.
4. Provide safe and efficient equipment and vehicles to perform needed Refuge operations and maintenance.

5. Provide up-to-date computer-based systems to perform Refuge operations and planning functions.

6. Upgrade project leader, deputy project leader, and supervisory wildlife biologist positions' as complexity of staff and responsibilities increase.

Objective 2: Maintain highly trained and effective law enforcement personnel to ensure trust resource protection, visitor safety, and enforcement of all Refuge-related acts and regulations.

Discussion: Protecting the natural resources of the Refuge and ensuring the safety of Refuge visitors are fundamental responsibilities of the National Wildlife Refuge System. This Refuge is accomplishing this responsibility with one full-time officer. As crime continues to increase in rural America, the refuges face a larger and more complicated enforcement problem. In addition to over 10,000 natural resource violations, serious felonies (including homicides, rapes, assaults, and acts of arson) are occurring on the refuges every year.

Strategies:

1. Provide up-to-date training and equipment to all full-time and dual function officers.

2. Develop Memorandums of Understanding with State and Parish law enforcement agencies to facilitate cooperation and assistance in law enforcement activities.

3. Provide education and outreach programs in the local community as part of a preventive law enforcement effort.

4. Provide assistance to Service Special Agents and State Conservation Officers for off-Refuge activities as requested.

V. Plan Implementation

INTRODUCTION

Refuge lands are managed as defined under the National Wildlife Refuge System Improvement Act of 1997. Congress has distinguished a clear legislative mission of wildlife conservation for all National Wildlife Refuges. National wildlife refuges, unlike other public lands, are dedicated to the conservation of the Nation's fish and wildlife resources and not wholly dedicated to 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 recreational uses.

To accomplish the purpose, vision, goals, and objectives contained in this plan for Lake Ophelia National Wildlife Refuge, this section identifies projects and a cost summary, staffing and funding needs, partnerships opportunities, step-down management plans, and a monitoring and evaluation plan necessary for successful implementation.

PROJECT SUMMARIES

Listed below are the project summaries and their associated costs for habitat restoration and management, land acquisition, facility development and maintenance, staffing, baseline data collection and interpretation, and exotic species control 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 the Refuge's objectives and strategies. The primary linkages of these projects to those planning elements are identified in each summary.

Reforestation of surplus Refuge cropland and other non-forested lands surrounding the Refuge will contribute to regional and national objectives for forest-dwelling birds and the Louisiana black bear. Refuge reforestation will follow a three-phased approach (Table 5-1), where existing reforestation will be evaluated and replanted as appropriate and approximately 1,178 acres surplus cropland will be reforested. No additional land will be reforested until an evaluation of all existing reforestation is completed, a plan is developed to meet minimum survival parameters on these plots, and additional plantings are completed, as necessary. Phase 2 will commence when Phase 1 is complete. Approximately 500 – 700 acres will be reforested in this phase. Reforestation will be completed on the remaining targeted cropland in the third phase. Projects that provide staffing, equipment, and Refuge infrastructure in one phase need to be completed before the projects in the next phase are initiated. Projects not associated with reforestation of cropland or Refuge staff and equipment required for habitat management were placed in the various phases based on the priority needs to meet overall Refuge goals and objectives over the 15-year life of this plan. A phased approach will allow the Refuge to have in place the necessary staff and equipment to achieve its habitat objectives before proceeding to the next phase. Most projects are or will be included in the Refuge Operation and Maintenance Needs (RONS and MMS) databases for the Central Louisiana National Wildlife Refuge Complex as described in Appendix VIII.

FISH AND WILDLIFE POPULATIONS

Project 1: Science-based Inventory and Monitoring of Plant and Animal Populations

Science-based inventories 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. A systematic inventory and monitor

Table 5-1. Summary of Lake Ophelia National Wildlife Refuge Comprehensive Conservation Plan projects divided into phases

	First Year Cost	Recurring Annual Cost	Staff FTE's
Existing Budget Base		$583,000	10.0 FTE
Phase 1 Projects			
8 Wetland Reforestation (phase 1 work only)	46,000	23,000	
19 Reconstruct Vehicle Access Roads	1,950,000	12,000	
1 Science-based Monitoring and Inventory	135,000	60,000	1.0 FTE**
15 Visitor Services Program	425,000	129,000	2.0 FTE**
18 Frazier/Whitehorse Lake Boat Ramp	98,000	6,000	
10 Lake Ophelia Restoration Project	150,000	15,000	
4 Water Management Sys. Operation*	250,000	20,000	
6 Forest Habitat Management	$145,000	$74,000	1.0 FTE**
Subtotal:	$3,199,000	$339,000	4.0 FTE
Phase 2 Projects			
5 Water Management System Maintenance*	$ 287,000	$66,000	1.0 FTE
8 Wetland Reforestation (phase 2 work only)	55,000	2,500	
16 Wildlife Observation/Interpretation	283,000	13,000	
20 Convert ATV Trails to Vehicle Access	1,400,000	9,000	
14 Archaeological Surveys	123,000	3,000	
2 Private Lands Conservation	139,000	74,000	1.0 FTE*
3 Control Invasive Feral Swine	41,000	17,000	
Subtotal:	$2,328,000	$184,500	2.0 FTE
Phase 3 Projects			
7 Forest Monitoring and Inventory*	135,000	60,000	1.0 FTE**
8 Wetland Reforestation (phase 3 work only)	74,580	3,390	
9 Heavy Equipment Package*	675,000	50,000	
11 Control Invasive Plants*	137,000	63,000	1.0 FTE
13 Boundary Line Surveys	200,000	3,000	
17 Lake Ophelia Fishing & Interpretive	211,000	8,000	
22 Refuge Law Enforcement	135,000	60,000	1.0 FTE
23 Position Upgrade	50,000	50,000	
24 Vehicle Replacement	100,000	100,000	
21 Upgrade Administrative Roads	1,800,000	6,000	
Subtotal:	$3,517,580	$403,390	3.0 FTE
Grand Total:	**$9,044,580**	**$926,890**	**19.0 FTE**
Potential Land Acquisition Cost:		**$25,000,000 to $50,000,000**	

* Projects to complete before initiating reforestation in same phase.
** FTEs with shared work responsibilities on Grand Cote and Cat Island NWRs.

Notes:
Phases indicate the order of accomplishment necessary to achieve overall plan goals, objectives, and strategies.

Costs are shown in Fiscal Year 2004 dollars.
ing program will enable the Refuge to make informed management decisions and valuable long-term contributions to national and regional objectives for waterfowl, shorebirds, forest breeding birds, wintering forest and scrub/shrub birds and the threatened Louisiana black bear, among others. Standardized census and survey techniques will be employed and all data compiled into databases including GIS for spatial analysis. This information is critical to formulating management actions and evaluating wetland restoration and other Refuge programs. All data will be shared with appropriate State and Federal partners in an effort to further ecosystem management. This project will add a wildlife biologist position to support this annual inventory and monitoring effort. The estimated first year cost for this project is $135,000, with a recurring cost of $60,000 per year. *(Linkages: Goal 1, Objectives 1-9; Goal 4, Objectives 1, 2, and 5.)*

Project 2: Private Lands Conservation Initiative

Lake Ophelia National Wildlife Refuge is strategically located in an important area of the lower Mississippi River ecosystem and must play a major role in the recovery and conservation of such species as the bald eagle, Louisiana black bear, and pallid sturgeon. The success of these conservation efforts will depend on the availability of suitable habitat, particularly on private land, and on providing technical assistance related to habitat and species management. This project will add a biologist position to assist in creating a 100,000-acre forested block for Neotropical migratory birds, as well as in reforesting black bear travel corridors that will link the Refuge and surrounding WMA's and coordinate threatened and endangered species recovery efforts on the Refuge and surrounding private land through private partners. This project will also identify an active role for the Refuge in black bear repatriation efforts in the Red River/Three Rivers Area, including monitoring bears both on and off Refuge and responding to any nuisance bear complaints. This position is extremely important to help guide partners in conserving lands of highest conservation priority. The estimated first-year cost of this project is $139,000, with a recurring cost of $74,000. *(Linkages: Goal 1, Objective 6; Goal 3, Objective 2.)*

Project 3: Control Invasive Feral Swine

Lake Ophelia Refuge has an established population of invasive 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 species recovery. Currently, the Refuge is using a multi-faceted control program including public hunting, staff control, trapping, and various other techniques described in the Reducing Wildlife-Caused Damage Plan. This project will provide professional animal damage control personnel to supplement the Refuge staff's feral swine control efforts. Control work will be contracted with U.S. Department of Agriculture (USDA) Animal Damage Control and/or other professional nuisance animal control personnel. The estimated first-year cost of this project is $41,000, with a recurring cost of $17,000. *(Linkages: Goal 1, Objectives 1-9; Goal 2, Objectives 1-5.)*

HABITATS

Project 4: Water Management System Operation

Man-made hydrological alterations have all but eliminated the natural flooding regimes that once supported historical numbers of waterfowl and shorebirds. In this altered floodplain, a system of levees, water control structures, and wells is necessary to provide dependable flooded habitats that correspond

with the migration chronologies of migratory birds. The timing of water management is critical not only to meet the needs of migratory birds, but also to stimulate the production of desirable moist-soil plants and to control undesirable plants. Water management includes monitoring water flow, water levels, and pumping with a GIS database to more efficiently manage resources. To efficiently manage and maintain the water management system, this project includes the installation of six additional water control structures ($50,000), two 10-inch irrigation wells and power units ($150,000), and an underground irrigation pipe system ($50,000). The estimated first-year total cost of this project is $250,000, with a recurring cost of $20,000. This project needs to be accomplished before the Refuge proceeds to Phase 3 reforestation. *(Linkages: Goal 1, Objectives 1 and 2; Goal 2, Objectives 4 and 5).*

Project 5: Water Management System Maintenance

The Refuge uses a system of levees, water control structures, and wells in an effort to mimic historic flooding regimes and provide dependable flooded habitat for migratory birds. This system consists of approximately 10 miles of levees, 36 water control structures, one well, and a 16-inch portable relift pump. The Refuge can provide over 1,500 acres of managed seasonal flooding with this water management system. Floodable acreage includes 1,155 acres of moist-soil and cropland habitat and 345 acres of forested habitat. The moist-soil habitat requires discing every two to three years to maintain desirable plant composition. For the functional operations of the entire water management system to work reliably, annual maintenance must be performed on the levees, water control structures, wells, and power units. This project includes monitoring equipment maintenance, water flow, water levels, pumping, etc., with a GIS database and other databases to more efficiently manage resources. This project will provide a maintenance worker to perform annual maintenance and the necessary equipment (180-hp tractor and disc, $100,000; and six-row planter, cultivator, 16-yard dirt pan, spray boom, and 15-foot flex-wing bush hog, $45,000). The total estimated first-year cost of this project is $287,000, with a recurring cost of $66,000. This project needs to be accomplished before the Refuge proceeds to Phase 2 reforestation. *(Linkages: Goal 1, Objectives 1 and 2; Goal 2, Objectives 4 and 5.)*

Project 6: Forest Habitat Management

An active forest management program will become increasingly important if the Refuge is to contribute to regional and national goals for migratory birds and the Louisiana black bear. A forest inventory has been conducted by contract foresters and Refuge staff via continuous forest inventory (CFI) plots. The development and implementation of a forest management plan is on hold until a forester can be hired or one can be detailed to Lake Ophelia Refuge from another refuge. CFI plots will be resampled in the future to track the forest composition and species diversity changes in response to time and management practices. Included in this project is a forester position to plan and implement forest management and inventory. This project needs to be implemented and a habitat management plan completed before the Refuge proceeds to Phase 2 reforestation. The estimated first-year cost of this project is $145,000, with a recurring cost of $74,000 per year. (*Linkages: Goal 2, Objectives 1 and 2; Goal 1, Objectives 1, 2, 4, and 6.)*

Project 7: Forest Monitoring and Inventory

This project complements Project 6 and will allow the completion, continuation, and monitoring of tasks identified by Project 6. Included in this project is a forestry technician position to implement forest management and assist with inventory and monitoring. The estimated first-year cost of this project is $135,000, with a recurring cost of $60,000 per year. *(Linkages: Goal 2, Objectives 1 and 2; Goal 1, Objectives 1, 2, 4, and 6.)*

Project 8: Wetland Reforestation

Prior to European settlement, the MAV contained over 24 million acres of bottomland hardwood forest that supported a wide variety of wildlife species. Today over 75 percent of the original forest has been lost to land clearing for agriculture, transportation, industrialization, and urbanization. The remaining 5.8 million acres of bottomland hardwoods lie in numerous isolated islands that are often surrounded by a sea of agriculture.

Reforestation of Refuge cropland and other non-forested lands surrounding the Refuge will contribute to regional and national objectives for waterfowl, forest-dwelling birds, and the Louisiana black bear. Refuge reforestation will follow a three-phased approach, where existing reforestation will be evaluated and replanted as appropriate and approximately 1,178 acres surplus cropland will be reforested. Phase 1 will be accomplished by implementing projects six and eight. No additional land will be reforested until an evaluation of all existing reforestation is completed, a plan is developed to meet minimum survival parameters of these plots, and additional plantings are completed, as necessary.

Phase 2 will commence when Phase 1 is complete. Projects four, five, and eight (in progress) must be implemented to complete this phase. Approximately 500 – 700 acres will be reforested in this phase. Phase 3 will begin when projects seven, eight (in progress), nine, and eleven are complete. The remaining cropland targeted for reforestation will be completed in this phase.

Project estimates include funding for evaluation, monitoring, equipment, planting materials, and contracted tree planting. The estimated cost of evaluation and reforestation is for a total cost of $176,000 over the next 15 years (4,588 acres of current reforestation evaluation and replanting and 1,178 acres of new reforestation). Much of the existing reforestation has been completed with carbon sequestration funds with little or no cost to the Service. Recurring costs associated with fire suppression, monitoring, and management will average $5 per acre per year. Ultimately, there is potential to reforest additional Refuge cropland if additional staffing and equipment resources are acquired, thus reducing the dependence on cooperative farming, and 13,000 acres of non-forested land in the surrounding Three Rivers SPOA could be reforested in future years (Figure 4-1). *(Linkages: Goal 2, Objectives 1-3; Goal 3, Objective 1 and 2.)*

Project 9: Heavy Equipment Package

This project will complete essential rehabilitation work on over 28 miles of roads and trails and 12 miles of levees. It will include the replacement of numerous collapsed culverts; graveling of damaged sections; installation or replacement of water control structures; building or repairing levees; purchases of essential heavy equipment to complete rehabilitation and development projects; and the removal of woody vegetation from road and levee shoulders. This work, along with the needed heavy equipment, is critical for restoring the Refuge's hydrology and enhancing its accessibility to the public. Necessary equipment includes an excavator with tree cutter attachment ($230,000); a gravel trailer ($35,000); 16-yard pull behind dirt scraper ($25,000); a road grader ($160,000); backhoe ($75,000); and a bulldozer ($150,000). This project needs to be accomplished before the Refuge proceeds with Phase 3, reforestation. The estimated first-year cost of this project is $675,000, with an annual recurring cost of $50,000. (*Linkage: Goals 1-4*.)

Project 10: Lake Ophelia Restoration

Lake Ophelia, a 350-acre, cypress-lined lake, is the namesake of the Refuge and at one time was a popular recreational fishing destination for people in Central Louisiana. However, during the drought in the

late 1990's Lake Ophelia went dry, thereby wiping out the native fishery and allowing a variety of invasive and exotic vegetation — including water hyacinth, hydrilla, and black willow trees—to infiltrate the lake. The excessive vegetation has caused very low dissolved oxygen levels during the summer, which has wiped out all re-stocking efforts. This project will restore the sport fish population in Lake Ophelia to a level that will sustain a recreational fishing program. Strategies will include control of all invasive and exotic plant species through chemical, biological, or mechanical techniques, enhanced water management capabilities, and re-stocking of sport fish as per guidelines set by Baton Rouge Fisheries Resource Office. The estimated cost is $150,000, with a recurring cost of $15,000 per year. (*Linkages: Goal 1, Objective 10; Goal 4, Objective 2.*)

Project 11: Control Invasive Plants

The Refuge's biological integrity is threatened by a variety of invasive plant species. This project will develop and implement an integrated pest management program (IPM) to control invasive plants. Invasive plant occurrence will be mapped and quantified. Appropriate IPM strategies will be used to control water hyacinth, hydrilla, and Eurasian water milfoil in all water bodies; alligator weed, *sesbania*, cocklebur, and Johnsongrass in moist soil and cropland fields; and Chinese tallow trees in reforestation areas. Strategies will include chemical, mechanical, and biological control techniques. This project will add a resource specialist position ($53,000). It needs to be fully operational before the Refuge proceeds to Phase 3 reforestation. The estimated cost is $137,000, with a recurring cost of $63,000 per year. *(Linkages: Goal 1, Objective 1; Goal 2, Objectives 3-5; Goal 4, Objectives 1 and 2.)*

LAND PROTECTION AND CONSERVATION

Project 12: Land Acquisition and Priority Areas of Conservation Interest

Through a combination of fee title purchases from willing sellers and leases, cooperative agreements and conservation easements with willing landowners, the Service will continue to purchase sufficient interest in the remaining 20,500 acres within the existing Refuge acquisition boundary. The Service will acquire sufficient interest in the identified lands to prevent conflicting land uses and to provide the management flexibility required to protect and manage the habitat as a national wildlife Refuge. Technical assistance will be provided to private landowners in the area interested in forest management, habitat management, and wildlife conservation. Completing this project will significantly reduce forest fragmentation and contribute to the biological integrity and environmental health of the entire Red River/Three Rivers Area. Additionally, this project will eliminate numerous small inholdings and consolidate Refuge boundaries, eliminating many administrative and public access issues. The acquired lands will be made available to the public for additional wildlife-dependent recreation. All acquisitions will be made from willing sellers. Potential funding sources for this project include the Migratory Bird Conservation Fund, Land and Water Conservation Fund, carbon sequestration and cooperative efforts with various Service partners. The estimated cost of this project is $25-50 million. *(Linkage: Goal 3, Objective 1.)*

Project 13: Boundary Line Surveys

Several portions of the current Refuge boundary have never been surveyed, and other portions have inadequate field points that preclude accurate boundary delineation. Registered surveys provide a legally defensible boundary line that is critical to resource protection and public relations, especially with regard to adjacent landowners. This project will fund surveys for approximately 40 miles of boundary line at an estimated cost of $5,000 per mile. The total cost of this project is $200,000, with a recurring cost of $3,000. *(Linkages: Goal 3, Objectives 1 and 3; Goal 4, Objective 1.)*

Project 14: Archaeological Survey

A comprehensive archaeological survey of Lake Ophelia National Wildlife Refuge will be conducted. This project is essential to meet Federal cultural resource mandates and will provide the baseline information needed for protection of existing resources and resource/public use development activities. The estimated first-year cost of this project is $123,000, with a recurring cost of $3,000. *(Linkage: Goal 3, Objective 3.)*

EDUCATION AND VISITOR SERVICES

Project 15: Visitor Services Program

Currently, Lake Ophelia Refuge offers limited opportunities for wildlife-dependent recreation due, primarily, to a lack of facilities and availability of staff to plan and implement a visitor services program. This project will add an outdoor recreation planner to organize and implement an overall visitor services program that will include hunting, fishing, wildlife observation and photography, and environmental education and interpretation. An office clerk position will be added to handle public use-related phone calls, process hunt applications, sell permits, and distribute brochures. Directional and interpretive signs will be developed and placed throughout the Refuge to accommodate all types of wildlife-dependent visitation. Programs and tours will be developed and provided to schools and other interested groups. Facilities will be developed for persons with disabilities. The estimated first-year cost of this project is $425,000, with a recurring cost of $129,000. (Linkage: Goal 4, Objectives 1-6.)

Project 16: Wildlife Observation and Interpretive Sites

Wildlife observation and interpretation sites will be developed for Duck Lake, Possum Bayou, and Point Basse. Each site will include parking, maintained trails with boardwalks, foot bridges (when necessary), interpretive panels, and observation blinds or platforms. Informational brochures and interpretive panels will describe the area's natural and cultural resources, Refuge management programs, and the National Wildlife Refuge System. The estimated cost of this project is $283,000, with a recurring cost of $13,000. (Linkage: Goal 4, Objectives 3-6.)

