I. Background

INTRODUCTION

The U.S. Fish and Wildlife Service (Service) has developed this Draft Comprehensive Conservation Plan to provide a foundation for the management and use of Lake Ophelia National Wildlife Refuge (Refuge or Lake Ophelia NWR) 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 inclusion of an Environmental Assessment (page 85). 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 State. In developing this plan, the planning team and Refuge staff have incorporated the input of local citizens and the general public through a series of stakeholder and public scoping meetings. This public involvement and the planning process itself are described in the Plan Development section (Chapter III).

The plan represents the Service's proposed alternative and is being put forward after consideration of three other alternatives, as described in the accompanying Environmental Assessment. After reviewing a wide range of public comments and management needs, the planning team developed these alternatives in an attempt to determine how to best meet the goals and objectives of Lake Ophelia National Wildlife Refuge. The proposed alternative is the Service's recommended course of action for the future management of the Refuge, and is embodied in this Comprehensive Conservation Plan.

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 Draft 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 (the 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. In addition, 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

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.*

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 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 Lower Mississippi River Alluvial Plain (LMRAP; Figure 1-1). The LMRAP 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 LMRAP'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 Lower Mississippi River Alluvial Plain 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 Lower Mississippi River Alluvial Plain. 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 LMRAP that have become extinct, endangered, or threatened include the red wolf, Florida panther, ivory-billed woodpecker, Bachman's warbler, and Louisiana black bear.

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 contin-

Figure 1-1. Lower Mississippi Alluvial Plain.

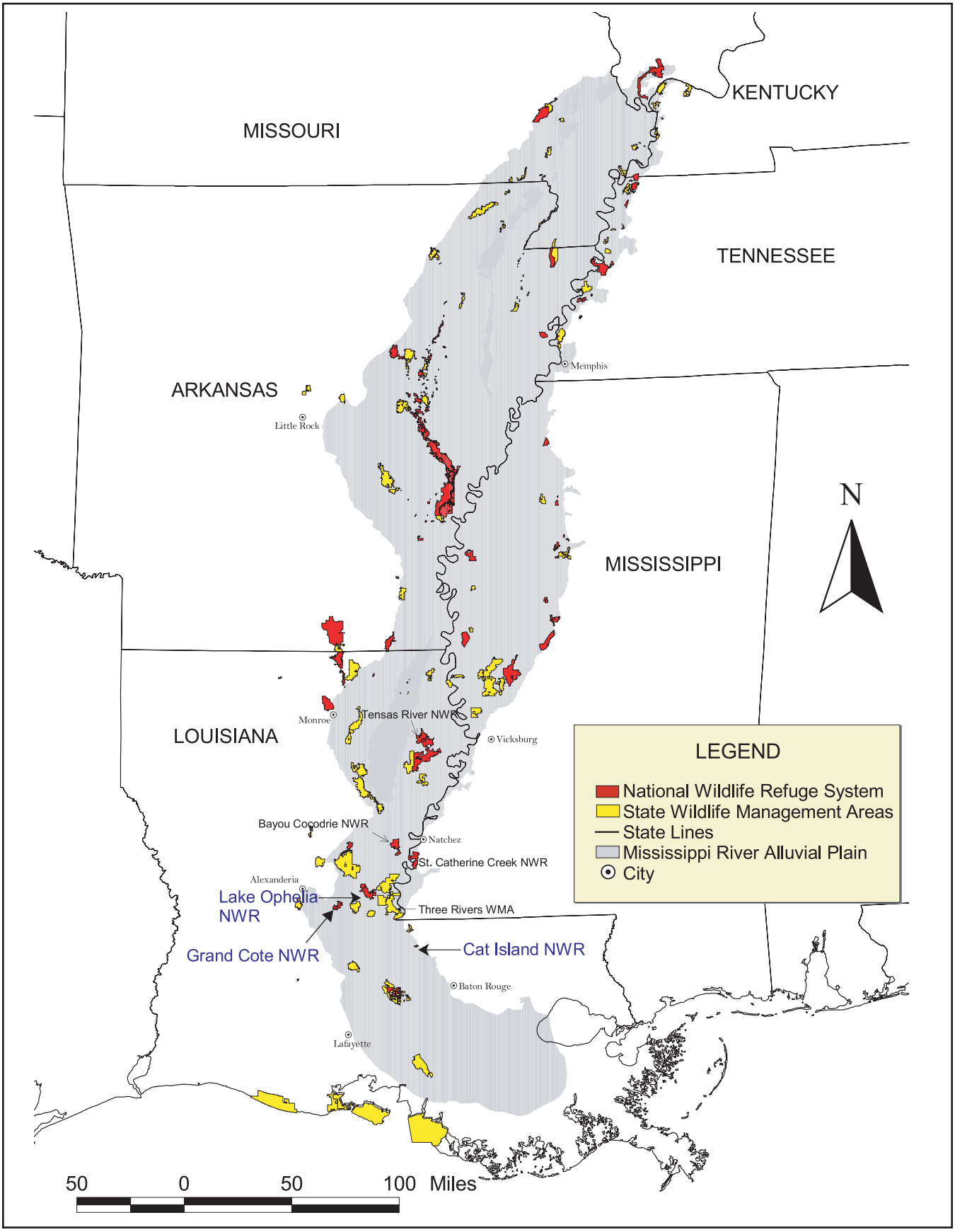
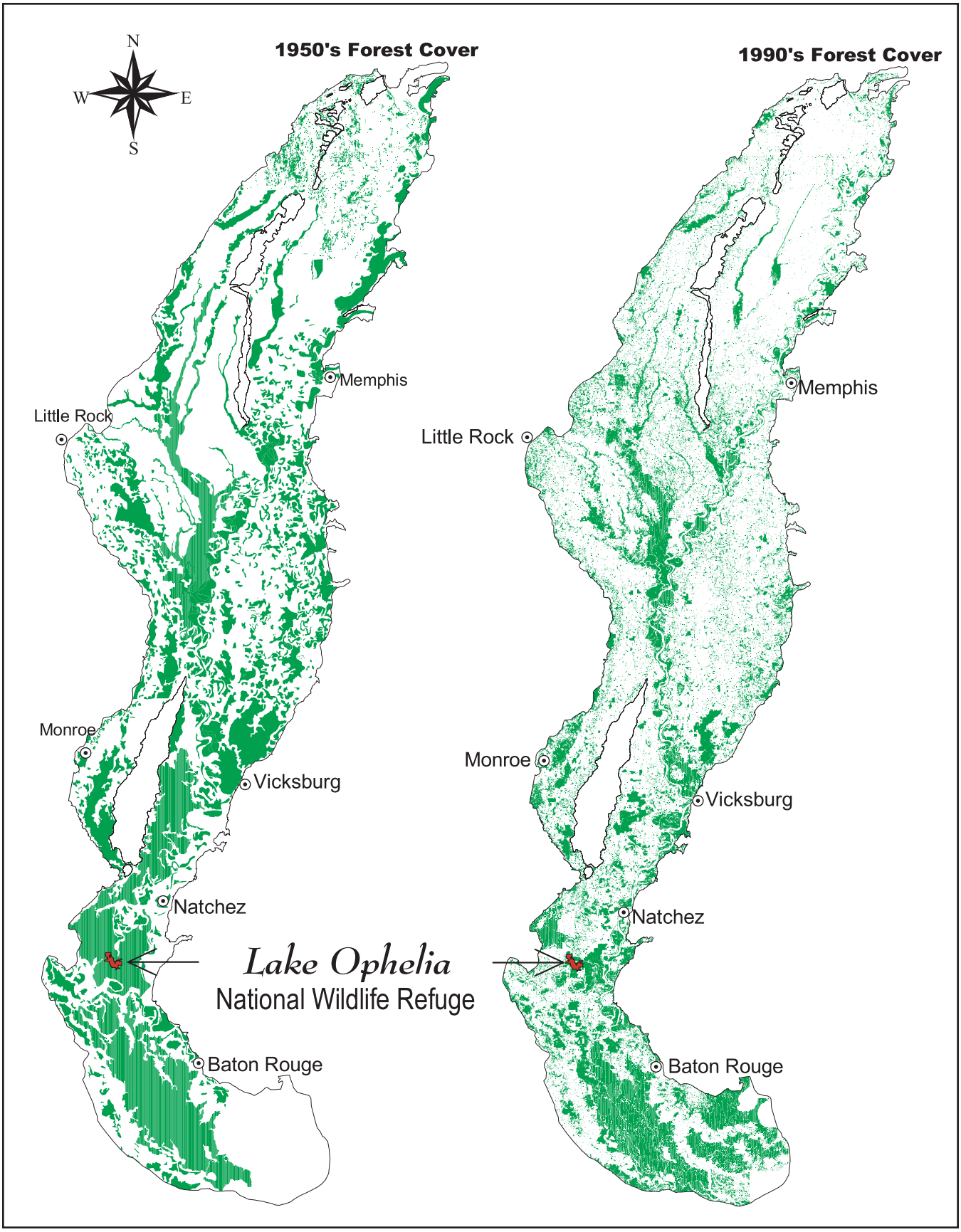


Figure 1-2. Forest cover changes in the Lower Mississippi Alluvial Plain.



uous 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 LMRAP. 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 LMRAP'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 LMRAP. The goal is to prioritize and manage wetlands to most effectively maintain and possibly restore the biological diversity in the LMRAP. 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 LMRAP will not be reforested. Some areas would 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 LMRAP'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 LMRAP. 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 LMRAP.