Project 17: Lake Ophelia Fishing and Interpretation Site

Lake Ophelia is a popular recreational fishing destination on the Refuge. However, inadequate public use facilities limit the public's opportunity to enjoy this 350-acre natural oxbow lake. This project will provide directional signs, an interpretive kiosk, an accessible trail and fishing pier, a parking area, and restrooms at the existing boat ramp site. Minimum public use standards will be met at this site. The estimated total cost for this project is $211,000, with a recurring cost of $8,000. *(Linkage: Goal 4, Objectives 2-6.)*

Project 18: Frazier/Whitehorse Oxbow Lake Access

Boat access facilities will be built on Lake Ophelia Refuge to provide public boat access to Frazier/Whitehorse Oxbow Lake. The Refuge adjoins this eight-mile-long lake for over three miles, but presently there are no public boat access facilities. This project will provide directional signs, an interpretive kiosk, a parking area, restrooms, and a concrete boat ramp. Completion of this project will provide Refuge visitors year-round access to over 300 acres of quality hunting, fishing, and wildlife observation opportunities. The cost of this project is estimated at $98,000, with a recurring cost of $6,000. *(Linkage: Goal 4, Objectives 1-6.)*

Project 19: Reconstruct Vehicle Access Roads

Poor access roads severely hamper public opportunities to visit and enjoy Lake Ophelia National Wildlife Refuge. Currently, Lake Long, Bucks, and Boones Roads are open to vehicular traffic and are the primary means of access to all wildlife-dependent recreational uses on the Refuge. Lake Long Road is being reconstructed using Federal Highways funds in fiscal year 2005, but must be maintained to ensure the $3.5 million investment is maintained. Bucks and Boones Roads have very little gravel, and poor drainage makes them impassable to all but four-wheel-drive vehicles during wet weather. This project will reconstruct Bucks and Boones Roads to minimum public use standards by raising the road beds, adding drainage culverts, and resurfacing with gravel. Bucks Road is 2.6 miles long and provides access to the southeast corner of the Refuge. The estimated cost to reconstruct Bucks Road is $1,272,000. Boones Road is 1.2 miles long with an estimated reconstruction cost of $682,000. Funding for road construction will be requested from the TEA-21 Refuge Roads fund. The total estimated cost of this project is $1.95 million, with an annual recurring cost of $12,000. *(Linkage: Goal 4, Objectives 1-6.)*

Project 20: Convert ATV Trails to Vehicle Access Roads

Currently, the only public access to several areas of the Refuge is by all-terrain vehicle (ATV) trail. Although this form of access is appropriate in some situations, access is limited to only those individuals who have an ATV. Several of the ATV trails lead to lakes or bayous where the Refuge has plans to develop environmental education and interpretation facilities. These trails were initially open to vehicular traffic when the Refuge was established, but were later restricted to ATVs in an effort to minimize road damage. This project will upgrade the following ATV trails to allow vehicular access: Duck Lake (4 miles), Westcut Lake (2.8 miles), and Dooms Lake (2 miles). Upgrading will consist of shaping the road beds, adding drainage culverts, and applying 6 inches of gravel. This project will allow all-weather vehicle access by the general public for hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Funding for upgrading trails to vehicular standards will be requested from the TEA-21 Refuge Roads fund. The estimated cost of this project is $1.4 million, with a recurring cost of $9,000. *(Linkage: Goal 4, Objectives 1-6.)*

Project 21: Upgrade Administrative Roads

The primary access roads to the Refuge's maintenance headquarters and major water control structures in the waterfowl management area are constructed of dirt. These dirt roads are used on a daily basis to transport equipment, monitor the water management system, and perform associated maintenance activities. The roads become impassable during wet weather and hinder Refuge management. Upgrading them will consist of shaping the road beds, adding culverts, and applying 6 inches of gravel. This project will ensure dependable all-weather access to perform critical Refuge operations and allow the development of compatible wildlife-dependent recreation in an area of the Refuge that is presently closed to the public. This project will include work on Bayou Jeansonne, First Cross Levee, and Shop Roads. The estimated first-year cost of this project is $1.8 million, with a recurring cost of $6,000. *(Linkages: Goal 4, Objectives 3-6; Goal 5, Objective 1.)*

REFUGE ADMINISTRATION

Project 22: Law Enforcement Package

The Refuge currently receives over 7,500 hunter visits annually and increased visitation is expected as the CCP is implemented. In addition, a major access road for through traffic dissects the Refuge and has consistently been a trouble spot for illegal hunting activities. The Central Louisiana National

Wildlife Refuge Complex currently only has 1 full-time law enforcement officer, covering 3 refuges which is insufficient to meet the demands of resource protection and visitor safety. This project will add 1 full-time office to the complex with shared responsibilities among all three refuges. First year cost of this project is $135,000, with a recurring cost of $60,000. (Linkages: Linkage: Goal 5, Objectives 1-2)

Project 23: Position Upgrades

The Central Louisiana National Wildlife Refuge Complex currently has a GS-0485-12/13 project leader, a GS-0485-11/12 deputy project leader, and a GS-0486-09/11 supervisory wildlife biologist positions covering 3 refuges which is insufficient to meet the demands of increased staff and management complexity associated with implementation of phase 3 of this CCP. This project will upgrade these current positions to a level commensurate with accreditation of duties. The estimated cost of this project is $50,000, with a recurring cost of $50,000. (Linkage: Goal 5, Objectives 1-2.)

Project 24: Vehicle Replacement

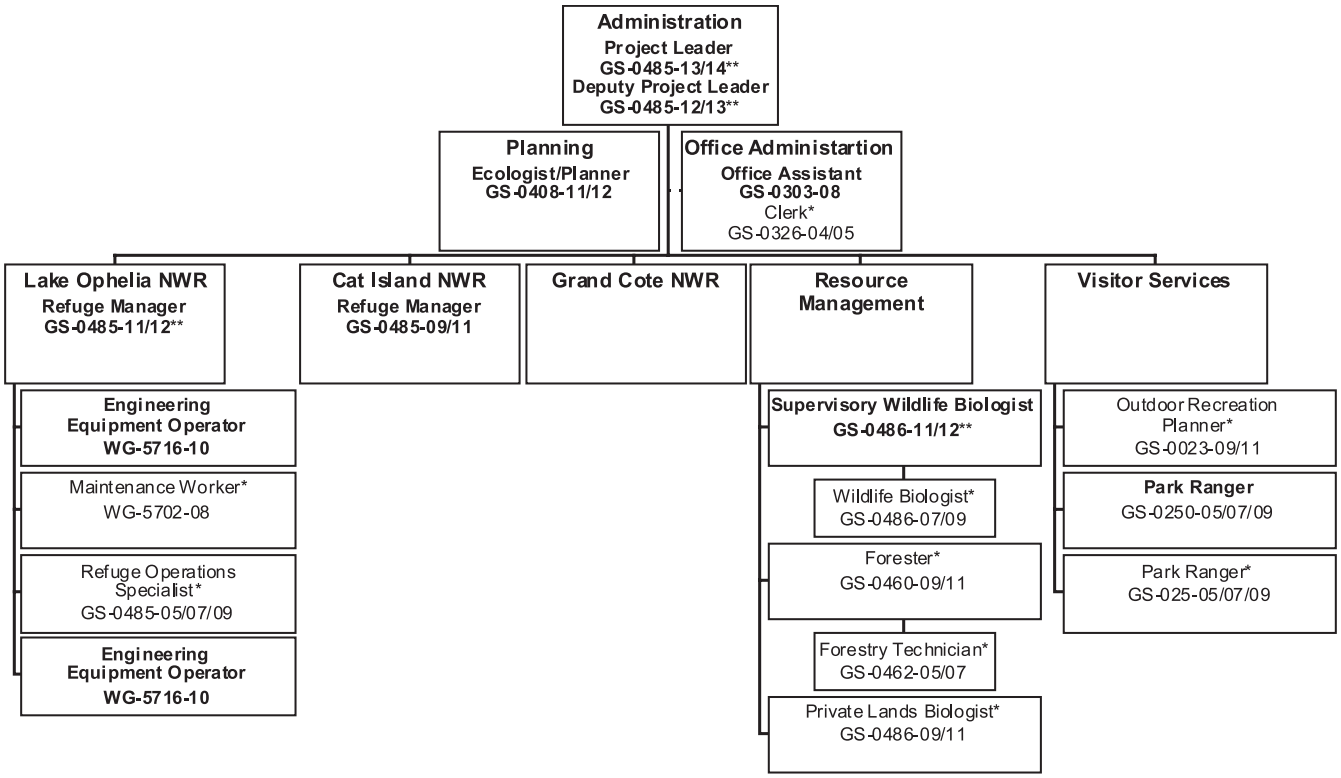
Refuge operations, maintenance, and law enforcement depend on reliable vehicles capable of travel both on- and off-road. The Refuge uses a combination of trucks, vans, ATVs, and boats for access. These vehicles are subjected to rough terrain and severe duty that effectively shorten their serviceable condition to less than five years. The Refuge needs to replace, on average, at least three vehicles and one ATV per year to maintain a safe and dependable vehicle fleet. The estimated cost of this project is $100,000, with a recurring cost of $100,000. *(Linkage: Goal 5, Objectives 1-2.)*

STAFFING AND FUNDING

Currently, a staff of ten permanent positions has been approved for the refuge complex and must share duties and responsibilities between the Lake Ophelia, Grand Cote, and Cat Island National Wildlife Refuges.

To complete the extensive wildlife habitat management and restoration projects and conduct the necessary inventorying, monitoring, and mapping activities, more staff are required. The proposed staffing plan (Figure 5-1) will enable the Refuge to achieve its plan objectives and strategies within a reasonable time. The annual cost (including salaries and benefits) will be $1.05 million. The rate at which this Refuge realizes its full potential to contribute locally, regionally, and nationally to wildlife conservation and appropriate wildlife-dependent recreation and environmental education is totally dependent upon receiving adequate staffing and funding.

Figure 5-1. Current and planned Central Louisiana National Wildlife Refuge Complex (Complex) staffing plan (Lake Ophelia National Wildlife Refuge and Complex-shared positions only).



* Indicates new position planned in CCP.
** Indicates upgraded position from currently approved position.

STEP-DOWN MANAGEMENT PLANS

A Comprehensive Conservation Plan is a strategic plan that guides the future direction of the Refuge. Before some of the strategies and projects can be implemented, detailed step-down management plans will need to be prepared or updated. To assist in preparing and implementing the step-down plans, the Refuge staff will develop partnerships with local agencies and organizations. These plans (Table 5-2) will be developed in accordance with the National Environmental Policy Act, which requires the identification and evaluation of alternatives and public review and involvement prior to their implementation.

Habitat Management Plan (Develop), Draft Completion 2006: This plan will describe the overall desired future habitat conditions needed to fulfill Refuge purpose and objectives. The plan will include three sections dealing with moist soil/water management units, forest, and croplands. Procedures, techniques and time tables for achieving desired future conditions will be developed into a overall plan.

Moist Soil/Water Management Plan (Update), Draft Completion 2005: This plan will describe the strategies and procedures (timing and duration of flooding and disturbance) for manipulating the Refuge's water management units to meet habitat management objectives.

Forest Management Plan (Develop), Draft Completion 2006: This plan will describe strategies for meeting Refuge forest management objectives. It will include direction on

reforestation, stand improvement, and harvest. Also, scrub/shrub habitat management will be addressed.

Cropland Management Plan (Update), Draft Completion 2006: This plan will describe management of Refuge agricultural lands. It will identify what crops will be grown, rotations, mechanical methods, chemical use, rent agreements, and how the program will meet wildlife management objectives. Also, it will detail how the three-phased progression away from cooperative farming will occur.

Integrated Pest Management Plan (Develop and Update), Draft Completion 2007: This plan will address the complex issue of bringing exotic and nuisance plants and animals to a maintenance control level on the Refuge. It will cover chemical pesticide use (aerial and ground application), mechanical eradication, and biological controls. The Nuisance/Exotic Animal and Plant control plans will be sections of this plan.

Table 5-2. Lake Ophelia National Wildlife Refuge step-down management plans arranged by issue sequence in the goals and objectives portion of the Comprehensive Conservation Plan.

Plan	Completion Date
Habitat Management	2006
Moist Soil/Water Management	2005
Forest Management	2006
Cropland Management	2006
Integrated Pest Management	2007
Nuisance Animal Control	2006
Exotic Plant Control	2007
Fire Management	2007
Visitor Services	2007
Environmental Education	2007
Fishing	2007
Hunting and Trapping	2007
Wildlife Observation and Photography	2007
Biological Inventory/Monitoring Plan	2006
Law Enforcement	2005

Note: Plans are shown in sequence according to goals and objectives listed in Chapter 4 of the Comprehensive Conservation Plan

Nuisance Animal Control Plan (Update), Draft Completion 2006: This plan (as part of the Integrated Pest Management Plan) will describe survey, removal or control, and monitoring techniques for both terrestrial and aquatic nuisance and exotic animals (vertebrate and invertebrate). Feral swine and beaver control will be included in this plan.

Exotic Plant Control Plan (Develop), Draft Completion 2007: This plan (as part of the Integrated Pest Management Plan) will describe survey, removal or control, and monitoring techniques for both terrestrial and aquatic nuisance and exotic plants.

Fire Management Plan (Update), Draft Completion 2007: This plan will describe wild and prescribed fire management techniques that will be employed on the Refuge. Wildfire control descriptions will include initial attack strategies and cooperative agreements with other agencies. Little reliance on prescribed fire is expected and its use will consist of burning brush piles, irrigation ditches, agricultural stubble, etc.

Visitor Services Plan (Develop), Draft Completion 2007: This plan will describe the Refuge's wildlife-dependent recreation, environmental education, and interpretation. Specific issues or items that will be addressed include facility requirements, site plans, and handicapped accessibility. The environmental education, fishing, hunting, and sign plans will be sections of this plan.

*Environmental Education Plan (*Develop), Draft Completion 2007: This plan will reflect the objectives and strategies of the Comprehensive Conservation Plan and address environmental education guidelines following Service standards.

Fishing Plan (Update), Draft Completion 2007: This plan (as part of the Visitor Services Plan) will address specific aspects of the Refuge's fishing program. It will define season structures, fish areas, methods, handicapped accessibility, facilities needed, and refuge-specific regulations.

Hunting and Trapping Plan (Update), Draft Completion 2007: This plan (as part of the Visitor Services Plan) will address specific aspects of the Refuge's hunting program. It will define species to be hunted/trapped, season structures, hunt areas, methods, all-terrain vehicle use, handicapped accessibility, facilities needed, and refuge-specific hunting regulations.

Wildlife Observation and Photography Plan (Update), Draft Completion 2007: This plan (as part of the Visitor Services Plan) will describe the Refuge's strategy for informing visitors via signage. It will incorporate Service guidelines.

Biological Inventory/Monitoring Plan (Develop), Draft Completion 2006: This plan will describe inventory and monitoring techniques and time frames. All plant communities and associations in the Refuge as well as all trust species (migratory birds including songbirds, Neotropical migratory birds, and waterfowl), listed species (Federal and State threatened, endangered and species of concern), and key resident species shall be inventoried, and population trends will be monitored. These data are essential to guide the management of wildlife populations, habitat, and wildlife-dependent public use on the Refuge.

Law Enforcement Plan (Update), Draft Completion 2005: This plan will provide a reference to station policies, procedures, priorities, and programs concerning law enforcement.

PARTNERSHIP OPPORTUNITIES

A major objective of this Comprehensive Conservation Plan is to establish partnerships with local volunteers, landowners, private organizations, and State and Federal natural resource agencies. In the immediate vicinity of the Refuge, opportunities exist to establish partnerships with sporting clubs, elementary and secondary schools, and community organizations. At regional and State levels, partnerships might be established with organizations such as the Louisiana Department of Wildlife and Fisheries, Roy Martin Lumber Company, Bayou State Bowhunters, The Nature Conservancy, Ducks Unlimited, National Audubon Society, Ruffed Grouse Society, and National Wild Turkey Federation.

The Refuge volunteer program and other partnerships generated will depend upon the number of staff positions the Service provides the Refuge. As staff and resources are committed to the Refuge, opportunities to expand the volunteer program and develop partnerships will be enhanced.

MONITORING AND EVALUATION

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 survey, inventory, 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, the Refuge's Comprehensive Conservation Plan will be revised. Specific monitoring and evaluation activities will be described in the step-down management plans.

PLAN REVIEW AND REVISION

This Comprehensive Conservation Plan will be reviewed annually 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. The final plan will be augmented by detailed step-down management plans to address the completion of specific strategies in support of the Refuge's goals and objectives. Revisions to the Comprehensive Conservation Plan and the step-down management plans will be subject to public review and NEPA compliance.

SECTION C. APPENDICES

Appendix I. Glossary

Adaptive Management	A process in which projects are implemented within a framework of scientifically driven experiments to test predictions and assumptions outlined within the Comprehensive Conservation Plan. The analysis of the outcome of project implementation helps managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.
Alternative	Alternatives are different means of accomplishing refuge purposes, goals, and objectives and contributing to the National Wildlife Refuge System. An alternative is a reasonable way to fix the identified problem or satisfy the stated need.
Approved Acquisition Boundary	A project boundary which the Director of the Fish and Wildlife Service approves upon completion of the detailed planning and environmental compliance process.
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. The National Wildlife Refuge System focus is on indigenous species, biotic communities, and ecological processes.
Biological Integrity	The biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms, and communities.
Canopy	A layer of foliage, generally the upper-most layer, in a forest stand. The term can be used to refer to mid- or under-story vegetation in multi-layered stands. Canopy closure is an estimate of the amount of overhead tree cover (also "canopy cover").
Categorical Exclusion	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 of 1969.
CFR	Code of Federal Regulations.
Compatible Use	A wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Refuge Manager, will not materially interfere with, or detract from, the fulfillment of the mission or the purposes of the refuge. A compatibility determination supports the selection of compatible uses and identifies stipulations or limits necessary to ensure compatibility.

Comprehensive Conservation Plan	A document that describes the desired future conditions of the refuge; provides long-range guidance and management direction for the Refuge Manager to accomplish the purposes, goals, and objectives of the refuge; and contributes to the mission of the National Wildlife Refuge System and meet relevant mandates.
Conservation Easement	A legal document that provides specific land-use rights to a secondary party. A perpetual conservation easement usually grants conservation and management rights to a party in perpetuity.
Cooperative Agreement	A simple habitat protection action in which no property rights are acquired. An agreement is usually long-term and can be modified by either party. Lands under a cooperative agreement do not necessarily become part of the National Wildlife Refuge System.
Corridor	A route that allows movement of individuals from one region or place to another.
Cover Type	The present vegetation of an area.
Cultural Resources	The remains of sites, structures, or objects used by people of the past.
Cypress and Tupelo Swamp	Found in low-lying areas–swales and open ponds–that hold water several months, if not all of the year. Large hollow trees are used as bear den sites.
Deciduous	Pertaining to perennial plants that are leafless for some time during the year.
Dominant Tree	Tree whose canopy is above height of main forest canopy. Crown receives full sunlight on at least three sides.
Ecological Succession	The orderly progression of an area through time in the absence of disturbance from one vegetative community to another.
Ecosystem	A dynamic and interrelating complex of plant and animal communities and their associated non-living environment.
Ecosystem Management	Management of natural resources using systemwide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and that basic ecosystem processes are perpetuated indefinitely.
Emergent Tree	Tree whose height is well above main forest canopy height. It may be a relic from previous forest stand or a faster growing species of same age class.
Endangered Species	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.

Endemic Species	Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.
Even-Aged Forests	Forests that have two or fewer age classes of trees.
Environmental Health	The composition, structure, and functioning of soil, water, air, and other abiotic features comparable with historic conditions, including the natural abiotic processes that shape the environment.
Environmental Assessment	A concise document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action as well as 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.
Fauna	All the vertebrate and invertebrate animals of an area.
Federal Trust Species	All species for which the Federal government has primary jurisdiction, including federally threatened or endangered species, migratory birds, anadromous fish, and certain marine mammals.
Fee-title	The acquisition of most or all of the rights to a tract of land. There is a total transfer of property rights with the formal conveyance of a title. While a fee title acquisition involves most rights to a property, certain rights may be reserved or not purchased, including water rights, mineral rights, or use reservation (the ability to continue using the land for a specified time period, or the reminder of the owner's life).
Finding of No Significant Impact	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 states that an environmental impact statement, therefore, will not be prepared.
Floodplain Woods	Bottomland hardwood forests. Consists of hardwoods (old growth and mid-succession-age timber) cypress tupelo stands found on low ridges that drain slowly and are subject to flooding. Group includes overcup, willow, water oaks, sweetgum, and green ash. Old growth trees typically exceeding 120 years of age. Red oaks were removed in the 1940s. Mid-succession trees are logged timber that may need restoration to improve wildlife habitat.
Fragmentation	The process of reducing the size and connectivity of habitat patches. The disruption of extensive habitats into isolated and small patches.

Goal	Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units.
Geographic Information System	A computer system capable of storing and manipulating spatial data.
Ground Story (flora)	Vascular plants less than one meter in height, excluding tree seedlings.
Habitat	The place where an organism lives. The existing environmental conditions required by an organism for survival and reproduction.
Herbaceous Wetland	Land annually or seasonally inundated with vegetation consisting primarily of grasses, sedges, rushes, and cattail.
Historic Conditions	The composition, structure, and functioning of ecosystems resulting from natural processes that we believe, based on sound professional judgment, were present prior to substantial human-related changes to the landscape.
Indicator Species	A species of plant or animals that is assumed to be sensitive to habitat changes and represents the needs of a larger group of species.
Inholding	Privately owned land inside the boundary of a national wildlife refuge.
Issue	Any unsettled matter that requires a management decision.
Migratory	The seasonal movement from one area to another and back.
Moist-soil Management	The technique of using water management structures in seasonally flooded impoundments to stimulate the production of natural plant species on exposed mudflats by regulating the timing of water removal in the spring.
Monitoring	The process of collecting information to track changes of selected parameters over time.
National Environmental Policy	A Federal law that requires all agencies, including the
Act of 1969	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 this Act with other planning requirements, and prepare appropriate policy documents to facilitate better environmental decision making.
National Wildlife Refuge	A designated area of land, water, or an interest in land or water within the National Wildlife Refuge System.
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. The Refuge System includes all lands,

	waters, and interests therein administered by the Secretary as wildlife refuges, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas.
Native Species	Species that normally live and thrive in a particular ecosystem.
Neotropical Migratory Bird	A bird species that breeds north of the United States/Mexican border and winters primarily south of that border.
Objective	An objective is a concise quantitative (where possible) target statement of what will be achieved. Objectives are derived from goals and provide the basis for determining management strategies. Objectives should be attainable and time-specific.
Planning Area	A planning area may include lands outside existing planning unit boundaries that are being studied for inclusion in the unit and/or partnership planning efforts. It may also include watersheds or ecosystems that affect the planning area.
Planning Team	A planning team prepares the Comprehensive Conservation Plan. Planning teams are interdisciplinary in membership and function. A team generally consists of the a planning team leader; refuge manager and staff biologists; staff specialists or other representatives of Service programs, ecosystems or regional offices; and State partnering wildlife agencies as appropriate.
Preferred Alternative	This is the alternative determined by the decision maker to best achieve the refuge purpose, vision, and goals; it contributes to the Refuge System mission, addresses the significant issues, and is consistent with principles of sound fish and wildlife management.
Purpose of the Refuge	The purpose of the refuge is 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 and refuge unit.
Refuge Operating Needs System	This is a national database which contains the unfunded operational needs of each refuge. Projects included are those required to implement approved plans and meet goals, objectives, and legal mandates.
Refuge Purposes	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 subunit.
Selection Harvesting	Form of uneven-age management where individual trees or groups of trees are removed during a harvesting operation.

Seral Forest	A forest in the mature stage of development, usually dominated by large, old trees.
Sink	A habitat in which local mortality exceeds local reproductive success for a given species.
Sink Population	A population in a low-quality habitat in which the birth rate is generally less than the death rate and population density is maintained by immigrants from source populations.
Source	A habitat in which local reproductive success exceeds local mortality for a given species.
Source Population	A population in a high-quality habitat in which birth rate greatly exceeds death rate and the excess individuals leave as migrants.
SPOA	Source Population Objective Area.
Step-Down Management Plans	Step-down management plans provide the details necessary to implement management strategies and projects identified in the Comprehensive Conservation Plan.
Strategy	A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives.
Threatened Species	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.
Timber Stand Improvement	Refers to intermediate stand treatment in even-age stands to improve stand characteristics.
Trust Species	Species for which the Fish and Wildlife Service has primary responsibility, including most federally listed threatened and endangered species, anadromous fish once they enter the inland coastal waterways, and migratory birds.
Understory	Any vegetation with canopy below or closer to the ground than canopies of other plants.
Uneven-Aged Forest	Forests that has three or more age classes of trees.
Wildlife Corridor	A landscape feature that facilitates the biologically effective transport of animals between larger patches of habitat dedicated to conservation functions. Such corridors may facilitate several kinds of traffic, including frequent foraging movement, seasonal migration, and the once-in-a-lifetime dispersal of juvenile animals. These are transition habitats and need not contain all the habitat elements required by migrants for long-term survival or reproduction.

Wildlife-Dependent Recreation A use of a refuge involving hunting, fishing, wildlife observation or photography, or environmental education or interpretation. The National Wildlife Refuge System Improvement Act of 1997 specifies that these are the six priority general public uses of the Refuge System.

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Appendix III. Relevant Legal Mandates

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

As part of this responsibility, the Service manages the National Wildlife Refuge System. This system is the only nationwide system of Federal land managed and protected for wildlife and their habitats. The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Lake Ophelia National Wildlife Refuge is managed as part of this system in accordance with the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, the Refuge Recreation Act of 1962, Executive Order 12996 (Management and General Public Use of the National Wildlife Refuge System), Biological Integrity, Diversity, and Environmental Health Policy, and other relevant legislation, Executive Orders, regulations, and policies.

Key Legislation/Policies for Plan Implementation
The Lake Ophelia National Wildlife Refuge Comprehensive Conservation Plan describes and illustrates management area projects with standards and guidelines for future decision making and may be adjusted through monitoring and evaluation, as well as amendment and revision. The plan approval establishes conservation and land protection goals, objectives, and specific strategies for the Refuge and its expansion. Compatible recreation uses specific to the Refuge have been identified and approved by the Refuge Manager. This plan provides for systematic stepping down from the overall direction as outlined when making project- or activity-level decisions. This level involves site-specific analysis (e.g., Forest Habitat Management Plan) to meet National Environmental Policy Act requirements for decision making.

The legal mandates supporting the National Wildlife Refuge System are as follows:

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a Federal responsibility. This act enables the setting of seasons, and other regulations including the closing of areas, federal or non-federal, to the hunting of migratory birds.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Fish and Wildlife Coordination Act (1958): Allows the Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Land and Water Conservation Fund Act (1965): Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

Architectural Barriers Act (1968): Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

Rehabilitation Act (1973): Requires that programmatic and physical accessibility be made available in any facility funded by the Federal government, ensuring that anyone can participate in any program.

Clean Water Act (1977): Requires consultation with the U.S. Army Corps of Engineers for major wetland modifications.

Executive Order 11988 (1977): Requires every Federal agency to provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and to preserve the natural and beneficial values served by the floodplain.

Executive Order 11990: Directs Federal agencies to (1) minimize destruction, loss, or degradation of wetlands and (2) preserve and enhance the natural and beneficial values of wetlands when a practical alternative exists.

Emergency Wetlands Resources Act (1986): The purpose of the act is "To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes."

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species; requires an interdisciplinary approach with the cooperation of other Federal and State agencies.

Americans with Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the Refuge System.

Executive Order 13007, Indian Sacred Sites (1996): Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Emergency Wetland 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 also requires the Secretary of the Interior to establish a National Wetlands Priority Conservation Plan, requires the states to include wetlands in their Comprehensive Outdoor Recreation Plans, and transfers to the Migratory Bird Conservation Fund an amount equal to import duties on arms and ammunition. Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended: Public Law 93-205,

approved December 28, 1973, repealed the Endangered Species Conservation Act of December 5,1969 (P.L. 91-135, 83 Stat. 275). The 1969 act amended the Endangered Species Preservation Act of October 15, 1966 (P.L. 89-669, 80 Stat. 926). The 1973 Endangered Species Act provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend, both through Federal action and by encouraging the establishment of State programs. The act authorizes the determination and listing of species as threatened and endangered; prohibits unauthorized taking, possession, sale, and transport of endangered species; provides authority to acquire land for the conservation of listed species, using land and water conservation funds; authorizes establishment of cooperative agreements and grants-in-aid to States that establish and maintain active and adequate programs for threatened and endangered wildlife and plants; authorizes the assessment of civil and criminal penalties for violating the act or regulations that implement it; and authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction of anyone violating the act and any regulation issued thereunder.

Environmental Education Act of 1990 (20 USC 5501-5510; 104 Stat. 3325): Public Law 101-619, signed November 16,1990, established the Office of Environmental Education within the Environmental Protection Agency to develop and administer a Federal environmental education program. Responsibilities of the office include developing and supporting programs to improve understanding of the natural and developed environment, and the relationships between humans and their environment; supporting the dissemination of educational materials; developing and supporting training programs and environmental education seminars; managing a Federal grant program; and administering an environmental internship and fellowship program. The Office is required to develop and support environmental programs in consultation with other Federal natural resource management agencies, including the Fish and Wildlife Service.

Executive Order 11988, Floodplain Management: The purpose of this executive order, signed May 24, 1977, 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 flood plains."

Fish and Wildlife Improvement Act of 1978: This act was passed to improve the administration of fish and wildlife programs; it and amends several earlier laws, including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary of the Interior 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.

Historic Preservation Acts include:

- Archaeological Resources Protection Act (16 U.S.C. 470aa - 47011) — Public Law 96-95, approved October 31, 1979, (93 Stat. 721) largely supplanted the resource protection provisions of the Antiquities Act for archaeological items. This act established detailed requirements for issuance of permits for any excavation for or removal of archaeological resources from Federal and Indian lands. It also established civil and criminal penalties for the unauthorized excavation, removal, or damage of any such resources; for any trafficking in such resources removed from federal and Indian lands in violation of any provision of federal law; and for interstate and foreign commerce in such resources acquired, transported, or received in violation of any State or local law.

- Public Law 100-588, approved November 3, 1988, (102 Stat. 2983) lowered the threshold value of artifacts triggering the felony provisions of the act from $5,000 to $500, made attempting to commit

an action prohibited by the act a violation, and required the land-managing agencies to establish public awareness programs regarding the value of archaeological resources to the nation.

- Archaeological and Historic Preservation Act (16 U.S.C. 469-469c)—Public Law 86-523, approved June 27, 1960, (74 Stat. 220), and amended by Public Law 93-291, approved May 24, 1974, (88 Stat. 174), directed Federal agencies to notify the Secretary of the Interior whenever a Federal, federally assisted, or licensed or permitted project may cause loss or destruction of significant scientific, prehistoric, or archaeologic data. The act authorized use of appropriated, donated, and/or transferred funds for the recovery, protection, and preservation of such data.

- Historic Sites, Buildings, and Antiquities Act (16 U.S.C. 461-462, 464-467)--The act of August 21,1935, (49 Stat. 666) popularly known as the Historic Sites Act, as amended by Public Law 89-249, approved October 9,1965, (79 Stat. 971), declared it a national policy to preserve historic sites and objects of national significance, including those located on refuges. It provided procedures for designation, acquisition, administration, and protection of such sites. Among other things, National Historic and Natural Landmarks are designated under authority of this act. As of January, 1989, thirty-one national wildlife refuges contained such sites.

- National Historic Preservation Act of 1966 (16 U.S.C. 470-470b, 470c-470n)—Public Law 89-665, approved October 15,1966, (80 Stat. 915) and repeatedly amended, provided for preservation of significant historical features (buildings, objects, and sites) through a grant-in-aid program to the states. It established a National Register of Historic Places and a program of matching grants under the existing National Trust for Historic Preservation (16 U.S.C. 468-468d).

- The act established an Advisory Council on Historic Preservation, which was made a permanent independent agency in Public Law 94-422, approved September 28,1976 (90 Stat. 1319). That act also created the Historic Preservation Fund. Federal agencies are directed to take into account the effects of their actions on items or sites listed in, or eligible for listing in, the National Register of Historic Places. As of January 1989, ninety-one such sites on national wildlife refuges are listed in this register.

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 of land acquisition under several authorities. Appropriations from the fund may be used for matching grants to states for outdoor recreation projects and for land acquisition by various Federal agencies, including the Fish and Wildlife Service.

Migratory Bird Hunting and Conservation Stamp Act (16 U.S.C. 718-718j, 48 Stat. 452), as amended: The "Duck Stamp Act," of March 16,1934, authorizes the opening of part of a refuge to waterfowl hunting and requires each waterfowl hunter 16 years of age or older to possess a valid Federal hunting stamp. Receipts from the sale of the stamp are deposited in a special Treasury account known as the Migratory Bird Conservation Fund and are not subject to appropriations.

National and Community Service Act of 1960 (42 U.S.C. 12401:104 Stat. 3127), Public Law 101-610, signed November 16,1990, authorizes several programs to engage citizens of the United States in full- and/or part-time projects designed to combat illiteracy and poverty, provide job skills, enhance educational skills, and fulfill environmental needs. Several provisions are of particular interest to the Fish and Wildlife Service.

Native American Graves Protection and Repatriation Act (1990): Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

American Conservation and Youth Service Corps: A Federal grant program established under Subtitle C of the law, the Corps offers an opportunity for young adults between the ages of 16-25, or in the case of summer programs, 15-21, to engage in approved human and natural resources projects which benefit the public or are carried out on federal or Indian lands. To be eligible for assistance, natural resource programs must focus on improvement of wildlife habitat and recreational areas, fish culture, fishery assistance, erosion, wetlands protection, pollution control, and similar projects. A stipend of not more than 100 percent of the poverty level will be paid to participants. A Commission established to administer the Youth Service Corps will make grants to States, the Secretaries of Agriculture and Interior, and the Director of ACTION to carry out these responsibilities.

National Environmental Policy Act of 1959 (P.L. 91-190,42 U.S.C. 4321-4347, January 1, 1970, 83 Stat. 852) as amended by Public Law 94-52, July 3, 1975, 89 Stat. 258, and Public Law 94-83, August 9,1975, 89 Stat. 424). Title I of the 1969 National Environmental Policy Act requires that all Federal agencies prepare detailed environmental impact statements for "every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment." The 1969 statute stipulated the factors to be considered in environmental impact statements, and required that Federal agencies employ an interdisciplinary approach in related decision making and develop means to ensure that unquantified environmental values are given appropriate consideration, along with economic and technical considerations. Title II of this statute requires annual reports on environmental quality from the President to the Congress, and established a Council on Environmental Quality in the Executive Office of the President with specific duties and functions.

National Wildlife Refuge System Improvement Act of 1997 (Refuge Administration Act), Public Law 105-57, amends the National Wildlife Refuge System Act of 1966 (16 U.S.C. 668dd-ee) and provides guidance for management and public use of the Refuge System. The act defines the National Wildlife Refuge System and authorizes the Secretary of the Interior to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. It mandates that the Refuge System be consistently directed and managed as a national system of lands and waters devoted to wildlife conservation and management. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System. It establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); these activities are to be promoted on the Refuge System, while all non-wildlife-dependent uses are subject to compatibility determinations. The act establishes a formal process for determining compatibility; a compatible use is one which, in the sound professional judgment of the Refuge Manger, will not materially interfere with, or detract from, fulfillment of the National Wildlife Refuge System Mission or refuge purpose(s). The act establishes the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; and requires a comprehensive conservation plan for each refuge by the year 2012. As stated in the act, "The mission of the system is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." The act also requires development of a comprehensive conservation plan for each refuge and that management be consistent with the plan. When writing a plan for expanded or new refuges, and when making management decisions, the act requires effective coordination with other Federal agencies, State fish and wildlife or conservation agencies, and refuge neighbors. A refuge must also provide opportunities for public involvement when making a compatibility determination.

North American Wetlands Conservation Act (103 Stat. 1968; 16 U.S.C. 4401-4412) Public Law 101-233, enacted December 13, 1989, provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on Wetlands between

Canada, the United States, and Mexico. The act converts the Pittman-Robertson account into a trust fund, with the interest available without appropriation through the year 2006, to carry out the programs authorized by the act, along with an authorization for annual appropriation of $15 million plus an amount equal to the fines and forfeitures collected under the Migratory Bird Treaty Act. Available funds may be expended, upon approval of the Migratory Bird Conservation Commission, for payment not to exceed 50 percent of the United States' share of the cost of wetlands conservation projects in Canada, Mexico, or the United States (or 100 percent of the cost of projects on Federal lands). At least 50 percent and no more than 70 percent of the funds received are to go to Canada and Mexico each year.

Refuge Recreation Act of 1952: 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 acquisition of land for incidental fish- and wildlife- oriented recreational development or protection of natural resources. It also authorizes the charging of fees for public uses.

Refuge Revenue Sharing Act (16 U.S.C. 715s) Section 401 of the act of June 15,1935, (49 Stat. 383) provided for payments to counties in lieu of taxes, using revenues derived from the sale of products from refuges. Public Law 88-523, approved August 30,1964, (78 Stat. 701) made major revisions to the Refuge Revenue Sharing Act by requiring that all revenues received from refuge products, such as animals, timber and minerals, or from leases or other privileges, be deposited in a special Treasury account and net receipts distributed to counties for public schools and roads. Public Law 93-509, approved December 3,1974, (88 Stat. 1603) required that moneys remaining in the fund after payment be transferred to the Migratory Bird Conservation Fund for land acquisition under provisions of the Migratory Bird Conservation Act. Public Law 95-469, approved October 17, 1978, (92 Stat. 1319) expanded the revenue-sharing system to include National Fish Hatcheries and Service research stations. It also included in the Refuge Revenue Sharing Fund receipts from the sale of salmonid carcasses. Payments to counties were established as follows: on acquired land, the greatest amount calculated on the basis of 75 cents per acre, three-fourths of one percent of the appraised value, or 25 percent of the net receipts produced from the land; and on land withdrawn from the public domain, 25 percent of net receipts and basic payments under Public Law 94-565 (31 U.S.C. 1601-1607, 90 Stat. 2662). This amendment also authorized appropriations to make up any difference between the amount in the fund and the amount scheduled for payment in any year. The stipulation that payments be used for schools and roads was removed, but counties were required to pass payments along to other units of local government within the county which suffer losses in revenues due to the establishment of Service areas.

Wilderness Act of 1954: Public Law 88-577, approved September 3, 1964, directed the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park Systems for inclusion in the National Wilderness Preservation System.

Appendix IV. Refuge Biota

Birds
Total species 183; Breeding species 66

Common Name	*Spring March – May*	*Summer May –August*	*Fall Sept–Nov*	*Winter Dec–Feb*
Pied-billed Grebe	u	c	c	u
White Pelican	r	o	o	r
Double-crested Cormorant	u	u	c	r
Anhinga*	c	c	u	r
American Bittern	o	r	r	-
Great Blue Heron*	c	c	c	c
Great Egret*	c	c	c	o
Snowy Egret*	u	c	c	o
Little Blue Heron*	u	c	c	-
Tricolored Heron*	o	o	o	-
Cattle Egret*	c	a	a	o
Green Heron*	u	c	c	-
Black-crowned Night-Heron	-	r	r	-
Yellow-crowned Night-Heron*	u	c	u	-
White Ibis	u	o	u	r
Glossy Ibis	-	r	r	-
Roseate Spoonbill	-	o	o	-
Wood Stork	-	o	o	-
Black Vulture*	c	c	c	c
Turkey Vulture*	c	c	c	c
Fulvous Whistling-Duck	-	r	-	-
Black-bellied Whistling-Duck*	u	u	-	-
Greater White-fronted Goose	r	-	c	c
Snow Goose	r	-	c	c
Canada Goose	r	-	r	r
Wood Duck*	c	c	c	c
Green-winged Teal	o	r	a	c
American Black Duck	r	-	o	o
Mottled Duck	r	r	o	o
Mallard	o	r	a	a
Northern Pintail	r	-	a	u
Blue-winged Teal	o	o	c	o
Northern Shoveler	c	-	o	c

a =abundant c =common u =uncommon o =occasional r =rare
**species with confirmed breeding records*

Common Name	*Spring March – May*	*Summer May –August*	*Fall Sept–Nov*	*Winter Dec–Feb*
Gadwall	c	-	o	c
American Wigeon	c	-	o	c
Canvasback	-	-	o	r
Redhead	-	-	-	r
Ring-necked Duck	-	-	c	a
Lesser Scaup	-	-	r	r
Common Goldeneye	-	-	-	r
Hooded Merganser*	u	u	o	o
Ruddy Duck	-	-	-	r
Osprey	o	o	o	r
Swallow-tailed Kite	r	-	-	-
Mississippi Kite	o	u	-	-
Bald Eagle	o	r	o	o
Northern Harrier*	c	c	c	c
Sharp-shinned Hawk	-	-	o	o
Cooper 's Hawk	-	o	o	o
Red-shouldered Hawk*	c	c	c	c
Broad-winged Hawk	r	r	o	r
Red-tailed Hawk*	c	u	c	c
Golden Eagle	-	-	-	r
Crested Caracara	r	-	-	-
American Kestrel	o	o	o	r
Merlin	-	-	o	r
Peregrine Falcon	-	-	r	r
Wild Turkey*	u	u	u	u
Northern Bobwhite*	u	o	u	u
King Rail	r	r	r	r
Sora	r	-	r	r
Purple Gallinule	r	r	r	r
Common Moorhen*	u	u	u	-
American Coot	c	r	u	c
Sandhill Crane	-	-	o	o
Killdeer*	c	c	c	c
Black-necked Stilt	o	u	o	-
Greater Yellowlegs	o	o	o	o
Lesser Yellowlegs	c	c	o	o
Solitary Sandpiper	o	r	r	-

a =abundant c =common u =uncommon o =occasional r =rare
**species with confirmed breeding records*

Common Name	*Spring March – May*	*Summer May –August*	*Fall Sept–Nov*	*Winter Dec–Feb*
Willet	-	r	-	-
Semipalmated Sandpiper	o	u	o	-
Least Sandpiper	u	u	o	-
Pectoral Sandpiper	r	r	o	-
Dunlin	o	-	-	r
Stilt Sandpiper	-	o	-	-
Short-billed Dowitcher	o	-	r	o
Long-billed Dowitcher	-	r	r	r
Common Snipe	c	-	o	c
American Woodcock	r	-	r	u
Herring Gull	-	-	-	r
Rock Dove	o	o	o	os
Eurasian Collared-Dove	-	r	-	-
Mourning Dove*	c	c	a	a
Common Ground-Dove	r	-	r	o
Black-billed Cuckoo	r	-	r	-
Yellow-billed Cuckoo*	c	c	-	-
Groove-billed Ani	-	-	r	-
Common Barn Owl	r	r	r	r
Eastern Screech Owl*	u	u	u	u
Great Horned Owl*	u	u	u	u
Barred Owl*	c	c	c	c
Chimney Swift	-	r	-	-
Ruby-throated Hummingbird*	o	o	o	-
Belted Kingfisher*	u	u	u	u
Red-headed Woodpecker*	u	u	u	u
Red-bellied Woodpecker*	c	c	c	c
Yellow-bellied Sapsucker	c	-	u	c
Downy Woodpecker*	c	c	c	c
Hairy Woodpecker*	u	u	u	u
Northern Flicker*	c	u	u	a
Pileated Woodpecker*	c	c	c	c
Eastern Wood-Pewee*	u	u	u	-
Acadian Flycatcher*	c	c	c	-
Eastern Phoebe	u	o	o	c
Vermillion Flycatcher	-	-	r	o
Great Crested Flycatcher*	c	c	c	-
Eastern Kingbird*	o	o	o	-

a =abundant c =common u =uncommon o =occasional r =rare
**species with confirmed breeding records*

Common Name	*Spring March – May*	*Summer May –August*	*Fall Sept–Nov*	*Winter Dec–Feb*
Scissor-tailed Flycatcher	-	-	r	r
Loggerhead Shrike	c	u	u	u
White-eyed Vireo*	c	c	c	r
Blue-headed Vireo	r	-	r	u
Yellow-throated Vireo*	o	o	o	-
Red-eyed Vireo*	c	c	c	-
Blue Jay*	c	c	c	c
American Crow*	c	c	a	a
Fish Crow	c	c	o	o
Horned Lark	o	-	r	o
Purple Martin*	r	r	-	-
Tree Swallow	c	u	c	-
Northern Rough-winged Swallow	c	u	c	r
Barn Swallow	c	u	u	-
Carolina Chickadee*	c	c	c	c
Tufted Titmouse*	c	u	u	c
White-breasted Nuthatch	u	-	-	u
Carolina Wren*	c	c	c	c
House Wren	r	-	r	u
Winter Wren	o	-	r	u
Golden-crowned Kinglet	c	-	o	c
Ruby-crowned Kinglet	c	-	o	c
Blue-gray Gnatcatcher*	u	u	u	u
Eastern Bluebird	c	u	c	c
Hermit Thrush	o	-	o	u
Wood Thrush	u	u	r	-
American Robin	a	u	u	a
Gray Catbird	u	-	u	r
Northern Mockingbird*	a	a	a	a
Brown Thrasher*	c	c	c	c
Cedar Waxwing	o	-	-	o
European Starling*	c	c	c	c
Orange-crowned Warbler	r	-	r	o
Nashville Warbler	-	-	r	-
Northern Parula*	u	u	o	-
Yellow-rumped Warbler	u	-	-	c
Yellow-throated Warbler	u	u	u	-
Pine Warbler	-	-	o	r

a =abundant c =common u =uncommon o =occasional r =rare
**species with confirmed breeding records*

Common Name	*Spring March – May*	*Summer May –August*	*Fall Sept–Nov*	*Winter Dec–Feb*
Black-and-White Warbler	o	-	o	-
American Redstart	o	o	o	-
Prothonotary Warbler*	c	c	c	r
Swainson 's Warbler	r	-	r	r
Common Yellowthroat*	u	u	o	o
Hooded Warbler*	c	c	c	-
Yellow-breasted Chat*	r	o	r	-
Summer Tanager*	c	c	o	-
Scarlet Tanager	r	-	-	-
Northern Cardinal*	a	a	a	a
Blue Grosbeak*	u	-	-	u
Indigo Bunting*	c	c	u	-
Painted Bunting*	c	c	u	-
Dickcissel*	o	o	-	-
Eastern Towhee*	u	u	u	u
Chipping Sparrow	u	u	u	u
Field Sparrow	u	u	u	u
Vesper Sparrow	r	-	r	o
Savannah Sparrow	-	-	r	r
Grasshopper Sparrow	-	-	r	r
Fox Sparrow	-	-	-	r
Song Sparrow	c	-	-	c
Lincoln's Sparrow	-	-	-	r
Swamp Sparrow	r	-	r	u
White-throated Sparrow	r	-	u	c
White-crowned Sparrow	-	-	r	r
Dark-eyed Junco	-	-	u	c
Bobolink	r	-	r	-
Red-winged Blackbird*	c	c	c	c
Eastern Meadowlark	c	c	c	c
Brewer 's Blackbird	c	-	-	c
Common Grackle	c	c	c	c
Brown-headed Cowbird*	c	c	c	c
Orchard Oriole	o	o	o	-
Baltimore Oriole*	o	o	o	-
American Goldfinch	u	-	-	u
House Sparrow	o	o	o	o

a =abundant c =common u =uncommon o =occasional r =rare
**species with confirmed breeding records*