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 LMRAP.

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 hydro-

logic alterations throughout the LMRAP. Lake Ophelia NWR 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 NWR would 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 LMRAP 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 LMRAP 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 LMRAP, 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 NWR. 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 LMRAP. The plant and animal community throughout the LMRAP is dependent upon the hydrologic cycle. It is incumbent upon land managers to manage hydrology in an effort to restore the ecological diversity that once characterized the LMRAP. 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.

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

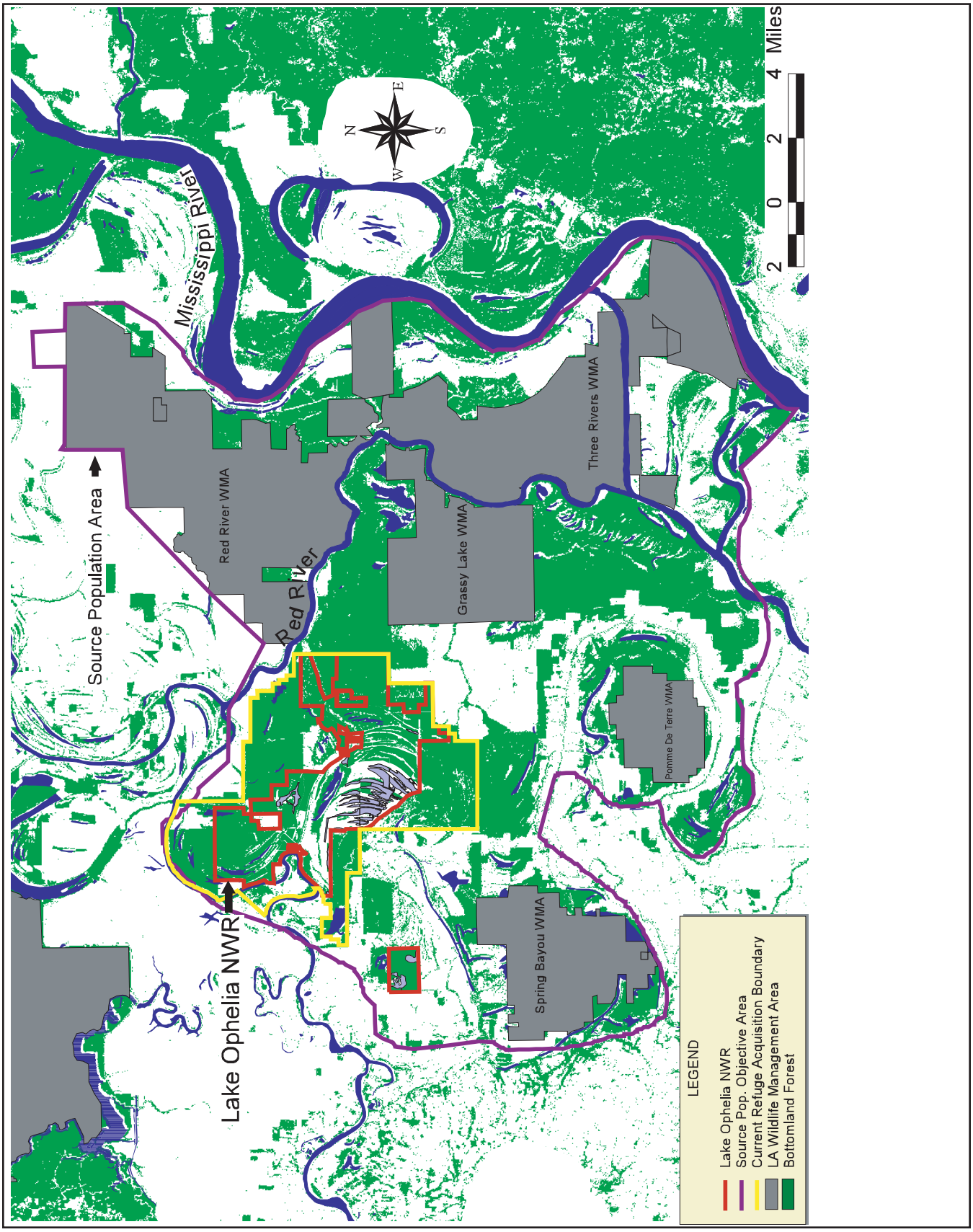
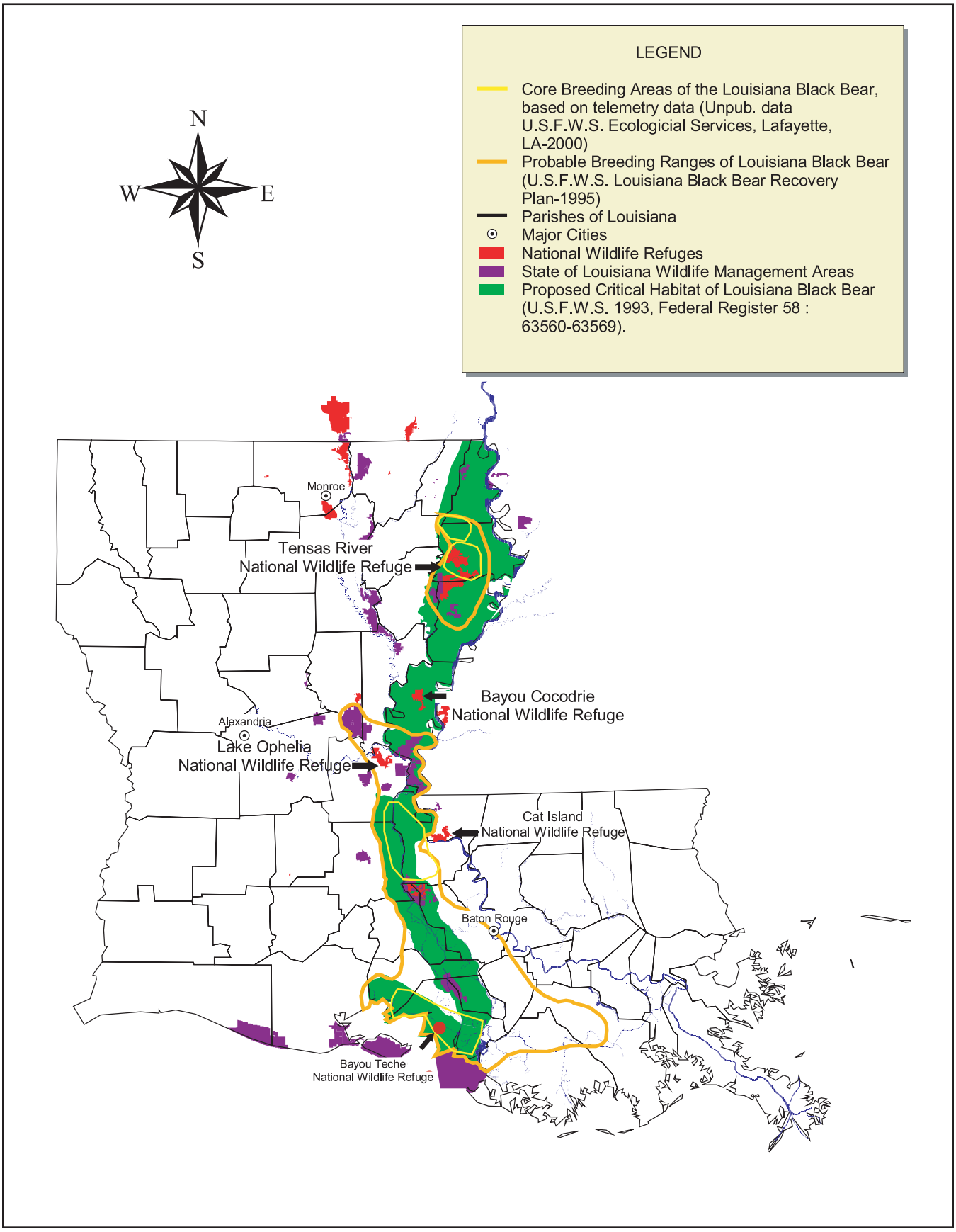


Figure 1-4. Known breeding ranges and proposed critical habitat for the Louisiana black bear.



CHALLENGES

One of the biggest challenges to the restoration efforts underway in the LMRAP, 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 NWR 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 would 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 would preclude future implementation of the desired management programs.