Mammals

Armadillo*

Bats:
1) Southeastern myotis
2) Eastern pipistrelle
3) Red
4) Seminole
5) Hoary
6) Northern yellow
7) Evening
8) Rafinesque's big-eared
Beaver*
Bobcat*
Coyote*
Feral hogs*
Gray fox*
Red fox*
Long-tailed weasel
Mink*

Mice:
1) House
2) Deer
3) Harvest
Nutria*
Opposum*
River Otter*
Raccoon*

Rats:
1) Wood
2) Rice
3) Cotton

Shrews:
1) Short-tailed
2) Least

Squirrels:
1) Gray*
2) Fox*
Striped skunk*

Rabbits:
1) Swamp*
2) Eastern Cottontail*
White-tailed deer*
Woodland vole

Amphibians and Reptiles

Snakes:
Timber rattlesnake*
Garter snake
Racer*
Eastern ribbon snake*
Rat snake*
King snake
Mud snake*
Copperhead*
Cottonmouth*
Various water snakes*

Frogs:
Bullfrog*
Bronze frog*
Pig frog*
Eastern narrowmouth toad*
Gray treefrog*
Green frog
Green treefrog*
Northern cricket frog*
Southern leopard frog*
Squirrel treefrog*
Spring peeper*
Upland chorus frog*
Woodhouse's toad*

Turtles:
Alligator snapping turtle*
Cooters*
Eastern box turtle
False map turtle
Mississippi map turtle
Musk turtle
Painted turtle
Slider*
Snapping turtle*
Spiny softshell
Stinkpot*

Sirens, Newts, Salamanders, Lizards, Skinks, & Crocodilians:
Lesser siren*
Central newt*
Mole salamander*
Green anole*
Eastern fence lizard
Broad-headed skink
Five-lined skink*
Ground skink*
Alligator*

Mussels:
Fat pocketbook
Flat .oater
Giant .oater
Mapleleaf
Paper pondshell
Papershell
Pink papershell
Pond mussel
Southern mapleleaf
Texas liliput
Yellow sandshell

**Species known to occur on Lake Ophelia NWR*

Fish:
Bluegill
Longear sunfish
Orange spotted sunfish
Redear sunfish
Warmouth
Green sunfish
White crappie
Black crappie
Largemouth bass
Yellow bass
Freshwater drum
Black bullheads
Yellow bullheads
Channel catfish
Flathead catfish
Bigmouth buffalo
Smallouth buffalo
Spotted gar
Shortnose gar
Longnose gar
Alligator gar
Carp
Bowfin

Vegetation

Trees – Dominant Vegetation
Black willow
Cherrybark willow
Cottonwood
Bald cypress
Drummond red maple
Elms: winged, water, cedar
Green ash
Gum -red, tupelo
Hackberry
Oaks: overcup, Nuttall,
Shumard, water, willow
Pecans — sweet and bitter
Red maple
Red mulberry
Swamp Cottonwood
Sweetgum
Sycamore

Mid-story/Understory -
Subdominant vegetation
Black berry
Black locust
Box elder
Button bush
Deciduous holly
Dew berry
French mulberry
Haws (cretagus)
Honey locust
Honey suckle
Hornbeam palmetto
Persimmon
Prickly ash
Smilax
Swamp dogwood
Swamp privet
Switchcane
Vines: rattan, muscadine,
poison ivy and oak,
Virginia creeper, pepper vine,
cross vine and grape
Water hickory
Water locust

Wet Sites
Pickerel-weed
Water hyacinth
Pennywort
Duckweed
Arrowhead
Smartweed
Water primrose
American lotus
Coontail
Floating heart
various sedges and grasses
Iris
Spider lily
Lizards tail
Marsh mallow
Cardinal flower

**Species known to occur on Lake Ophelia NWR*

Appendix V. Decisions and Approvals

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION

Originating Person: Michael P. Chouinard
Telephone Number: 318-253-4238
E-Mail: mike_chouinard@fws.gov
Date: June 15, 2005

Project Name: Lake Ophelia National Wildlife Refuge Comprehensive Conservation Plan

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/ U.S. Fish and Wildlife Service

III. Station Name: Lake Ophelia National Wildlife Refuge

IV. Description of Proposed Action (attach additional pages as needed): Implementation of the Comprehensive Conservation Plan for Lake Ophelia NWR by adopting the preferred alternative of Ecosystem Emphasis which will provide guidance, management direction and operation plans for the next 15 years.

V. Pertinent Species and Habitat:

A. Include species/habitat occurrence map: The Refuge is within the known breeding range of Louisiana black bear (USFWS Louisiana Black Bear Recovery Plan, 1995). It is likely that male Louisiana black bears move through the Refuge, but no breeding has been reported in recent years. As part of the Recovery Plan for the bear, the Service and other partners have initiated a Louisiana black bear repatriation project within the Red River/Three Rivers Conservation Area, that includes Lake Ophelia NWR.

Bald eagles are occasionally seen during winter months on the Refuge. The Refuge was a bald eagle hacking site from 1992 to 1994 when 31 eaglets were successfully fledged. One starter nest was observed on the Refuge in 1995, but no other active eagle nests have been observed.

Interior least tern colonies have been documented on the Red River from river mile 44 to 240, upstream from the Refuge. Potential least tern nesting habitat occurs on the Red River adjacent to the Refuge.

Pallid sturgeon have been documented in the Red River near the Old River Control structures approximately 10 miles downstream.

Ivory-billed woodpecker have not been documented in the area since before the 1940's; however, the Refuge lies within the historic distribution of this species.

B. Complete the following table.

SPECIES/CRITICAL HABITAT	STATUS[1]
Louisiana Black Bear	T
Bald Eagle	T
Interior Least Tern	E
Pallid Sturgeon	E
Ivory-billed woodpecker	**E**

[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: Lower Mississippi Valley No. 27

B. County and State: Avoyelles, Louisiana

C. Section, township, and range (or latitude and longitude): T2N, T3N, R6E

D. Distance (miles) and direction to nearest town: Twenty miles southwest to Marksville, LA

E. Species/habitat occurrence:

Louisiana Black Bear- males probably travel through the Refuge and eleven female black bears and cubs were repatriated on the Refuge.

Bald Eagle- occasionally observed during winter. No active nest.

Interior Least Tern- no known nesting colonies on Red River adjoining the Refuge, but active colonies found upstream on sandbars in Pools 1-5.

Pallid Sturgeon- known to occur in the Red River at the Old River Control Complex approximately 10 miles downstream from the Refuge.

Ivory-billed woodpecker have not been documented in the area since before the 1940's; however, the Refuge lies within the historic distribution of this species.

VII. Determination of Effects:

A. Explanation of effects of the action on species and critical habitats in item V. B (attach additional pages as needed).

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Louisiana Black Bear	No negative impacts foreseen, more protection
Bald Eagle	No negative impacts foreseen, more protection
Interior Least Tern	No negative impacts foreseen, more protection
Pallid Sturgeon	No negative impacts foreseen, more protection
Ivory-billed woodpecker	**No negative impacts foreseen, more protection**

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

SPECIES/ CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS
Louisiana Black Bear	Maintain and expand bottomland hardwood habitat
Bald Eagle	Maintain and expand potential roosting and feeding habitat
Interior Least Tern	Work with COE and private landowner to maintain sandbar habitat
Pallid Sturgeon	Maintain water quality and in stream flow in the Red River
Ivory-billed woodpecker	**Expand bottomland hardwood forest and maintain set-aside forested areaswith no or limited disturbance.**

VIII. Effect Determination and Response Requested:

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE[1] REQUESTED
	NE	NA	A	
Louisiana Black Bear		X		
Bald Eagle		X		
Interior Least Tern		X		
Pallid Sturgeon		X		
Ivory-billed woodpecker		**X**		

[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."

//S// Mike Chouinard — Signature (originating station)
6/15/05 — Date

Project Leader — Title

IX. Reviewing Ecological Services Office Evaluation:

A. Concurrence ✓ **Nonconcurrence** _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

E. Remarks (attach additional pages as needed):

//S// Russell Watson — Signature
6/20/05 — Date

Field Supervisor — Title
Lafayette, LA — Office

COMPATIBILITY DETERMINATION

Lake Ophelia National Wildlife Refuge Compatibility Determination

Uses: The following uses were considered for compatibility determination reviews: hunting, fishing, wildlife observation and photography, environmental education and interpretation, all-terrain vehicle use, trapping of selected furbearers, cooperative farming program, forest management program and Refuge resource research studies. A description and anticipated biological impacts for each use are addressed separately in this Compatibility Determination.

Refuge Name: Lake Ophelia National Wildlife Refuge.

Date Established: March 17, 1989.

Establishing and Acquisition Authority(ies): 16 U.S.C., Sec. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986) and 16 U.S.C. Sec. 664 (Migratory Bird Conservation Act of 1929).

Refuge Purpose: The purpose of Lake Ophelia National Wildlife Refuge, as reflected in the Refuge's authorizing legislation, is to protect and conserve migratory birds and other wildlife resources through the protection of wetlands, in accordance with the following laws:

> *...the conservation of 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., Sec. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986);
>
> *...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...* 16 U.S.C. Sec. 664 (Migratory Bird Conservation Act of 1929);
>
> *...for the development, advancement, management, conservation, and protection of fish and wildlife resources...* 16 U.S.C. Sec 742f(a)4; and
>
> *...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services...* 16 U.S.C. Sec. 742f(b)1 (Fish and Wildlife Act of 1956).

The Refuge's purpose and importance to migratory birds, particularly waterfowl, was further described in the Service's Environmental Assessment for the proposed establishment of the Refuge (1989): *To preserve wintering habitat for mallards, pintails, and wood ducks and production habitat for wood ducks to meet the habitat goals presented in the Ten-Year Waterfowl Habitat Acquisition Plan and the North American Waterfowl Management Plan.*

The Refuge purpose was further described in the Approval Memorandum for the purchase of lands for the establishment of Lake Ophelia National Wildlife Refuge where the primary reason for acquisition and inclusion of the area into the National Wildlife Refuge System was to preserve wintering habitat for mallards, pintails, wood ducks, and production habitat for wood ducks (USFWS Southeast Region Approval Memorandum, 1989). Three objectives for which the area will be managed were identified in the Approval Memorandum: to preserve an area which has traditional high use for wintering waterfowl; to provide additional waterfowl habitat through Refuge management; and to establish a waterfowl sanctuary.

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 were considered separately. Although for brevity, the preceding sections from “Uses” through “Other Applicable Laws, Regulations and Policies” are only written once within the plan, they are part of each descriptive use and become part of that compatibility determination if considered outside of the Comprehensive Conservation Plan.

Description of Use:

Hunting

Most of the Refuge area is a mosaic of forest blocks of mid-succession bottomland hardwoods, reforested fields, agricultural fields, moist soil management units and interconnected sloughs, bayous and lakes. There is a great variety of tree species on the Refuge that includes oak, hackberry, black gum, hickory, elm, green ash, bitter pecan, cypress, tupelo, and willow. This rich forested wetland provides good habitat for a number of game species including white-tailed deer, turkey, squirrel, raccoon, woodcock and waterfowl.

Many of the local residents enjoy an informal, rural lifestyle that includes frequent recreational use of the area's natural resources. Hunting and fishing have been, and continue to be, popular uses of Refuge lands. Hunting has been permitted since 1990, when the Refuge was first approved to offer hunting of big game and small game. Waterfowl hunting was approved in 1996 and has been offered on portions of the Refuge since that time. The administration as well as special regulations for hunting have changed over time but the majority of the program has remained unchanged.

The Comprehensive Conservation Plan calls for the continued hunting of deer, small game, waterfowl, woodcock and turkey. All hunts fall within the framework of the State's open seasons and follow state regulations. There are additional Refuge-specific regulations to supplement State regulations. These Refuge-specific regulations are reviewed annually and incorporated into the Refuge hunting and fishing brochure and permit that hunters are required to have before hunting on the Refuge. The Comprehensive Conservation Plan will increase law enforcement presence during hunting seasons; will evaluate the hunt program annually and modify seasons, hunt areas or regulations if necessary; and additional non-hunting areas could be added as the Refuge expands through an active land acquisition program. Implementation of the proposed alternative, as described in the Comprehensive Conservation Plan, will ensure that opportunities for various types of wildlife-dependent recreation will continue for future generations.

Availability of Resources: Based on a review of the Refuge's budget allocated for this activity, there is adequate funding to ensure compatibility and to administer this use at its current level. Additional fiscal resources are needed to conduct this use as proposed. An additional office automation clerk is needed to assist with hunting program administration and visitor service. Upgrading and expanding the current radio system to Department of the Interior standards is needed to improve emergency response and ensure the safety of officers in the field. Additional hunt acreage, hunter safety classes, and annual hunt brochures are proposed.

Anticipated Impacts of the Use: The deer herd has expanded and increased significantly since the Refuge was established. Prior to Refuge establishment this portion of Avoyelles Parish was subject to excessive deer poaching that maintained the deer herd at low levels. Following Refuge establishment and initiation of an effective wildlife law enforcement program the deer herd has increased significantly in and around the Refuge. The Refuge's mix of forest, reforestation fields, agriculture and moist soil management areas provides ideal habitat conditions for whitetail deer. Following ten years of Refuge deer management, the deer herd has a more balanced age and sex structure and the population is below carrying capacity as indicated by recent browse and abomasum parasite surveys and harvested yearling buck weights. Turkey populations on the Refuge have fluctuated since Refuge establishment due to the impacts of spring flooding on nest success. Recent gobbler surveys indicated an expanding turkey population and the first spring gobbler only turkey season on the Refuge was held in spring 2001. Two two-day quota turkey hunts were conducted in 2001 resulting in the harvest of two gobblers, although several other gobblers were heard and worked.

The floodplain hardwood forests of the area support high squirrel populations and have for several years. As a result, fall squirrel hunting is one of the most popular activities on the Refuge. Squirrel dogs are occasionally used in late winter following leaf fall.

The raccoon population appears to be increasing throughout the area, and in the absence of predators, raccoon populations rapidly build to levels resulting in disease problems and impacts to the reproduction of nongame forest-breeding birds and wild turkeys. Therefore, in addition to providing hunting opportunities, an effective hunting program for raccoon is particularly important to keep the raccoon population at a level that does not negatively affect nongame forest-breeding birds and wild turkeys.

The traditional method for hunting raccoons is the use of dogs at night to tree raccoons. The use of dogs typically occurs with a single, well-trained dog under a high level of control by the hunter and rarely, if ever, results in unacceptable levels of disturbance to other wildlife. Many years of experience, on multiple refuges and national recreation areas across the Southeast Region, indicate that traditional methods of take for these species, conducted under controlled conditions of carefully regulated and enforced seasons on large forested land areas, do not negatively or cumulatively affect other wildlife or other users. As with all hunts on the Refuge, results will be carefully monitored and changes implemented as needed across time to minimize the impacts and maintain compatibility.

Duck hunting occurs in a number of sloughs, bayous and lakes throughout the Refuge until backwater flooding provides additional habitat usually accompanied by an increase in Refuge duck populations and hunter effort. Dabbler species such as mallard, gadwall, widgeon, wood duck and teal are the most abundant species by number and thus are the most commonly harvested species.

Harvest management of big game (white-tailed deer and turkey) is the art of combining wildlife science and landowner objectives for the attainment of a specific management goal. Harvest management strategies should be based on objectives established as part of hunting plans developed for the area. The objective-setting process must be based on a complete analysis of biological data. Specific harvest objectives allow the setting of hunting regulations. Results of each hunting season will be thoroughly evaluated to ensure that the harvest management program remains dynamic and responsive to an evolving management environment (Bookhout 1994).

Harvest management of upland game and furbearers (squirrel, rabbit, raccoon, opossum, beaver) is considerably different from that of both big game and migratory birds. Current literature suggests that user take (<50% of total mortality) of most upland game is compensatory; that factors such as immigration from adjacent areas and density-dependent production operate in most upland game populations; and that hunting does not significantly impact populations. Hunting is substituted for natural mortality. Production of large, annual surpluses of young allows for lengthy seasons and generous bag limits with little concern for over-harvest and minimal chance of population impacts in most areas (Bookhout, 1994).

Harvest management of migratory birds (ducks, woodcock) is more difficult to assess. 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 data with regulations that are subject to change each year, including bag limits, season lengths, and framework dates (Bookhout, 1994). Schimidt (1993) states, "In general, all studies have demonstrated a high degree of compensation of hunting mortality by other 'natural' mortality factors for harvest levels experienced to date." He also reports, "The proportion of waterfowl populations subject to hunting on refuges is very low, thus hunting is not likely to have an adverse impact on the status of any recognized waterfowl population in North America."

The Refuge's great variety and abundance of high quality wetland areas provide outstanding habitat for a variety of wading birds. Wading birds frequent these wetlands and two known rookeries are present

on the property. Primary species include the great blue heron, little blue heron, green heron, cattle egret, snowy egret, great egret, anhinga, and night herons (USFWS, 1989). The potential of disturbance, especially during the nesting season, does exist for these rookeries; however, this potential will be virtually nonexistent due to no overlap of hunting seasons with nesting season.

Similar to wading birds, the area's habitat for Neotropical migratory birds is outstanding (USFWS, 1998). Neotropical migrants use the interior hardwood forested areas and edges. Disturbance to Neotropicals will be minimal and temporary as the habitat will be slightly altered for the betterment of these species.

Based on available information, no threatened or endangered species, other than the bald eagle and Louisiana black bear, have been documented on Lake Ophelia National Wildlife Refuge. It is anticipated that the current levels and expected future levels of hunting or other wildlife-dependent recreation activities will not directly, indirectly, or cumulatively impact any listed, proposed, or candidate species or designated/proposed critical habitat. Data gathered from future biological surveys regarding the importance or potential importance of the Refuge to threatened or endangered species or critical habitat (or proposed threatened, endangered, or critical habitat), could result in changes to public use activities across time; however, these changes will have no effect on listed species.

Incidental take of other wildlife species, either illegally or unintentionally, may occur with any consumptive use program. At current and anticipated public use levels, incidental take will be very small and will not directly or cumulatively impact current or future populations of wildlife either on this Refuge or in the surrounding areas. Implementation of an effective law enforcement program and development of site specific Refuge regulations/special conditions will eliminate most incidental take problems.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility: Hunting will be permitted in accordance with State of Louisiana regulations and licensing requirements. An Environmental Assessment is on file at the Refuge headquarters as part of the Hunting Plan. Following completion of the Comprehensive Conservation Plan, the Hunting Plan will be updated and revised. The following stipulations will help ensure the Refuge hunting program is compatible with Refuge purposes.

Vehicles will be restricted to existing roads. All-terrain vehicles will be restricted to designated trails/roads. Off-road travel will be limited to foot travel only.

Firearms, bows, and other weapons will be prohibited except during designated hunting seasons.

Hunting deer with dogs will not be allowed on the Refuge. Use of dogs for hunting rabbit, squirrel, raccoon, waterfowl, and woodcock will be allowed during designated seasons only.

Camping overnight on the Refuge will be prohibited.

All hunts will be designed to provide quality user opportunities based upon known wildlife population levels and biological parameters. Hunt season dates and bag limits will be adjusted as needed to achieve balanced wildlife population levels within carrying capacities, regardless of impacts to user opportunities.

As additional data is collected and a long-range hunt plan developed, additional Refuge-specific regulations could be implemented. These regulations could include, but may not be limited to, season dates that differ from those in surrounding State zones, Refuge permit requirements, and closed areas on a permanent or seasonal basis (to reduce disturbance to specific wildlife species or habitats, such as bird rookeries, wintering waterfowl or threatened/endangered species, or to provide for public safety).

Justification: Hunting is compatible with the purposes for which the Refuge was established and the mission of the National Wildlife Refuge System. It is one of the public use recreational activities that is specifically identified in the 1997 National Wildlife Refuge System Improvement Act to be allowed where possible on Refuges. Refuge deer and raccoon hunts are used as management tools to protect the diverse ecosystem. It has been well documented that hunting mortality from small game and spring gobbler harvests is incidental to overall mortality. Waterfowl hunting mortality has been documented as being compensatory to natural mortality factors and the number or waterfowl hunted on Refuges is insignificant in terms of the overall continental population.

Mandatory 10- or 15-year Re-evaluation Date: _____9/26/2020_____

Description of Use:

Fishing
Sport fishing is a common public use on the Refuge and surrounding area. Fishing is permitted on designated Refuge lakes and bayous on a seasonal basis from March 1 to October 15. Fish creel limits, boating safety and license requirements are in accordance with State of Louisiana regulations. Lake Ophelia has historically offered excellent fishing opportunities for largemouth bass, crappie and bluegill. However, three years of drought conditions from 1997 to 2000 reduced this 350-acre lake to only 15 acres in the fall of 2000. Unfortunately most of the fishery was lost and the lake has been closed to public use since that time. The water level has started to recover and with more normal rainfall patterns should refill allowing continued public fishing in the near future. A public boat ramp and accessible fishing pier is available at Lake Ophelia. Duck and Westcut Lakes offer only limited fishing opportunities due to a lack of vehicle or boat access. The same is true for the Frazier-Whitehorse Bend Cut-off of the Red River. This former Red River channel borders the Refuge for several miles, but there are currently no public access points. Frazier-Whitehorse supports an excellent floodplain fishery that is utilized by adjoining private camp owners. Development of public access to these Refuge lakes would allow the public to utilize these important fishery resources. As identified in the Comprehensive Conservation Plan, additional access and boat ramps will be provided, creel surveys conducted, and water quality analysis performed in order to provide a high quality fishing experience.

Availability of Resources: Based on a review of the Refuge's budget allocated for this activity, there is adequate funding to ensure compatibility and to administer the use at its current level. Additional fiscal resources are needed to conduct this use as proposed. To improve sport fishing opportunities, additional boat ramps, creel surveys, water quality analyses, restrooms and aquatic weed control are proposed.

Anticipated Impacts of the Use: Recreational fishing should not adversely affect the fisheries resource, wildlife resource, endangered species, or any other natural resource of the Refuge. There may be some limited disturbance to certain species of wildlife and some trampling of vegetation; however, this should be short-lived and relatively minor and will not negatively impact wetland values of the Refuge. Known bird rookery sites do not occur at locations currently popular for fishing activities; therefore, disturbance should not be a problem. If disturbance at these sites is identified as a problem in future years, closed areas will be established during nesting season to eliminate this concern.

Construction of boat ramp facilities at Frazier-Whitehorse, Duck and Westcut Lakes will create some disturbance to the natural environment during construction and lead to increased public use on these water bodies. All construction activities will be carried out with appropriate permits under Section 404 of the Clean Water Act and State Historic Preservation Officer review of cultural resources. Sediment retention barriers will be utilized during boat ramp construction and soil stabilization features will be incorporated in to ramp design to minimize any future soil erosion potential. Public use of these water bodies will be expected to increase as a result of boat ramp construction, but the level of use is not expected to cause detrimental wildlife disturbance. Time and space zoning of lake use will be utilized as necessary to minimize wildlife disturbance. Problems associated with littering and illegal take of fish will be controlled through law enforcement activities. Providing information to Refuge visitors about rules and regulations, along with increased law enforcement patrol, will keep these negative impacts to a minimum.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Conflicts between fishermen and hunters or other visitors using the Refuge for nonconsumptive wildlife recreation have not been a problem in the past and are not expected to be a problem in the future. Associated violations such as taking undersize fish, open fires and littering can be minimized by a continued law enforcement presence. An Environmental Assessment is on file at the Refuge headquarters as part of the Fishing Plan. Following completion of the Comprehensive Conservation Plan, the Fishing Plan will be updated and revised. The following stipulations will help ensure the Refuge fishing program is compatible with Refuge purposes.

Outboard motors up to 25HP allowed; some water bodies may seasonally restrict or prohibit outboard motor use to minimize wildlife disturbance.

All fishing tackle must be attended at all times.

Leaving boats on the Refuge overnight is prohibited.

Fishing allowed during daylight hours only.

Justification: Refuge lakes and sloughs are seasonally open to fishing under State regulations. Although limited in size, time and space zoning of recreational fishing is providing a quality fishing experience on a sustainable basis. Fishing is a public use activity that, according to the 1997 National Wildlife Refuge System Improvement Act, should be provided and expanded where possible. Improved access facilities will reduce bank erosion and habitat disturbance, while providing additional quality fishing opportunities.

Mandatory 10- or 15-year Re-evaluation Date:_____9/26/2020_____

Description of Use:

Wildlife Observation and Photography
Nonconsumptive wildlife observation uses such as birdwatching, auto tour routes, hiking, and nature photography are minimal at this time due to the area's distance from large metropolitan areas and the general lack of access and facilities. It is estimated that 2,000 visits/year are attributed to wildlife observation and related activities.

It is anticipated that an increase in nonconsumptive wildlife-dependent uses will occur over the next few years as facilities and access are provided and especially as the public and conservation groups become aware of the excellent birding/wildlife viewing opportunities on the Refuge. This anticipated increase will be slow in developing and due to the remoteness of the area, high numbers of users are not expected.

There are 12 miles of Refuge primary roads maintained for public vehicle travel. An additional 9 miles of Refuge secondary roads are maintained for administrative purposes, while 17 miles of all-terrain vehicle trails for hunting and fishing access and 4 miles of foot trails are maintained for public use. Nine miles of all-terrain vehicle trail will be upgraded and converted to public vehicle travel, 12 miles of Refuge primary roads will be upgraded to national refuge road standards and 4 miles of new foot trails will be created.

Availability of Resources: Based on a review of the Refuge's budget allocated for this activity, there is adequate funding to ensure compatibility and to administer the use at its current level. Additional fiscal resources are needed to provide this use as proposed. To provide safe, high quality wildlife observation and photography opportunities, vehicular road access must be improved, wildlife observation points developed and directional/interpretive signage provided.

Anticipated Impacts of the Use: Wildlife observation and photography activities might result in some disturbance to wildlife, especially if visitors venture too close to one of the bird rookeries. Refuge road systems, foot trails, boardwalks and wildlife observation platforms opened to public use will be located to minimize disturbance that could occur in these sensitive areas. If unacceptable levels of disturbance is identified at any time, sensitive sites will be closed to public entry. Some minimal trampling of vegetation also may occur.

Construction of foot trails, boardwalks, observation platforms, upgrading Refuge roads and converting all-terrain vehicle trails to vehicular traffic will alter small portions of the natural environment. Proper planning prior to construction, sediment retention and grade stabilization features will reduce negative impacts to wetlands, threatened and endangered species and species of special concern. Impacts such as trampling vegetation and wildlife disturbance by Refuge visitors do occur, but is presently not significant. Upgrading Refuge roads and converting all-terrain vehicle trails to vehicular roads will reduce soil erosion associated with the current dirt roads and trails. Other potential negative impacts are caused by visitors violating Refuge regulations such as littering or illegally taking plants or wildlife. Refuge roads are maintained for habitat and biological management programs and law enforcement. Use of the roads by the public does incur added maintenance costs.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Permits prior to construction will be obtained from local, State and Federal regulatory agencies to reduce the possibility of negatively impacting wetlands, cultural resources or protected species. Law enforcement patrol of public use areas will continue to minimize violations of Refuge regulations. Refuge roads will be closed to the public during extremely wet periods such as flooding to prevent road damage and for visitor safety. Public use for wildlife observation and photography will be monitored to document any negative impacts. If any negative impacts become noticeable, corrective action will be taken to reduce or eliminate the effects on wildlife.

Justification: Wildlife observation and photography are important and preferred public uses on Lake Ophelia National Wildlife Refuge and the National Wildlife Refuge System. The 1997 National Wildlife

Refuge System Improvement Act identified wildlife observation as a priority public recreational use to be facilitated on Refuges. It is through permitted, compatible public uses such as this, that the public becomes aware of and provides support for our national wildlife refuges.

Mandatory 10- or 15-year Re-evaluation Date:_____9/26/2020_____

Description of Use:

Environmental Education and Interpretation
Environmental education and interpretation are those activities which seek to increase the public's knowledge and understanding of wildlife, National Wildlife Refuges, ecology and land management, as well as contribute to the conservation of natural resources. Interpretation and environmental education programs for the Refuge will be developed. Environmental education/interpretation activities have been largely nonexistent in prior years. Efforts to develop this program are planned and will usually be associated with structured activities conducted by Refuge staff or trained volunteers. Refuge staff will develop and provide curriculum and support materials to area teachers for use both on and off the Refuge. Informational kiosks and interpretive panels will be developed at key Refuge entrance points, at the Duck Lake boardwalk, Possum Bayou and Lake Ophelia trailheads and at the proposed Point Basse and waterfowl sanctuary wildlife observation platforms as part of the environmental education/interpretation program.

Availability of Resources: Based on a review of the Refuge's budget allocated for these activities, funding is inadequate to ensure compatibility and to administer these uses at current or proposed levels. Additional fiscal resources are needed to conduct these uses. Current staffing is extremely limited with no public use staff. The management of a volunteer program will be essential to successfully implement the education and visitor use program. Volunteers will be recruited and trained to assist staff in developing and implementing environmental education and interpretive programs. The addition of a permanent park ranger (interpretive)/public use specialist and facilities including vehicle access roads, boardwalks, signs, parking and trail head development, kiosks, and environmental education materials are needed to provide and conduct wildlife observation, and photography, and environmental education and interpretation activities.

Anticipated Impacts of the Use: Construction of facilities such as boardwalks, kiosks and observation platforms will alter small portions of the natural environment on the Refuge. Proper planning and placement of facilities will ensure that wetlands, threatened or endangered species, or species of special concern are not negatively impacted. Proper permits through the parish, State and Federal regulatory agencies will be obtained prior to construction to ensure resource protection. The use of on-site, hands-on, action-oriented activities to accomplish environmental education and interpretive tours may impose a low-level impact on the sites used for these activities. These low-level impacts may include trampling of vegetation and temporary disturbance to wildlife species in the immediate area. Educational activities held off-Refuge will not create any biological impacts on the resource.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Zoning of visitor activities by time and space, clustering public use facilities, proper monitoring, educating visitors, and enforcement will ensure compatibility with the purposes of the Refuge and mission of the National Wildlife Refuge System. Through periodic evaluation of trails and visitor contact points, the visitor services program will assess resource

impacts. If future human impacts are determined through evaluation to be detrimental to important natural resources, actions will be taken to reduce or eliminate those impacts. Major portions of the Refuge will remain undeveloped, without public interpretive facilities.

Justification: Interpretation and environmental education are identified in the 1997 National Wildlife Refuge System Improvement Act as activities that should be provided and expanded on refuges. Educating and informing the public through structured environmental education courses, interpretive materials, and guided tours about migratory birds, endangered species, wildlife management, and ecosystems will lead to improved support of the Service's mission to protect our natural resources.

Mandatory 10- or 15-year Re-evaluation Date:_____9/26/2020_____

Description of Use:

All-Terrain Vehicle Use

A large portion of the Refuge is inaccessible to conventional vehicles due to either impassible roads or no roads. In order to disperse hunters and access remote areas for hunting and fishing, Refuge users have historically utilized all-terrain vehicles throughout the area resulting in a fairly limited system of trails distributed to most areas of the Refuge.

Considering the topography of the area and its remoteness, the need for limited use of all-terrain vehicles by certain Refuge users is apparent. It will be impossible to develop an effective public use program that provides optimum consumptive use opportunities without providing for all-terrain vehicle use.

Service policy pertaining to all-terrain vehicle use requires such use be in conjunction with wildlife-dependent activities only, and be confined to designated areas or trails identified for such use; all off-road use is restricted to foot travel only. Approximately 17 miles of all-terrain trails are currently available for seasonal use for hunting and fishing access. All all-terrain vehicle trails are shown on Refuge brochure maps and designated for public use by signs. Some modifications to this initial trail system will be necessary from time to time as Refuge public use patterns change and/or other public use development occurs. Approximately 9 miles of these all-terrain vehicle trails provide access to Refuge lakes and areas targeted for the development of interpretation/environmental education facilities. These trails were historically accessed by conventional vehicles prior to Refuge establishment, but were restricted to all-terrain vehicles after Refuge establishment in an effort to minimize environmental damage associated with vehicle travel during wet conditions. Upgrading these former roads/trails by adding gravel and culverts will allow conventional vehicular access to a segment of the public that currently has virtually no access to major portions of the Refuge.

Availability of Resources: Based on a review of the Refuge's budget allocated for this activity, there is adequate funding to ensure compatibility and to administer the use at its current level. As some of the current ATV trails are converted to vehicular access, funding required to administer and maintain use will decrease proportionately. Additional fiscal resources will be needed contingent on future Refuge land acquisition to develop appropriate ATV trails in order to provide initial public access to newly acquired lands.

Anticipated Impacts of the Use: With these trail upgrades the Refuge will have approximately 8 miles of designated all-terrain vehicle trails and 9 miles of additional vehicular access roads. Designated all-terrain vehicle trails will be open seasonally to support hunting-and fishing-related public use. The upgraded vehicular roads will be open year round to support all priority public uses. All-terrain vehicle trails are located on former dirt field and woods roads that were existing when the Refuge was established. These trails have

crown to provide drainage from the trail surface and are maintained by bushhogging two to three times per year. All-terrain vehicle use causes trampling of the mowed vegetation, but rutting and associated soil erosion is very minimal. Some wildlife disturbance may occur adjacent to the trails, but is believed to be minimal and is restricted to primarily the fall and winter months. Any disturbance from all-terrain vehicles is comparable to regular vehicles traveling Refuge roads. All-terrain vehicles are restricted to designated marked trails. Therefore any impacts are restricted to a very small portion of the Refuge.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: All-terrain vehicle use is permitted in support of hunting and fishing activities where adequate access is not available by maintained vehicular roads. All persons over 16 years of age must have a Lake Ophelia Hunting, Fishing and All-terrain Vehicle Use permit in order to use an all-terrain vehicle on the Refuge. Persons under 16 years of age are not allowed to operate an all-terrain vehicle on the Refuge. All-terrain vehicle use is restricted to designated and maintained all-terrain vehicle trails. No off-trail use of all-terrain vehicles is permitted. All-terrain vehicles used on the Refuge must have low ground pressure tires with a manufacture's recommended tire pressure of 7 pounds per square inch and may not have tire lug depths greater than one inch. All weapons transported on all-terrain vehicles must be fully unloaded. All-terrain vehicle use is permitted only during daylight hours.

Justification: Hunting and fishing are identified in the 1997 National Wildlife Refuge System Improvement Act as priority wildlife-dependent recreational activities that should be promoted and expanded on refuges. Lake Ophelia National Wildlife Refuge has very limited vehicular access to most portions of the Refuge. To facilitate hunting and fishing use, a limited system of all-terrain vehicle trails is required to provide access to major portions of the Refuge and to specific lakes. Without these trails the public will not be able to access major portions of the Refuge. Prior to Refuge ownership these areas were accessed by four wheel drive trucks, which created significant damage to the natural environment through severe rutting of dirt trails. Following Refuge establishment, these trails were converted to all-terrain vehicle use only, as a means of providing public access, while minimizing any damage to the natural environment.

Mandatory 10- or 15-year Re-evaluation Date:_____9/26/2015_____

Description of Use:

Trapping of Selected Furbearers
Raccoon and beaver are the species upon which management activities may be directed. Both species are at a sufficiently high level on the Refuge to adversely affect ecosystem functions. As indicated in the Comprehensive Conservation Plan, beaver activities have caused significant deterioration and loss of bottomland hardwoods throughout the Refuge, and excessive numbers of raccoons can 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 plan. To this end, trapping and/or hunting remain the only viable methods to reduce population levels of beaver and raccoon. The Service will issue Special Use Permits to administer a trapping program consistent with sound biology, Refuge purposes, and conservation of ecosystem functions.

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 Impacts of the Use: Targeted removal of beaver and raccoon from portions of the Refuge will reduce the negative impacts these species are having on ecosystem functions. Control of beaver populations will help ensure the protection of important bottomland hardwood forests, including reforestation areas, and minimize beaver problems associated with the operation of over 25 water control structures on the Refuge. Regulated trapping of raccoon populations will reduce the nest predation this species causes to Neotropical birds and wild turkeys. 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 impact on other wildlife species is expected in both the short and long term.

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 impacts. 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 Lake Ophelia National Wildlife Refuge 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. Beavers and raccoons have been documented to cause negative impacts to forested wetlands and nesting birds. When these negative impacts become significant on the Refuge, wildlife managers need trapping as a management tool to control the level on damage. Certainly, beavers and raccoons are important components of the ecosystem, but when their populations and negative impacts become significant, wildlife managers need a regulated trapping program to reduce their populations to acceptable levels.

Mandatory 10- or 15-year Re-evaluation Date:_____9/26/2015_____

Description of Use:

Cooperative Farming Program
Cooperative farming is utilized on the Refuge to manage and maintain approximately 3,700 acres of openland habitats that provide seasonally flooded crops and moist soil units necessary to meet the Refuge's waterfowl habitat objectives. This farming program is a critical component of the Refuge's habitat management program. The Refuge's two cooperative farmers enter into annual cooperative farming agreements specifying what crops will be grown in specific fields for both the Refuge's and cooperative farmers' shares. The cooperative farmer receives 80% of planted acres, while the Refuge receives 20% of the planted acres. The Refuge's crop share is strategically located in areas that can be flooded in the winter to provide waterfowl foraging habitat in support of North American Waterfowl Management Plan objectives for the Lower Mississippi Alluvial Valley. At the present time the Refuge does not have the staff or equipment necessary to manage and maintain the acreage needed to meet its waterfowl foraging objectives without the assistance of the cooperative farming program. Refuge cooperative farming operations will continue under carefully regulated conditions.

Availability of Resources: Based on a review of the Refuge's budget allocated for this activity, there is adequate funding to ensure compatibility and to administer the use at its current level.

Anticipated Impacts of the Use: Cooperative farmers grow grain sorghum, rice, wheat, soybeans, and millet on the Refuge under an annually updated cooperative farming agreement. Refuge crop shares are left standing in the field to provide high energy grain and forage primarily for wintering waterfowl. The cooperative farmers' harvested fields are also used extensively by woodcock, waterfowl, deer, and wild turkeys. The majority of all cooperative farming takes place in the Refuge's core waterfowl sanctuary area. Cooperative farmers also provide the equipment and personnel to manage the Refuge's moist soil units as part of the cooperative farming agreement. If the Comprehensive Conservation Plan is enacted, approximately 1,200 acres of current Refuge cropland will be reforested. Continuing to farm the 1,200 acres scheduled for reforestation ensures the acreage is plantable with current reforestation techniques and ultimately improves the probability of successful reforestation.

Cooperative farming results in some degree of soil erosion due to spring discing and planting operations. The impact of soil erosion on adjacent wetlands and water bodies is minimal because of maintained grass buffer strips around each field and the extensive use of flash board risers to retain and slowly release sediment-laden water. Cooperative farmers are allowed to use approved pesticides under a closely monitored pesticide use proposal system. Refuge-approved pesticides have low toxicity and fast biodegradation rates compared to other commonly used agricultural pesticides. Under approved label application rates and methods, approved pesticides should have minimal effect on the biological environment. However, the potential exists for misapplication or accidental spills of approved pesticides. During the past ten years there have been no known pesticide accidents or pesticide-related wildlife mortality reported on the Refuge. Careful monitoring of cooperative farmer pesticide use and reforestation of approximately 1,200 acres of existing cropland should further reduce any potential impacts from pesticide use on the Refuge.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: The cooperative farming program is regulated through annual cooperative farming agreements that specify the field specific crops to be grown, acceptable farming practices, and approved pesticide use procedures. Special conditions contained in each cooperative farming agreement provide the following requirements: no fall discing allowed, vegetative filter strips are maintained around all fields and water bodies, crops must be harvested by November 15 and no drainage of seasonally flooded habitat is allowed until after March 1, Refuge crops will be planted in designated fields and not be manipulated in any way after maturity and only approved pesticides will be used when the level of pest occurrence is at the economic threshold level as indicated by crop scouting. Under these carefully controlled conditions, the cooperative farming program has been and is expected to continue to be compatible with the Refuge's purposes.

Justification: The cooperative farming actions as set forth in the Cropland Management Plan for Lake Ophelia National Wildlife Refuge are in accordance with Service guidelines for the protection, management and enhancement of habitats for wildlife populations on the Refuge. Adherence to the Cropland Management Plan promotes the enhancement of habitats for migratory birds, threatened and endangered species and resident wildlife.

Mandatory 10- or 15-year Re-evaluation Date:_____9/26/2015_____

Description of Use:

Forest Management Program
A forest management program will be initiated on Lake Ophelia National Wildlife Refuge in accordance with an approved forest management plan targeted for completion in 2005. Forest management as described in the Comprehensive Conservation Plan, will be directed towards protecting, restoring and managing the functions and values of the Refuge forest to support viable populations of native flora and fauna consistent with sound biological principles.

The entire Refuge forest habitat will be inventoried and mapped as part of the development of a forest management plan. This plan will provide a comprehensive forest management prescription to achieve forest habitat objectives over a 15-year planning cycle. Forest management prescriptions will include timber stand improvement, commercial timber harvest and reforestation.

Forest habitat manipulations will be carried out by commercial timber harvests. All harvesting will be conducted by Special Use Permit and carried out in accordance with the U.S. Fish and Wildlife Service Manual. The sale and disposition of forest products will be carried out by open market rules and formal bid solicitations.

Availability of Resources: Based on a review of the Refuge's budget allocated for this activity, there is adequate funding to ensure compatibility and to administer the current forest management program, which consists of reforestation and fire protection. The Comprehensive Conservation Plan describes a forest management program that will utilize timber harvest to promote the enhancement of habitats for both threatened and endangered species, migratory birds and resident wildlife; promote habitat restoration; protect cultural resources; and provide opportunities for public recreation and environmental education. Additional funding and staffing will be required to inventory forest stands, prepare a forest management plan, develop forest prescriptions, and administer timber harvest.

Anticipated Impacts of the Use: It is anticipated that forest habitat management will enhance the existing forest and help restore the functions and values typically associated with bottomland hardwood forest. Forest management operations will be directed at providing more vertical diversity (understory, midstory, canopy and superemergent trees) within each forest block in support of the habitat requirements of forest dwelling birds, black bears and other resident wildlife. Reforestation will be an important component of Refuge forest management with a special emphasis on creating a 100,000-acre core forest within the Red River/Three Rivers Source Population Objective Area. The 100,000-acre forest block will support area-sensitive species such as the swallow-tailed kite, cerulean warblers and black bears.

Forest management will include the use of commercial timber harvest operations, which if not tightly controlled and supervised, have the potential to cause adverse impacts on environmental quality. The controls placed on harvesting operations minimize possible adverse effects caused by logging equipment, such as excessive defacement and negative impacts on surface water quality. However, minimum short-term impacts do occur from harvesting operations such as actual mechanized operation disturbance to wildlife and trampling of the understory vegetation by equipment. The understory vegetation usually recovers in one growing season and usually is more beneficial to wildlife due to increased density and palatability caused by harvest operations (i.e., decreased competition and increased sunlight reaching the forest floor).

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Commercial timber harvest operations will not be carried out on Lake Ophelia National Wildlife Refuge until a comprehensive forest inventory has been completed and a Forest Habitat Management Plan prepared. Forest management operations will be directed at providing a desired future condition for the overall Refuge forest. Individual forest stands will be inventoried, timber harvest prescriptions developed and timber harvest operations carried out in a manner that will accomplish the Refuge's forest habitat management objectives for migratory birds, threatened and endangered species and resident wildlife. Timber harvest operations will target select trees to be sold, and then removed by commercial timber and pulpwood operators. Trees may also be removed through timber stand improvement operations or by permittees when commercial sales are not feasible. Only trees needing to be removed in order to improve the forest habitat for wildlife or to restore the integrity of the forested wetlands ecosystem will be taken. Forest management operations may be conducted throughout the year, but only according to the guidelines detailed in a Forest Habitat Management Plan.

Justification: The forest management actions proposed in the Comprehensive Conservation Plan for Lake Ophelia National Wildlife Refuge are in accordance with Service guidelines for the protection, management and enhancement of habitats for wildlife populations on the Refuge. Adherence to a Forest Management Plan promotes the enhancement of habitats for both threatened and endangered species, migratory birds and resident wildlife species; promotes habitat restoration; protects cultural resources; and provides opportunities for public recreation and environmental education.

Mandatory 10- or 15-year Re-evaluation Date:_____9/26/2015_____

Description of Use:

Refuge Resource Research Studies
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-term 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 Service and U.S. Geological Survey research of Neotropical migrant birds, waterfowl, bottomland hardwood restoration, amphibians and reptiles, forest bats and sandhill cranes. Efforts will be made to expand partnerships with Louisiana State University and the Black Bear Conservation Committee to conduct research on the Refuge associated with the recovery of the threatened Louisiana black bear.

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 Impacts of the Use: There should be no significant negative impacts 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. Impacts 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.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

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 plant and animals that might occur.

Mandatory 10- or 15-year Re-evaluation Date:_____9/26/2015_____

Literature Cited

Bookhout, T.A. 1994. Research and management techniques for wildlife and habitats. Fifth edition. The Wildlife Society, Bethesda, MD 740pp.

Schmidt, P.R. 1993. Memorandum - Information request regarding impacts of hunting on national wildlife refuges. U.S. Department of the Interior, Fish and Wildlife Service, Office of Migratory Bird Management, Washington, D.C. 7pp.

U.S. Fish and Wildlife Service. 1989. Purchase of lands for the establishment of Lake Ophelia National Wildlife Refuge, Avoyelles Parish, Louisiana. Final Environmental Assessment. Atlanta, GA.

U.S. Fish And Wildlife Service. 1998. Lake Ophelia and Grand Cote Refuge Complex Biological Update/Recommendations. Atlanta, GA.

Approval of Compatibility Determination

The signature of approval is for all compatibility determinations considered within the comprehensive conservation plan. If one of the described uses is considered for compatibility outside of the plan, the approval signature becomes part of that determination.

Refuge Manager: //S// Mike Chouinard 9/20/05
(Signature/Date)

Regional Compatibility Coordinator: //S// Steve Johnson 26Sep05
(Signature/Date)

Refuge Supervisor: //S// Lou Hinds 9/28/05
(Signature/Date)

Regional Chief, National Wildlife Refuge System, Southeast Region: //S// Jon Andrew 9-29-05
(Signature/Date)

Appendix VI. Management Methods and Priorities

PARTNERSHIPS

The Service's Partners for Fish and Wildlife program helps accomplish its mission by offering technical and financial assistance to private landowners to voluntarily restore wetlands and other fish and wildlife habitats on their land. The program emphasizes the reestablishment of native vegetation and ecological communities for the benefit of fish and wildlife in concert with the needs and desires of private landowners.

The Service also enlists the assistance of a wide variety of other partners to help restore wildlife habitat on private lands. These partners include other Federal agencies, Tribes, State and local governments, conservation organizations, academic institutions, businesses and industries, school groups, and private individuals. While not a program requirement, a dollar-for-dollar cost share is usually sought on a project-by-project basis.

Since the program's inception in 1987, these partnerships have generated significant habitat restoration accomplishments on private lands, primarily focused on the restoration of wetlands, native grasslands, stream banks, riparian areas, and in-stream aquatic habitats. These restored habitats now provide important food, cover, and water for Federal trust species including migratory birds (e.g., waterfowl, shore and wading birds, songbirds, and birds of prey) and anadromous fish, threatened and endangered species, as well as other fish, wildlife, and plant species that have experienced population declines in the recent past. Many of these projects are located near existing National Wildlife Refuge System lands, or State Wildlife Management Areas, which provide increased benefits to fish and wildlife that rely on these lands for survival.

The assistance that the Service offers to private landowners may take the form of informal advice on the design and location of potential restoration projects, or it may consist of designing and funding restoration projects under a voluntary cooperative agreement with the landowner. Under the cooperative agreements, the landowner agrees to maintain the restoration project as specified in the agreement for a minimum of 10 years.

Typical restoration projects may include, but are not limited to:

1. Restoring wetland hydrology by plugging drainage ditches, breaking tile drainage systems, installing water control structures, constructing dikes, and reestablishing old connections with waterways.
2. Installing fencing and off-stream livestock watering facilities to allow for restoration of stream and riparian areas.
3. Removing exotic plants and animals which compete with native fish and wildlife and alter their natural habitats.
4. Prescribed burning to remove exotic species and to restore natural disturbance regimes necessary for some species survival.
5. Reconstruction of in-stream aquatic habitat through bioengineering techniques.

In addition to providing restoration assistance to private landowners, the Service also provides biological technical assistance to U.S. Department of Agriculture agencies implementing key conservation programs of the Farm Bill. The Service's assistance helps the Department of Agriculture meet the technical challenges presented by these programs while maximizing benefits to fish and wildlife resources. The Service also assists in on-the-ground habitat restoration actions associated with several of these programs.

Under the Wetlands Reserve Program, conservation easements are required to protect and restore formerly degraded agricultural wetlands. The Service provides technical assistance to Department of Agriculture agencies and to private landowners on site selection, restoration planning, and compatible uses for easements offered voluntarily by interested landowners.

AVIFAUNAL ANALYSIS

Forest Breeding Birds. The goal for forest breeding birds in the Lower Mississippi Valley was to establish self-sustaining populations for all of the roughly 70 species that breed in the valley. Although habitat objectives must ultimately address both quality and quantity, the Service initially concentrated on the size and number of forest patches in this highly fragmented landscape. A six-step process was established to set habitat objectives and population goals. The Partners-in-Flight prioritization process (Hunter et al., 1993) was utilized to set breeding bird species priorities in the valley. Six of the seven highest-priority species breeding in the valley nest in bottomland hardwood forests (Table C-1). Based on this and the historical ecosystem structure of the valley, bottomland hardwood forests were selected as the highest priority habitat type for breeding bird conservation. To determine forest patch sizes, two sources of information were used: empirical studies and a mathematically derived, theoretical, genetically viable population. Empirical studies were used primarily for the swallow-tailed kite and the Cerulean warbler.

To determine the forest patch size requirements for the theoretical genetically viable populations the following formula was used:

$A = (N \text{ c } D) + B$

A = Area of forest patch required to support a source population
N = number reproductive units (usually breeding pairs) required for a source population
D = Breeding density (usually expressed as hectares/breeding pair)
B = The area of a one-kilometer forested buffer around the forest core (N*D).

For each of several populations, the Service adopted a proposed minimum effective population size of 500 breeding adults from the recovery plan for the red-cockaded woodpecker. For monogamous species, this constitutes 250 breeding pairs. However, establishing conservation goals at the minimum threshold seems fraught with peril. Thus, to buffer breeding populations within forest patches, a goal of 500 breeding pairs per forest patch (N=500) was adopted.

For the value of D, average breeding densities from Breeding Bird Censuses conducted in the Southeastern United States were used. Even under optimal conditions, bird density in bottomland hardwoods is determined by the frequency of occurrence of patchily distributed microhabitat features (e.g., thickets for Swainson's warblers, cypress brakes for yellow-throated warblers). To account for these habitat quality factors, it was assumed that birds rarely occur in the valley at densities as high as reported in the literature, which is an additional reason for the adoption of 500 breeding pairs per forest patch as a target population.

The agricultural matrix that dominates the valley is generally considered hostile to birds breeding within forest patches. Researchers working in fragmented landscapes have found that nest predation and parasitism were high even in large forest patches (5,000 acres) in landscapes with a low percentage of forest cover. They also have found that female brown-headed cowbirds travel an average of 2 miles between feeding and breeding sites. One researcher has found that male ovenbirds singing on territories less than 900 feet from the edge of the forest were more likely to be unpaired than males from the interior of the forest. For planning purposes, it is assumed that a 0.6-mile forest buffer surrounding an interior for-

est core will reduce these negative impacts. Only those pairs within the forest core are assumed to reproduce at a rate sufficient to serve as a source population. Because the area of a 0.6-mile buffer will vary with the geometric configuration of each forest patch, the area requirements of each will differ. For planning purposes, until the actual areas of interior forest within each forest patch are determined, doubling the core forest area (B=2) will generally result in forest patch requirements that approximate or exceed a 0.6-mile buffer around the desired interior forest area.

As an example, Swainson's warblers have been noted to occur at densities generally ranging from one pair per 6 acres to one pair to 11 acres. Taking the average of one pair per 9 acres, if Swainson's warblers occur over a large area at this density, 500 pairs will require 4500 acres. Applying the doubling factor as a surrogate for the 0.6-mile buffer produces a desired forest patch size of 9,000 acres. The Service made this calculation for all valley forest breeding species. For planning purposes, the Service placed species into three forest patch size groups designed to meet their specific area requirements: 10,000-20,000, 20,000-100,000, and >100,000 acres.

Once the aerial habitat requirements of the high priority species were determined and the existing habitat was measured using 1992 thematic mapper images, specific locations across the valley were identified for habitat protection/restoration. In addition to habitat requirements and existing forest locations, several other factors such as flooding frequency, current land use, adjacent land use, ownership, and reforestation potential were used to identify proposed habitat protection/restoration sites. Where possible, restoration sites were centered on existing public land. Where linkages could logically be created, existing forest patches were combined to reach target sizes. This sometimes resulted in several existing 10,000- or 20,000-acre patches being combined into a proposed 100,000-acre patch.

Ultimately 101 proposed Breeding Bird Forest Patches were identified for the valley, but the number and location of these sites are not final, and probably never will be. A massive reforestation effort will be necessary to meet these objectives, and their achievement often will be opportunity driven. As new opportunities arise and old objectives become unattainable, the locations of the Breeding Bird Forest Patches will change.

Prioritized species suites were developed for Lake Ophelia National Wildlife Refuge, based on present and potential habitat (Table C-2). The Refuge is part of the Three Rivers Source Population Objective Area, one of only 13 identified 100,000-acre forest patches in the valley. High priority species for this forest patch include: Swainson's warbler, swallow-tailed kite, and cerulean warbler. For Lake Ophelia National Wildlife Refuge a target density for Swainson's warblers will be approximately one nesting pair per 9 acres. To support 4,000 pairs, assuming all acreage is suitable or optimal habitat, about 36,000 acres (without the buffer included) will be needed. However, as stated above it is risky to accept the assumption that all habitat is suitable or optimal for any priority species within a discrete habitat patch. A better assumption is that no more than half of all forested acreage is optimal or suitable (because of, e.g., ridges, within a ridge and swale topography) for this species and therefore 72,000 acres (with buffer included) may be necessary to support the population target of 4,000 pairs. This acreage requirement is well above that suggested for this species elsewhere in the valley, but where there are already larger existing forest patches Swainson's warblers occur in higher densities.

An acreage target for the Three Rivers Source Population Objective Area and Lake Ophelia National Wildlife Refuge at 100,000 acres or more of bottomland hardwoods will be established in the hope that eventually Cerulean warblers and some swallow-tailed kites may recolonize the area. As efforts continue to expand forested acreage, increasing densities from 6 to 9 pairs/100 acres may be an appropriate population objective. Reproductive data collection should also be undertaken to measure whether nesting success and fledgling survival change accordingly for this and other species on the above list.

Food is assumed to be the limiting factor for both southbound migrating shorebirds and wintering waterfowl. Following this assumption, the amount of energy required to support one bird for one day, the length of each bird's stay in the valley (wintering or transient), was calculated along with the amount of energy available from potential food sources.

$$H = \frac{P \times S \times E}{C \times F}$$

H = Amount of habitat (hectares)
P = Population goal (number of birds)
S = Length of stay in the Lower Mississippi Valley (days)
E = Energetic requirement of one bird for one day (kilojoules [kJ])
K = Energetic value of food source (kJ/g)
F = Available food (g/ha)

With some adjustments, this formula was used to calculate the amount of habitat needed to support the target populations of shorebirds and waterfowl.

Transient Shorebirds. Typically, mudflat foraging habitat is abundant in the valley during the spring northward migration. In early spring the agricultural fields are bare and winter flood water is receding; in late spring rice fields are flooded. During southward migration, in late summer and fall, fields of maturing crops are dry. Therefore, the period from July 15 to September 30 is the period when foraging habitat for migrating shorebirds is least available. The objective is to ensure that adequate shallow water habitat is available in the valley to meet the foraging requirements of the species during their southward migration.

Neither census data nor any specific estimates of shorebird populations moving through the valley during southward migration currently exist. To establish such an estimate, we examined data from the International Shorebird Survey and consulted shorebird biologists (D.L. Helmers and B.A. Harrington) with knowledge of migration patterns and continental population estimates. Based on these sources, about 500,000 shorebirds are estimated to move through the valley during fall migration.

Shorebirds using the valley range in size from 30 to 200 grams (g). The average shorebird mass (weighted by abundance) is 45 g A 45-g shorebird requires 102.77 kilojoules .kJ)/day to maintain its existing metabolic rate. For the purpose of modeling, we assumed that chironomids are the primary food item consumed by shorebirds. A gram of chironomids has a gross energy content of 23.8 kJ. Because the assimilation efficiency of birds feeding on invertebrates is approximately 73 percent, the net energy content of chironomids in about 17.6 kJ/g Thus a 45-g. shorebird requires about 6 g/day (102.77/17.6 = 5.84) of invertebrate forage to maintain its body mass.

In addition, to provide the fat reserves necessary to complete migration, shorebirds must gain about one g/day. About 2 g of invertebrate forage must be consumed each day to increase biomass by 1 g The daily food requirement then becomes about 8 g.

We used estimates of 2 g/square meter for invertebrate food density and a 10-day stopover period for each shorebird migrating south through the Lower Mississippi Valley (D.L. Helmers, pers. comm.). The overall habitat objective for shorebird foraging habitat during southward migration is 5,000 acres. The 5,000-acre goal was distributed among valley states based on their ability to provide managed mudflat habitat during the fall migration period.

For Lake Ophelia National Wildlife Refuge, specifically, present and projected future Refuge capabilities suggest that habitat should be provided to support 4,000 shorebird forage use-days during the period of fall migration, July 15 through September 30.

Wintering Waterfowl. The valley-wide goal for waterfowl is to provide enough habitat to support 4.3 million wintering ducks and 1.0 million wintering geese. The duck goal was derived from goals of the North American Waterfowl Management Plan by determining the proportion of the continental wintering population found in the valley and then multiplying the continental breeding population goal by this proportion. Duck population levels from the 1970s were used as the basis for this goal because those levels are believed to be high enough to maintain huntable populations yet attainable in today's social and economic environment. The goose population goal was derived from the number of geese observed in the valley during the mid-winter waterfowl inventories in the mid-1980s, a period when most goose populations in the Mississippi Flyway were at or near historic high levels.

As with shorebirds, it is assumed that food is the limiting factor on wintering populations. The energy value and availability of various foods (soybean, rice, corn, moist soil, and bottomland hardwood forest) were calculated, and the daily energy requirement of a female mallard (292 kilocalories/day) was used. The wintering period for waterfowl is 120 days.

Approximately 650,000 acres of foraging habitat and an additional 625,000 acres of naturally flooded habitat are needed to support the wintering waterfowl population goal. Within each State habitat objectives are divided between public and private ownership, managed and unmanaged lands, and three foraging habitats: bottomland hardwood forests, moist soil, and agricultural fields. The availability of waterfowl foraging habitat depends on adequate precipitation and the resultant ponding or overbank flooding, and water control infrastructure (levees, dikes, water control structures, pumps) to facilitate flooding.

The North American Waterfowl Management Plan and Mississippi Flyway Plans target Lake Ophelia National Wildlife Refuge to provide dependable seasonal flooding on approximately 1,200 acres in a core waterfowl sanctuary capable of supporting approximately 2.5 million duck-use days. Several hundred thousand additional duck-use days should be provided in other non-sanctuary areas of the Refuge.

ARCHAEOLOGICAL AND HISTORIC RESOURCE PROTECTION

With the enactment of the Antiquities Act of 1906, the Federal Government recognized the importance of cultural resources to the national identity and sought to protect archaeological sites and historic structures on those lands either owned, managed, or controlled by the United States. The body of historic preservation laws has grown dramatically since 1906. Several themes are consistently present in the laws and the promulgating regulations. They include: 1) each agency to systematically inventory the "historic sites" on their holdings and to scientifically assess each site's eligibility for the National Register of Historic Places; 2) consideration of impacts to cultural resources during the agency's management activities and seek to avoid or mitigate adverse impacts; 3) protection of cultural resources from looting and vandalism to be accomplished through a mix of informed management, law enforcement efforts, and public education; and 4) the increasing role of consultation with groups, such as Native American tribes and African American communities, to address how a project or management activity may impact specific archaeological sites and landscapes deemed important to those groups. The objectives and strategies below outline the Service's attempt to achieve mandated historic preservation responsibilities in a manner consistent with its mission and the Refuge's mission.

The Fish and Wildlife Service Regional Archaeologist coordinates a Memorandum of Understanding with pertinent Federal and State agencies, such as the Louisiana Fish and Game Commission, to enhance

law enforcement of the Archaeological Resources Protection Act, the Native American Grave Protection and Repatriation Act, and Section 50 of the Code of Federal Regulations as well as to facilitate investigations of the Archaeological Resources Protection Act violations and unpermitted artifact collection on the Refuge.

A review of the State Site Files located at the Louisiana Division of Archaeology has provided preliminary information on the known or potential archaeological sites and historic structures within and near the Refuge. Such information will aid the Service in the development of a long-term management plan for cultural resources. A comprehensive Refuge-wide archaeological survey is recommended so that the Service's management options can be fully realized in a cost-effective manner. The survey will provide a site predictive model based upon the region's cultural history, known site distribution, oral history interviews, historic documents, historic land use patterns, topography, geomorphology, soils, hydrology, and vegetative patterns.

ECOSYSTEM MANAGEMENT

Healthy habitats are necessary to sustain fish, wildlife, and plants on lands in the system. In the past, the administrative boundaries of national wildlife refuges have often bounded the scope of planning and policy decisions. The Service develops conservation strategies at two spatial levels in a collaborative process to solve broad scale ecological problems. Within a large spatial level, the Service has developed a cross-program approach for the Lower Mississippi Valley considering issues within the ecological, political, and social boundaries. The Lower Mississippi River Ecosystem Team focuses on landscape problems affecting fish and wildlife resources and provides specific guidance that will best serve trust species and species of concern and reduce impacts associated with forest fragmentation. At a smaller spatial level, the Comprehensive Conservation Planning team reflects the conservation strategies for national wildlife refuges within the ecosystem and identifies select area species on which to focus management efforts. Ecosystems are communities of living organisms interacting among themselves and with the physical component of their environment. Ecosystems are experiencing increasing impacts from human activities, the threat of which will require extraordinary flexibility and innovation to successfully conserve and manage them. In recent years conservationists have fostered the idea that resource conservation can best be achieved by taking a holistic approach to management. The Service is working with divergent interests on ecosystem-based approaches to conserve the variety of life and its processes in the Nation's diverse ecosystem.

The Service's mission is to conserve, protect, and enhance the Nation's fish and wildlife and their habitats for the continuing benefit of the American people. The Service has adopted an ecosystem approach to more effectively achieve this mission. Our objective is to implement consistent policies and procedures that will embrace the ecosystem approach in a "management environment" which considers the needs of all our resources in decision making. This holistic approach to fish and wildlife conservation will enable the Service to more efficiently and effectively maintain healthy ecosystems on a long-term basis and to conserve the Nation's rich biological heritage.

An ecosystem approach to fish and wildlife conservation means protecting or restoring the function, structure, and species composition of an ecosystem while providing for its sustainable socioeconomic use. It involves recognizing that, in some way, all things are connected. The ecosystem approach emphasizes conservation and management of discrete land units, watersheds, or ecosystems and requires the identification of ecosystem goals that represent resource priorities on which all programs of the Service will collectively focus their efforts. The Service must work closely and consistently with external partners, public and private, who share responsibility for ecosystem health and biological diversity. This approach will enable the Service to fulfill its fish and wildlife trust responsibilities with greater efficiency and effectiveness.

In the Southeast Region, we are approaching our nationally mandated leadership role for fish and wildlife conservation on an ecosystem basis, partnering with other Service regions, with other Federal agencies, with Sates and their local governments and citizenry, and with non- governmental organizations. Together, we are working to achieve healthy, sustainable ecosystems that ensure a continuing legacy of abundant fish and wildlife resources for all Americans to use and enjoy.

LAND PROTECTION AND CONSERVATION

The Service acquires land and interests in lands, such as easements and management rights in lands, through leases or cooperative agreements consistent with legislation or other Congressional guidelines and Executive Orders, for the conservation of fish and wildlife and to provide wildlife-oriented public use for educational and recreational purposes. These lands include national wildlife refuges, national fish hatcheries, research facilities, and other areas. The Service's policy is to acquire land from willing sellers, and only when other protective means, such as local zoning restrictions or regulations, are not appropriate, available or effective. When land is needed to achieve fish and wildlife conservation objectives, the Service seeks to acquire the minimum interest necessary to reach those objectives. If fee title is required, the Service gives full consideration to extended use reservations, exchanges, or other alternatives that will lessen the impact on the owner and the community. Donations of desired lands or interests are encouraged.

The Service, like all Federal agencies, has the power of eminent domain, which allows the use of condemnation to acquire lands and interest in lands for the public good. This power, however, requires congressional approval and is seldom used. The Service usually acquires lands from willing sellers. In all fee title acquisition cases, the Service is required by law to offer 100 percent of the property's appraised market value, as set out in an approved appraisal that meets professional standards and Federal requirements.

Planning for the acquisition of land, water, or other interests is initiated with the identification of a need to meet resource objectives that require a real property base. At Lake Ophelia National Wildlife Refuge, a team of biologists, planners, and realty specialists evaluated a myriad of factors, such as fish and wildlife resources, land use, threats to resource values, socioeconomic considerations, and cultural resources, to determine the original Refuge boundary in 1988. This plan will to protect additional habitat within the current 38,000 acre acquisition boundary as well as work with Federal, State, and Private partners to protect priority lands between the Refuge and WMA's. The acquisition of lands adjacent to Service-owned lands within the existing Refuge boundary and protection of larger contiguous forest tracts (inside or outside the current acquisition boundary) and marginal farmland, will be given the highest priority.

Generally, the Service seeks to acquire the minimum interest necessary in the land to provide the level of protection needed to achieve management goals and needs. Other options may be available on a particular project such as conservation easements, leases, cooperative agreements or life-use reservations. In the latter, the owner reserves the right to live on and use part of the property for the remainder of his/her life. Owners sometimes choose to donate all or a portion of their land because of tax advantages or as a lasting memorial.

The acquisition methods that could be used by the Service within the current acquisition boundary under this alternative are described as follows:

1. *Leases and Cooperative Agreements*
Potentially, the Service can protect and manage habitat through leases and cooperative agreements. Management control on privately owned lands could be obtained by entering into long-term renewable leases or cooperative agreements with the landowners. Short-term leases can be used to protect or manage habitat until more secure land protection can be negotiated.

2. *Conservation Easements*
Conservation easements give the Service the opportunity to manage lands for their fish and wildlife habitat values. Such management precludes all other uses that are incompatible with the Service's management objectives. Only land uses that will have minimal or no conflicts with the management objectives are retained by the landowner. In effect, the landowner transfers certain development rights to the Service for management purposes as specified in the easement. Easements will likely be useful when: (a) most, but not all, of a private landowner's uses are compatible with the Service's management objectives, and (b) the current owner desires to retain ownership of the land and continue compatible uses under the terms set by the Service in the easement.

Land uses that are normally restricted under the terms of a conservation easement include: (a) development rights (agricultural, residential, etc.); (b) alteration of the area's natural topography; (c) uses adversely affecting the area's floral and faunal communities; (d) private hunting and fishing leases; (e) excessive public access and use; and (f) alteration of the natural water regime.

3. *Fee Title Acquisition*
A fee title interest is normally acquired when (a) the area's fish and wildlife resources require permanent protection not otherwise assured; (b) land is needed for visitor use development; (c) a pending land use could adversely impact the area's resources, or (d) it is the most practical and economical way to assemble small tracts into a manageable unit.
Fee title acquisition conveys all ownership rights to the Federal Government and provides the best assurance of permanent resource protection. A fee title interest may be acquired by donation, exchange, transfer, or purchase.

Funds for the acquisition of lands for Lake Ophelia National Wildlife Refuge will likely come from the Land and Water Conservation Fund or the Migratory Bird Conservation Fund. Sources of revenue for this fund include Federal Duck Stamp sales, Refuge entrance fees, fish and wildlife fines, import taxes on arms and ammunition, offshore oil and gas leases, and Congressional appropriations.

Lands acquired by the Service will be removed from the tax rolls. To offset the fiscal impact associated with removal of these lands from the public tax rolls, the Refuge Revenue Sharing Act of 1935, as amended in 1978, provides for payments in lieu of taxes. Revenue sharing payments for the parish will compare favorably with current tax rates. If fully funded, the revenue sharing rate is 1 percent of the fair market value of a property. For lands purchased by the Service, the greatest of the following amounts is used to determine the annual payment amount to the parish. Payment for acquired land is computed according to whichever of the following formulas yields the greatest result: (1) three-fourths of 1 percent of the fair market value of the lands acquired in fee title; (2) 25 percent of the net refuge receipts collected; or (3) 75 cents per acre of the lands acquired in fee title within the parish.

Lands subject to refuge revenue sharing payments are reappraised every 5 years. The appraisals set the fair market value of the land, based on the highest and best use. The appraised market value of the fee title lands within the refuge, and thus, the revenue sharing payments, will change over time in relation to the changing value of non-refuge lands.

The Service's action will result in the acquisition of up to 20,500 acres of wildlife habitat within the current acquisition boundary, through a combination of fee title purchases and /or donations from willing sellers and less-than-fee interests (conservation easements, cooperative agreements) from willing landowners and the prioritization of lands outside the current acquisition boundary for protection. The Service believes these are the minimum interests necessary to preserve and protect the fish and wildlife resources in the proposed area.

The private property has been prioritized for acquisition using the following criteria:

1. Biological significance;
2. Existing and potential threats;
3. Significance of the area to Refuge management and administration; and
4. Existing commitments to purchase or protect land.

Based on these criteria, the lands were grouped into three priority categories: Priorities I, II, and III. Priority I lands are the highest priority for land protection. The characteristics and benefits of each priority group are described below. Figure 4-1 in the Comprehensive Conservation Plan shows a combination of the locations of the three priority groups in the conservation area.

Priority Group I - Lands within this priority group are located within the current acquisition Refuge boundary and will protect core woodland habitat contributing to the 100,000-acre SPOA.

Priority Group II - Lands within this priority group have no physical barrier between them and the core woodland area, and will provide for bear movement and additional habitat for forest-breeding birds.

Priority Group III - Lands within this priority group will provide a forested buffer and bear travel corridor, primarily along the Red River.

Table VI-1. Priority bird species for the Mississippi Alluvial Plain: entry criteria and selection rationale.[1]

Priority Entry Criteria[2]	Species	Total PIF Priority Score	Concern Scores Area Importance	Population Trend	Percent of BBS Population	Local Migratory Status[3]	Geographical or Historical Notes
Ia.	***Breeding***						
	Swainson's Warbler	29	5	3	20.8	B	
	Swallow-tailed Kite	28	4	3	25.1	E	Widespread prior to 1900
	Southeast U.S. subsp. Cerulean Warbler	28	3	4		E	Formerly breed throughout?
	Transient						
	Golden-winged Warbler	30	5	5		A	Probably more important in spring
	Winter						
	Bewick's Wren (eastern)	29	5	4		C	
Ib.	***Breeding***						
	Least Tern (Interior)	27	5	4		B	Sandbars along theMississippi
	Prothonotary Warbler	24	5	3	34.8	B	
	Painted Bunting	24	3	5	4.4	B	
	Red-headed Woodpecker	23	5	5	3.0	D	
	Bell's Vireo	23	2	3	1.0	B	
	Northern Parula	23	5	5	6.9	B	
	Worm-eating Warbler	23	2	3		B	
	Kentucky Warbler	22	3	3	4.7	B	
	Orchard Oriole	22	5	5	7.4	B	
	Yellow-billed Cuckoo	22	5	5	6.0	B	
	Wood Thrush	22	3	3	1.3	B	
	White-eyed Vireo	22	4	5	8.4	B	
	Transient						
	Stilt Sandpiper	25	4	3		A	
	Buff-breasted Sandpiper	25	4	3		A	
	Blue-winged Warbler	24	5	3		A	Probably more important in spring
	Bay-breasted Warbler	24	5	3		A	
	Bobolink	24	5	5		A	
	Canada Warbler	23	5	3		A	
	American White Pelican	22	5	1		A	
	Western Sandpiper	22	4	3		A	
	Short-billed Dowitcher	22	3	5		A	
	Black Tern	22	5	5		A	
	Veery	22	5	5		A	
	Philadelphia Vireo	22	5	3		A	
	Blackburnian Warbler	22	5	3		A	
	Palm Warbler	22	5	5		A	

Table VI-1. (Continued) Priority bird species for the Mississippi Alluvial Plain: entry criteria and selection rationale.[1]

Priority Entry Criteria[2]	Species	Total PIF Priority Score	Concern Scores Area Importance	Concern Scores Population Trend	Percent of BBS Population	Local Migratory Status[3]	Geographical or Historical Notes
Ib.	***Winter***						
Cont'd.	Henslow's Sparrow	26	2	4		C	
	Yellow Rail	25	3	3		C	
	Sedge Wren	23	5	2		C	
	LeConte's Sparrow	23	4	2		C	
	American Black Duck	22	3	5		C	
	American Woodcock	22	4	5		D	
	Short-eared Owl	22	3	5		C	
IIa.	***Breeding***						
	Yellow-breasted Chat	21	5	5	6.2	B	
	Northern Bobwhite	20	3	5		R	
	King Rail	20	5	3	9.4?	D	
	Eastern Wood-Pewee	20	3	5		B	
	Carolina Chickadee	20	4	5		R	
	Loggerhead Shrike	20	4	4		D	
	Field Sparrow	20	3	5		D	
	Baltimore Oriole	20	3	5		B	
	Yellow-crowned Night-Heron	19	5	3		D	
	Ruby-throated Hummingbird	19	5	3	7.3	B	
	Blue-gray Gnatcatcher	19	4	5		B	
	Transient						
	Semipalmated Sandpiper	21	4	5		A	
	Black-billed Cuckoo	21	5	3		A	
	Olive-sided flycatcher	21	5	3		A	
	Willow Flycatcher	21	5	3		A	
	Least Flycatcher	21	5	5		A	
	Chestnut-sided Warbler	21	5	3		A	
	Black-throated green Warbler	21	5	3		A	
	Mourning Warbler	21	5	3		A	
	Sanderling	20	3	5		A	
	Dunlin	19	3	5		A	
	Grasshopper Sparrow	19	3	5		A	
	Winter						
	Canvasback	21	4	4		C	
	Rusty Blackbird	21	5	5		C	
	American Bittern	20	3	5		D	
	Northern Harrier	20	4	4		C	
	Greater Yellowlegs	19	5	3		F	
	Lark Sparrow	19	3	5		C	
IIb.	Mississippi Kite	21	4	2	13.4	B	
	Wood Duck	19	5	2	9.3?	D	
	Acadian Flycatcher	20	3	2	5.6	B	
	Dickcissel	21	4	2	5.1	B	

Table VI-1. (Continued) Priority bird species for the Mississippi Alluvial Plain: entry criteria and selection rationale.[1]

Priority Entry Criteria[2]	Species	Total PIF Priority Score	Concern Scores Area Importance	Population Trend	Percent of BBS Population	Local Migratory Status[3]	Geographical or Historical Notes
IIIa.	Scissor-tailed Flycatcher	21	3	3		B	
	Chuck-will's widow	21	4	3	3.1	B	
	Prairie Warbler	20	2	3		B	
IIIb.	Bald Eagle	18	3	3		D	
IV.	Barred Owl	16	5	2	15.6	R	
	Red-shouldered hawk	17	4	2	9.8	D	
	Purple Martin	17	5	2	7.8	B	
	Carolina Wren	18	5	3	6.5	R	
	Red-bellied Woodpecker	18	5	2	6.1	R	
	Northern Cardinal	16	5	2	5.7	R	
Addendum							
a. Regional	Hooded Warbler	21	3	3		B	
	Yellow-throated Warbler	20	3	2		B	
	Yellow-throated Vireo	20	3	2		B	
	Summer Tanager	18	2	3		B	
b. State	NONE						
c. Local	American Redstart	20	3	3		B	
	Pileated Woodpecker	16	4	2		R	

[1]Taken from partners in Flight Bird Conservation Plan: Section 2 Avifaunal analysis.
[2]Entry criteria:

Ia. Overall Highest Priority Species. Species with total score 28-35. Ordered by total score. Consider deleting species with AI < 2 confirmed to be of peripheral occurrence and not of local conservation interest, but retain species potentially undersampled by BBS or known to have greatly declined during this century.

Ib. Overall High Priority Species. Species with total score 22-27. Ordered by total score. Consider deleting species with AI < 2 confirmed to be of peripheral occurrence and not of local conservation interest, but retain species potentially undersampled by BBS or known to have greatly declined during this century.

IIa. Area Priority Species. Species with slightly lower score total 19-21 with PT+AI=8+. Ordered by total score. These are overall moderate priority species.

IIb. Area Priority Species. Species with slightly lower score total 19-21 with PT+AI<8, but with high percent of BBS population (see below). These are overall moderate priority species.

IIIa. Additional Species of Global Priority. Add WatchList species (Partners in Flight-National Audubon Society priority species at national level), not already listed in either I or II, with AI=2+. Order by total score. Consider deleting species with AI=2 if confirmed to be of peripheral occurrence and not of local conservation interest, but retain if a local population is viable and/or manageable. These are also overall moderate priority species.

IIIb. Additional Federally Listed Species. Federal listed species if not already included above. Overall moderate priority, but appropriate legal obligations ("legal priority species") to protect through appropriate management and monitoring still apply. Only Bald Eagle meets this criterion in some Southeast physiographic areas.

IV. Additional Species of Area Responsibility. Species with high percent of Breeding Bird Survey (BBS) population (>5% in physiographic areas <200,000 km2, >10% in physiographic areas >200,000 km2) if not already listed above. Ordered from highest to lowest percentages, also include species with exceptionally high relative abundance (detection rates on BBS routes). These are overall low priority species, but are still designated "High Responsibility" within physiographic area primarily for general monitoring purposes but little if any directed management action.

Addendum

Local, state, or regional Interest Species. Includes game or nongame species identified by State Working Groups. Also, may include species often meeting criteria for I or II within other physiographic areas and therefore of regional interest for monitoring throughout the Southeast. These are overall low priority species within physiographic area, but may be more important within one or more States (especially where multiple states have designated some special protective status on the species).

[3] Local Migratory Status, codes adapted from Texas Partners in Flight as follows:

A = Breeds in temperate or tropical areas outside of region, and winters in temperate or tropics outsid of region (i.e., passage migrant).

B = Breeds in temperate or tropical areas including the region, and winters exclusively in temperate or tropics outside the region (i.e., includes both breeding and transient populations).

C = Breeds in temperate or tropical areas outside of region, and winters in both the region and in temperate or tropical areas beyond area (i.e., includes both transient and wintering populations).

D = Breeds and winters in the region, with perhaps different populations involved, including populations moving through to winter beyond the region in temperate or tropical areas (i.e., populations may be present throughout year, but may include a large number of passage migrants).

E = Species reaching distributional limits within the region, either as short-distance or long-distance breeding migrants, but at population levels above peripheral status.

F = Same as E except for wintering (non-breeding) migrants.

R = Resident, generally non-migratory species (though there may be local movements).

RP= Resident, non-migratory species, reaching distributional limits within the region, but at population levels above peripheral status.

P = Pelagic, breeding grounds outside of region, but can occur during breeding season.

PB = Post-breeding dispersal or non-breeding resident; species present during breeding season, but not known to be breeding in the region proper.

[4]Highest percent of breeding population recorded in temperate North America; numbers in " " are likely projections; ? indicates species widespread outside of temperate North America and/or waterbirds poorly sampled by Breeding Bird Survey within physio. area.

[5]AI or PT score revised from what was derived by BBS data, or lack thereof, based on better local information.

Table VI-2. Species suites for Lake Ophelia National Wildlife Refuge, based on present and potential habitat*

	Habitat Groups				
Priority Level	**Shrub-scrub**	**Forested Wetland**	**Prairies, Grasslands**	**Emergent Wetlands**	**Open Water, Mudfalts**
Extremely High		Swallow-tailed Kite Cerulean Warbler Swainson's Warbler			Least Tern (?)
High	Bell's Vireo White-eyed Vireo Painted Bunting Orchard Oriole	American Woodcock Yellow-billed Cuckoo Red-headed Woodpecker Wood Thrush Northern Parula Prothonotary Warbler Kentucky Warbler	Short-eared Owl Sedge Wren LeConte's Sparrow	Yellow Rail	Am. White Pelican Hudsonian Godwit Western Sandpiper Stilt Sandpiper Buff-breasted Sandpiper Short-billed Dowitcher Black Tern
Moderate	Field Sparrow Northern Bobwhite Yellow-breasted Chat	Eastern Wood-Pewee Carolina Chickadee Blue-gray Gnatcatcher Rusty Blackbird Baltimore Oriole	Northern Harrier Northern Bobwhite Loggerhead Shrike Lark Sparrow Grasshopper Sparrow	American Bittern King Rail	Yellow-crowned Night-Heron White Ibis Greater Yellowlegs Semipalmated Sandpiper Sanderling Dunlin
Local or Regional Interest	Prairie Warbler Brown Thrasher Gray Catbird Eastern Towhee	Chimney Swift Pileated Woodpecker Northern Flicker Acadian Flycatcher Great Crested Flycatcher Yellow-throated Warbler Hooded Warbler Summer Tanager	Barn Owl Eastern Kingbird Scissor-tailed Flycatcher Sprague's Pipit Dickcissel Eastern Meadowlark	Bald Eagle	Upland Sandpiper Willet

*List customized for Refuge, based on Partners in Flight-Lousiana Priority List for the Mississippi Alluvial Plain physiographic area.

Appendix VII. Public Involvement

PUBLIC INVOLVEMENT PROCESS

Public involvement in the development of the Comprehensive Conservation Plan and Environment Assessment for Lake Ophelia National Wildlife Refuge, located in Avoyelles Parish, Louisiana, was sought throughout the planning process. A planning team (Table VII-1) composed of representatives from various Service divisions was formed to prepare the Draft CCP and Environmental Assessment. Initially, the team focused on identifying the issues and concerns pertinent to Refuge management. The team met on several occasions from August 1997 to January 2004. During this period, the team sought the contributions of experts (Table VII-2) from various fields.

To expand the range of issues and to generate potential alternatives, the planning team assembled a scoping team consisting of representatives from agencies and organizations (Table VII-3) concerned about the future management of the Refuge. The scoping team met on September 18, 1997. Shortly thereafter, on October 28, 1998, the planning team held a public scoping meeting to gain the insights of local citizens and their perceptions of the issues and concerns facing the Refuge.

The issues and alternatives generated from these meetings, coupled with the input of the planning team, were presented in the draft environmental assessment. Over an 8 year period, a draft plan was developed for the Refuge.

The draft plan was made available for public review, beginning April 5, 2005, and ending May 20, 2005. Individuals reviewing this document represented landowners, conservation organizations, and state and local government agencies. A flyer which announced the dates of the comment period, and the dates and locations of the public meetings to discuss the draft, was mailed along with the plans. Public meetings were held on: April 19, 2005 at 6:30 p.m., at the Natural Resources Conservation Service Office, 3737 Government Street, Alexandria, Louisiana; April 20, 2005, at 6:30 p.m., at the Cottonport Bank Camp, Marksville, LA; and April 21, 2005, at 6:30 p. m., at Ecological Services Field Office, 646 Cajundome Blvd., Lafayette, Louisiana. Sixteen individuals were in attendance at all three meetings. Ten individuals presented oral comments and eleven respondents submitted written comments by mail or email.

GENERAL

One written comment questioned the Refuge's proposed management action and suggested that alternative 3 minus ATV use of the Refuge be adopted. Most other comments supported the proposed action and appreciated the information presented in the plan. The Service believes that the selection of Alternative 2 as the proposed action best meets the purpose and goals of the Refuge. One respondent was concerned with the lack of wilderness review outlined in the CCP. Refuge planning policy requires a Wilderness review concurrent with the comprehensive conservation planning process. The Service inventoried Refuge lands within the planning area and found no areas that meet the eligibility criteria for a Wilderness Study Area as defined by the Wilderness Act. Therefore, the suitability of Refuge lands for wilderness designation was not analyzed further in this plan. One individual was concerned about the accuracy of the scoping team members listed in Table VII-3. Refuge staff checked the transcripts of the meeting that occurred on September 18, 1997, and verified this information. One written comment expressed concern that the step-down management plans were not presented and the plans will lead to mismanagement of the Refuge. The level of specificity in step-down management plans is too great for inclusion in the CCP; however, the guidelines identified in the CCP goals, objectives, and strategies will

be the overriding guidance for the development of step-down plans. The goals, objectives, and strategies presented in the CCP will allow for continuity in Refuge management regardless if there is a change in staffing or funding. Step-down management plans are also an adaptive process in which once put in place, if a problem or new information arises, the plans can be modified.

Fish and Wildlife Populations
Most comments concerning fish and wildlife populations can be addressed in specific step-down plans already in place, while other plans will need to be developed. Some of these comments dealt with methods of deer harvest, control of raccoon and hogs, and pallid sturgeon use of Refuge. One respondent requested that the Refuge work with partners to update the Louisiana Black Bear Recovery Plan. The Refuge is an active partner in Louisiana Black Bear Recovery and will continue to fully participate in this adaptive process. One individual was concerned with the declining hooded merganser population and will like to see the Refuge support nesting cavities for this species. The Refuge will provide a minimum of 75 wood duck boxes which support hooded mergansers as well as other cavity-nesting species. One individual wanted the Refuge to re-examine methods used to set waterfowl step-down objectives, especially since waterfowl use in this entire area is declining. The Refuge is an active participant in the Lower Mississippi Valley Joint Venture and habitat management objectives are set to meet waterfowl step-down objectives set forth by the Joint Venture.

Habitats
Several comments concerning invasive plant management on Refuge lakes were received. Two comments dealt with controlling the amount of vegetation with use of flooding or grass carp. Although, the two management methods cannot be used simultaneously, both ideas are noteworthy and are likely to be explored in the future through specific step-down management plans. Of course, the flooding option will entail major consultation with the Army COE, adjacent landowners, and other partners before any feasibility study could occur. Comments received on reforestation of the Refuge varied in context. One respondent believes reforestation is good but will like to see some areas maintained in shrub/cut-over habitats. Two respondents wanted like to see the entire Refuge reforested to bottomland hardwood forests and one of those comments suggested eradicating the cooperative farming program. The Refuge plans to reforest a total of 5,766 acres, maintain 2500 acres in the Cooperative farming program, and work with partners within the Three Rivers Source Population Objective Area to reforest additional areas. The Service believes the proposed action will be the most effective way to meet the purposes of Lake Ophelia National Wildlife Refuge.

Land Protection and Conservation
One respondent believed the Refuge boundary should be expanded to include regions presented in Alternative 3 in order to help meet the goal of assembling a 100,000-acre block of contiguous bottomland hardwood forest and forested corridors between these blocks. The Three Rivers SPOA, which includes Lake Ophelia National Wildlife Refuge, is a 283,204-acre area with an objective of providing 100,000 acres of bottomland hardwood forest and a core area of 84,000 acres. A core area is a contiguous block of forest that is 1 kilometer (0.62 mile) from the forest edge. Waterways within forest blocks are included in that acreage. At the present time, the Three Rivers SPOA has a core area of 80,000 acres, only 4,000 acres short of meeting the 100,000-acre block objective. Reforestation of relatively small areas in appropriate locations could easily meet this objective. The Service believes that the proposed reforestation within the current Refuge boundary and working with partners to reforest prioritized areas outside the current acquisition boundary will meet this goal. One comment requested the Refuge participate in the Spring Bayou Restoration Project. The Service supports this landscape level watershed management endeavor and will participate as appropriate.

Education and Visitor Services
Most comments concerning visitor services can be addressed in specific step-down plans already in place, while other plans will need to be developed. Some respondents will like the Refuge to allow more archery deer hunting days or areas targeted specifically for bow hunters, and elimination of gun hunting all together. One comment supported adding a riffle gun hunting season. One respondent did not want any hunting to occur on the Refuge. One respondent will like to eradicate ATV trails from the Refuge while one respondent did not support the addition of ATV trails or converting trails to vehicle access. Harvest management strategies are designed for multiple user groups within certain population parameters. The Service will try to balance the needs of different user groups recognizing that all needs may not be met.

One comment requests the Refuge to allow mountain bikes to access hunting areas. The use of mountain bikes is something the Refuge will explore in the future. One respondent does not want the Refuge to allow firearm hunters to place deer stands within 100 yards of private property or place parking lots any closer than 200 yards from private property. The Service encourages hunters to be ethical and respectful of other hunters and private property owners and thus be courteous of stand placement. The Refuge will carefully place new parking lots to minimize wildlife disturbances and conflicts with adjacent landowners. Comments were received regarding vehicular access and road construction. Increase in the speed of vehicles and wildlife-related vehicle accidents and fiscal feasibility are a few reasons the Service decided to use gravel instead of pavement.

Table VII-1: Lake Ophelia National Wildlife Refuge Comprehensive Conservation Planning team members and list of preparers.

Ray Aycock, *Supervisory Wildlife Management Biologist (former)*,
Wildlife and Habitat Management Office, Jackson, Mississippi

John Earle, *Refuge Operations Specialist (former),*
Lake Ophelia National Wildlife Refuge Complex, Marksville, Louisiana

Dave Erickson, *Refuge Planner (former),*
Southeast Regional Office, Atlanta, Georgia

Mike Esters, *Acting Refuge Manager (former),*
Lake Ophelia National Wildlife Refuge Complex, Marksville, Louisiana

John Forester, *Fisheries Biologist,*
Baton Rouge Fisheries Assistance Office, Baton Rouge, Louisiana

Jennifer Harris, *Refuge Planner (former),*
Southeast Regional Office, Atlanta, Georgia

Dennis Sharp, *Project Leader (former),*
Lake Ophelia National Wildlife Refuge, Marksville, Louisiana

Eric Smith, *Refuge Manager (former),*
Central Louisiana National Wildlife Refuge Complex, Marksville, Louisiana

Donna Stanek, *Outdoor Recreation Planner (former),*
Lower Mississippi Valley Ecosystem, Crossett, Arkansas

Bob Strader, *Supervisory Wildlife Management Biologist (current),*
Wildlife and Habitat Management Office, Jackson, Mississippi

David Walther, *Wildlife Biologist,*
Lafayette Ecological Services Office, Lafayette, Louisiana

Mike Chouinard, *Project Leader (current),*
Central Louisiana National Wildlife Refuge Complex, Marksville, Louisiana

Tina Chouinard, *Natural Resource Planner (current),*
Central Louisiana National Wildlife Refuge Complex, Marksville, Louisiana

Richard Crossett, *Refuge Biologist (current),*
Central Louisiana National Wildlife Refuge Complex, Marksville, Louisiana

Ben Mense, *Deputy Project Leader (former),*
Central Louisiana National Wildlife Refuge Complex, Marksville, Louisiana

Kathleen Schmidt, *Mangi Environmental,*
McLeon, Virginia.

Table VII-2: Expert contributors to the Lake Ophelia National Wildlife Refuge Comprehensive Conservation Plan and their areas of expertise.

Name	Field of Expertise
Blaine Elliott, Cartographer, U.S. Department of the Interior, Fish and Wildlife Service, Lower Mississippi Valley Joint Venture Office, Vicksburg, Mississippi	Geographical information system, cartography
Pete Jerome, Refuge Supervisor, U.S. Department of the Interior, Fish and Wildlife Service, Refuges, Southeast Regional Office, Atlanta, Georgia	
Frank Bowers, Supervisory Wildlife Biologist, U.S. Department of the Interior, Fish and Wildlife Service, Wildlife and Habitat Management, Southeast Regional Office, Atlanta, Georgia	Wildlife management, ecosystem management
Michael Jordan, District Conservationist, U.S. Department of Agriculture, Natural Resources Conservation Service, Avoyelles Parish, Marksville, Louisiana	Soil and water conservation, Federal land conservation programs
Dexter Soileau, Law Enforcement Officer, U.S. Department of the Interior, Fish and Wildlife Service, Lake Ophelia National Wildlife Refuge Complex, Marksville, Louisiana	Wildlife law enforcement, visitor protection
Chuck Hunter, Migratory Bird Biologist, U.S. Fish and Wildlife Service, Atlanta, Georgia	Migratory bird management
Richard Crossett, Wildlife Biologist, Lake Ophelia National Wildlife Refuge, Marksville, Louisiana	Geographic information system, maps, and figures
Anita Goetz, Private Lands Biologist, U.S. Fish and Wildlife Service, Ecological Services, Lafayette, Louisiana	Research and writing on affected environment
Richard Kanaski, Regional Archaeologist, U.S. Fish and Wildlife Service, Savannah, Georgia	Research and writing on cultural resources
Dr. Bob Gramling, Sociologist, Delta Research Corporation, Layfayette, LA	Research and writing on socioeconomic environment and effects

Table VII-3: Lake Ophelia National Wildlife Refuge Scoping Team members.

Catherine Bordelon, Avoyelles Wildlife Federation, Marksville, Louisiana

Don Brouillette, U.S. Department of Agriculture, Consolidated Farm Services Agency, Marksville, Louisiana

Wilbert Carmouche, Avoyelles Parish Office of Tourism, Marksville, Louisiana

Dave Fruge, Supervisory Wildlife Biologist, Lafayette Ecological Services Office, Lafayette, Louisiana

Louis Gros, Avoyelles Soil and Water Conservation District, Marksville, Louisiana

Sidney Joffrion, Avoyelles Wildlife Federation, Marksville, Louisiana

Vicki Joffrion, Avoyelles Wildlife Federation, Marksville, Louisiana

Albin Lemoine, Avoyelles Parish School Board, Marksville, Louisiana

Stuart McLane, U.S. Department of Defense, U.S. Army Corps of Engineers Vicksburg District, Vicksburg, Mississippi

Roderick Scott, Office of U.S. Senator Mary Landrieu, Alexandria, Louisiana

Kerney Sonnier, Louisiana Department of Wildlife and Fisheries, Opelousas, Louisiana

Bob Stewart, Office of U.S. Congressman John Cooksey, Alexandria, Louisiana

Appendix VIII. Budget Requests - Refuge Operating and Maintenance Needs

Table VIII-1. Lake Ophelia National Wildlife Refuge operating and maintenance needs.

Project Number	CCP Project Description Number	Project Description	Cost Estimate ($1000's)
Fish and Wildlife Populations			
RONS00012	1	Conduct Science-based Inventory and Monitoring of Plant and Animal Populations	127
RONS00013	3	Control Invasive feral swine	41
RONS00014	1	Amphibian and retile survey	51
RONS00014	1	Develop GIS capabilities for wetland restoration within Refuge	25
Habitats			
MMS01003	5	Replace John Deere Tractor	78
MMS98004	9	Replace military road grader	181
MMS01008	5	Replace 1991 Alamo bushhog	13
MMS04001	5	Replace Mower	17
MMS01004	9	Replace Tractor	91
MMS01006	9	Replace Backhoe	64
MMS01005	9	Replace Dozer	101
MMS01009	9	Replace Disk	17
MMS01002	9	Replace Grader	180
MMS01001	9	Replace D-7 Dozer	213
RONS00001	5	Improve Deteriorating Water Mgmt. Capabilities	44
RONS98019	6	Develop Forest Habitat Mgmt Program	151
RONS97002	5	Equipment to Maintain Water Mgmt Infrastructure	230
RONS02002	5	Expand Refuge moist soil and farming activities	165
RONS00006	8	Plan and implement wetland restoration within Refuge	151
RONS98014	4	Improve early water capabilities	65
RONS98015	4	Improve water mgmt. in individual swales	69
RONS02001	4	Improve water capabilities on Refuge	65
RONS98016	4	Improve water delivery system	44
RONS00007	6	Develop forest habitat mgmt program	127
Land Protection and Conservation			
RONS00007	14	Conduct Comprehensive Archaeological Survey	123
RONS97006	13	Conduct boundary surveys	60

Table VIII-1. (Continued) Lake Ophelia National Wildlife Refuge operating and maintenance needs.

Project Number	CCP Project Description Number	Project Description	Cost Estimate ($1000's)
Education and Visitor Services			
MMS00017	19	CN Lake Long Rd (Rte 10, 10 mi.)	$418
MMS00016	15	Improve Refuge Directional and Interpretive Signage	$76
MMS00031	16	Construct Fishing and Wildlife Observation Access – Duck Lake	136
MMS00018	16	Construct wildlife and observation interpretive facilities in Possum Bayou	75
MMS00017	16	Construct wildlife/waterfowl observation area	85
MMS00026	17	Improve Lake Ophelia Fishing Access	220
MMS00011	20	Reconstruct Duck Lake Road	862
MMS00009	19	PE Bucks Road	50
MMS00006	21	PE First Crossing Road	50
MMS93021	21	Reconstruct Shop Road	1278
MMS00008	21	Reconstruct First Cross Levee Road	217
MMS00007	21	Reconstruct Gravel Bayou Jeansonne Road	381
MMS00010	21	Reconstruct School Road	258
MMS00012	20	Reconstruct Westcut Lake Road	327
MMS00005	21	Rehabilitate Ramp Road	327
MMS00009	19	CN/CE Bucks Road	1205
MMS00006	21	CN/CE First Crossing Road	678
MMS00017	19	Reconstruct Lake Long Road	52
RONS00004	18	Improve Boat Access at Red River Cut-off	98
RONS00009	15	Staffing to Support Visitor Services	99
RONS02003	15	Enhance public use opportunities	40
Refuge Administration			
MMS01011	24	Replace 1998 Dodge	31
MMS03004	24	Replace 1996 Honda ATV	9
MMS03003	24	Replace 1991 Honda ATV	7
MMS03001	24	Replace 1992 Honda ATV	7
MMS03002	24	Replace 1993 Honda ATV	7
MMS98005	24	Replace 1998 Blazer	28
MMS01016	24	Replace 1985 GMC	40
MMS01018	24	Replace 2001 GMC ½ ton truck	31
MMS01017	24	Replace 2001 ¾ ton truck	31
MMS01019	24	Replace 2001 Sterling dump truck	103
MMS03005	24	Replace 2003 Chev Truck	31
MMS03006	24	Replace 2002 Tahoe	31
MMS03007	24	Replace 2002 Sterling Truck tractor	94
MMS98016	24	Replace boat	27
RONS03000	22	Provide Refuge Officer	133

Appendix IX. Finding of No Significant Impact

Lake Ophelia National Wildlife Refuge
Comprehensive Conservation Plan
Avoyelles Parish, Louisiana

INTRODUCTION

The U.S. Fish and Wildlife Service proposes to protect and manage certain fish and wildlife resources in Avoyelles Parish, Louisiana, through the Lake Ophelia National Wildlife Refuge (Refuge). An Environmental Assessment has been prepared to inform the public of the possible environmental consequences of implementing the Comprehensive Conservation Plan for Lake Ophelia 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.

ALTERNATIVES

In developing the Comprehensive Conservation Plan for Lake Ophelia National Wildlife Refuge, the Fish and Wildlife Service evaluated four alternatives: Alternatives 1, 2, 3, and 4.

The Service adopted Alternative 2, the "Preferred Alternative," as the plan for guiding the direction of the Refuge for the next 15 years. The overriding concern reflected in this plan is that wildlife conservation assumes first priority in refuge management; wildlife-dependant recreational uses are allowed if they are compatible with wildlife conservation. Wildlife dependent recreation uses (hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation) will be emphasized and encouraged.

Alternative 1. No Action Alternative

Alternative 1 represents no change from current management of the Refuge. Under this alternative, 17,525 acres of Refuge lands would be protected, maintained, restored, and enhanced for resident wildlife, waterfowl, Neotropical migratory birds, and threatened and endangered species. Refuge management programs would continue to be developed and implemented with little baseline biological information. All Refuge management actions would be directed toward achieving the Refuge's primary purposes (preserving wintering habitat for mallards, pintails, and wood ducks; providing production habitat for wood ducks; and helping to meet the habitat conservation goals of the North American Waterfowl Management Plan), while contributing to other national, regional, and State goals to protect and restore shorebird, Neotropical breeding bird, woodcock, and Louisiana black bear populations. Cooperative farming would continue to be used to manage and maintain approximately 3,700 acres of cropland and moist soil habitats. No active forest management (other than reforestation of previously planted, but failed, sites) would occur. The current level of wildlife-dependent recreation activities (hunting, fishing, and wildlife observation and photography, environmental education and interpretation) opportunities would be maintained. Under this alternative, the Refuge would continue to seek acquisition of all willing seller properties within the present acquisition boundary.

Alternative 2.
The preferred alternative, Alternative 2, is considered to be the most effective management action for meeting the purposes of the Refuge by conserving wetlands and migratory waterfowl while reducing forest fragmentation. The preferred alternative would add more staff, equipment, and facilities and seeks to conduct extensive wildlife population monitoring/surveying in order to assess population status, trends, wildlife habitat associations, and population responses to habitat management. The intensive management of habitats is expected to provide a wide variety of habitat elements that will in turn sustain a richer variety of flora and fauna through their life cycles. This proposed management will benefit not only waterfowl, but also shorebirds, Neotropical migratory and upland birds, fishery resources, reptiles, amphibians, threatened and endangered species, especially the Louisiana black bear, and resident wildlife species. The preferred alternative also calls for intensive efforts to forge partnerships to attain Refuge goals such as identifying lands of conservation priority and working with partners to contribute to the 100,000-acre forest block objective for the Three Rivers Source Population Objective Area. The six priority wildlife-dependent recreational uses will continue to be supported and will be expanded throughout the Refuge under the preferred alternative. This alternative will also strengthen the close working relationship in existence between the Service, the local community, conservation organizations, the Louisiana Department of Wildlife and Fisheries, and other State and Federal agencies.

Alternative 3.
The primary focus under Alternative 3 would be to add more staff, equipment, and facilities in order to maximize bottomland hardwood forest restoration in support of migratory birds and other wildlife. Under this alternative, 17,525 acres of Refuge lands would be protected, maintained, restored, and enhanced for resident wildlife, waterfowl, migratory nongame birds, and threatened and endangered species. Additionally, the acquisition boundary would be expanded (77,000 acres) to create forested linkages with the State of Louisiana's Spring Bayou and Grassy Lake Wildlife Management Areas. The primary purpose for this expansion would be to provide a bottomland forest system of sufficient size and carrying capacity to reach regional objectives associated with area-sensitive Neotropical migratory birds, Louisiana black bear, forest-associated waterfowl, woodcock, and wetland forest landscapes. Extensive wildlife and plant censuses and inventory activities would be initiated to obtain the biological information needed to implement management programs on the Refuge. Most Refuge management actions would be directed toward creating and managing the largest possible amount of interior and corridor forest habitat (for Louisiana black bear, Neotropical migratory songbirds, and other interior forest wildlife) and reducing forest fragmentation, while supporting the Refuge's primary purpose; and help meet the habitat conservation goals of the North American Waterfowl Management Plan) with the smallest possible commitment in land resources. Cooperative farming would be eliminated. Agricultural acreage would be reduced to 240 acres; all farming would be conducted by Refuge staff. A forest management plan, designed to address this alternative's primary goals by creating spatially and specifically diverse woodlands, would be developed and implemented. High quality wildlife-dependent recreation activities (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) opportunities would increase.

Alternative 4.
The primary focus under Alternative 4 would be to add more staff, equipment, and facilities in order to restore the Refuge's wetland hydrology in support of migratory birds, particularly waterfowl and shorebirds. Cooperative farming would be maintained to provide more waterfowl habitat. A forest management plan, designed to address this alternative's forest management goals of creating spatially and specifically diverse woodlands (with no negative effect to waterfowl obligations), would be developed and implemented. High quality wildlife-dependent recreation activities (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) opportunities would be provided and increased. Under this alternative, the Service would continue to seek acquisition of all willing seller prop-

erties within the present acquisition boundary. Lands acquired as part of the Refuge would be made available for compatible wildlife-dependent recreation.

SELECTION RATIONALE

Alternative 2 is selected for implementation because it directs the development of programs to best achieve the Refuge purpose and goals; emphasizes the restoration of open wetland and forest habitats; collects habitat and wildlife data; and ensures long term achievement of Refuge and Service objectives. At the same time, these management actions provide balanced levels of compatible public use opportunities consistent with existing laws, Service policies, and sound biological principles. It provides the best mix of program elements to achieve desired long term conditions.

Under Alternatives 2, all lands within the approved 38,000 acre acquisition boundary will be protected, maintained, and enhanced and lands outside the boundary will be prioritized for land protection best achieving 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, population management, land conservation, and visitor service management activities on Lake Ophelia National Wildlife Refuge would result in increased migratory bird utilization and production; increased protection for threatened and endangered species; enhanced wildlife populations; bottomland hardwood forest restoration; and enhanced opportunities for wildlife dependent recreation and environmental education. These effects are detailed as follows:

1. Duck and shorebird use of the Refuge would improve significantly as intensive water management efforts would provide dependable flooded habitats to match the migration chronologies of these species. Forest breeding birds would benefit from Refuge land acquisition, reforestation, and forest management actions. Woodcock population numbers and habitat use would be monitored and managed and woodcock use of the Refuge would be expected to increase.

2. Migratory bird production would increase by enhancing forest habitat quality for Neotropical migratory birds, habitat and food availability for wintering waterfowl, and through hydrological restoration and reforestation. Forest management practices such as reforestation, selective harvests, and preservation of mature stand components would benefit nesting and feeding habitat for Neotropical migratory birds.

3. Refuge land acquisition, reforestation, and protection would benefit the recovery of threatened and endangered species. Louisiana black bear recovery efforts in the Red River/Three Rivers Source Population Objective Area would be fully supported with Refuge staff and resources. Refuge reforestation and forest management actions would provide improved habitat in support of black bear recovery efforts. Pallid sturgeon recovery efforts would be supported under Alternative 2 by habitat restoration, technical assistance to other private landowners bordering the Red River, and assistance with Service recovery efforts.

4. The Refuge's habitat mix of cropland, early success ional reforestation areas, and bottomland hardwood forest, as well as habitat management, would 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 developments, would result in improved wildlife dependent recreational opportunities. While public use would 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 would not result in development of buildings and/or structures within floodplain areas, nor would they result in irrevocable, long term adverse impacts. In fact, a major thrust of the management action is to implement bottomland hardwood forest and open wetland restoration within the wildlife communities of the refuge that has been severely impacted by actions of previous landowners. Implementing the management action would result in substantial enhancement of forest and open wetland communities and net increases to the Nation's bottomland hardwood forest and open wetland acreage and quality.

POTENTIAL ADVERSE EFFECTS AND MITIGATION MEASURES

Wildlife Disturbance

Disturbance to wildlife at some level is an unavoidable consequence of any public use program, regardless of the activity involved. Obviously, some activities innately have the potential to be more disturbing than others. The management actions to be implemented have been carefully planned to avoid unacceptable levels of impact.

As currently proposed, the known and anticipated levels of disturbance of the management action are considered minimal and well within the tolerance level of known wildlife species and populations present in the area. Implementation of the public use program would take place through carefully controlled time and space zoning such as establishment of black bear sanctuary areas, establishment of protection zones around key sites, such as rookeries and eagle nests (if necessary), closures of all terrain vehicle trails, and routing of roads and trails to avoid direct contact with sensitive areas, such as nesting bird habitat and black bear dens, etc. All hunting activities (season lengths, bag limits, number of hunters) would be conducted within the constraints of sound biological principles and refuge specific regulations established to restrict illegal or non conforming 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.

User Group Conflicts

As public use levels expand across time, some conflicts between user groups may occur. Programs would be adjusted, as needed, to eliminate or minimize these problems and provide quality wildlife dependent recreational opportunities. Experience has proven that time and space zonings, such as establishment of separate use areas, use periods, and restricting numbers of users, are effective tools in eliminating conflicts between user groups.

Effects on Adjacent Landowners

Implementation of the management action would not impact adjacent or in holding landowners. Essential access to private property would be allowed through issuance of special use permits. Future land acquisition would occur on a willing seller basis only, at fair market values within the approved acquisition boundary. Lands are acquired through a combination of fee title purchases and/or donations and less than fee title interests (e.g., conservation easements, cooperative agreements) from willing sellers. Funds for the acquisition of lands within the approved acquisition boundary would likely come from

the Land and Water Conservation Fund or the Migratory Bird Conservation Act. The management action contains neither provisions nor proposals to pursue off refuge stream bank riparian zone protection measures (e.g., fencing) other than on a volunteer/partnership basis.

Land Ownership and Site Development
Proposed acquisition efforts by the Service would result in changes in land and recreational use patterns, since all uses on national wildlife refuges must meet compatibility standards. Land ownership by the Service also precludes any future economic development by the private sector.
Potential development of access roads, dikes, control structures, and visitor parking areas could lead to minor short term negative impacts on plants, soil, and some wildlife species. When site development activities are proposed, each activity will be given the appropriate National Environmental Policy Act consideration during pre construction planning. At that time, any required mitigation activities will be incorporated into the specific project to reduce the level of impacts to the human environment and to protect fish and wildlife and their habitats.

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:

All affected landowners
Congressional representatives
Governor of Louisiana
Louisiana Department of Wildlife and Fisheries
Louisiana State Historic Preservation Officer
Louisiana Department of Natural Resources, Coastal Management Division
Kisatchie Delta Regional Planning and Economic Development District
Local community officials
Interested citizens
Conservation organizations

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 for the Lake Ophelia 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 128-133, and page 144-146).

2. The actions will not have a significant effect on public health and safety. (Environmental Assessment, page 144).

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 144-146).

4. The effects on the quality of the human environment are not likely to be highly controversial. (Environmental Assessment, pages 128-133, and page 145-146).

5. The actions do not involve highly uncertain, unique, or unknown environmental risks to the human environment. (Environmental Assessment, pages 128-133, and page 144-146).

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 128-133, and page 144-146).

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, page 145).

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, pages 144-145).

9. The actions are not likely to adversely affect threatened or endangered species, or their habitats. (Environmental Assessment, pages 128-130).

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 144).

SUPPORTING REFERENCES

Fish and Wildlife Service. 2005. Draft Comprehensive Conservation Plan and Environmental Assessment for Lake Ophelia National Wildlife Refuge, Avoyelles Parish, Louisiana. 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 Lake Ophelia National Wildlife Refuge and was made available in April 2005. Additional copies are available by writing: U.S. Fish and Wildlife Service, 1875 Century Boulevard, Atlanta, GA 30345.

//S// Cynthia Dohner 9/30/05

Sam D. Hamilton
Regional Director

Date