

## V. Plan Implementation

**Comprehensive  
Conservation Plan**

**Plan Implementation**



**Air photo over I-20**  
*USFWS Photo*

### BACKGROUND

Refuge lands are managed as defined under the National Wildlife Refuge System Improvement Act of 1997, Fish and Wildlife Manual, sound biological principles, and up-to-date research. Congress has distinguished a clear legislative mission of wildlife conservation for all national wildlife refuges, which unlike other public lands, are dedicated to the conservation of the Nation's fish and wildlife resources. Recreational values are accommodated where appropriate and compatible, while still meeting the Congressional mandates of wildlife first. Priority projects emphasize the protection and enhancement of fish and wildlife species first and foremost, but consideration is given to balancing the needs and demands for recreation and environmental education.

### REFUGE PROJECTS

The projects described in the following pages reflect the basic needs identified by Service staff, the public, and planning team members for the management of fish and wildlife populations, habitats, visitor services, general administration, and land protection and conservation. Among these projects is a list of step-down plans, individual and specific in nature, to be developed or revised. Step-down plans are prepared in conjunction with the provisions set forth in the National Environmental Policy Act of 1969, and outline specific management actions. The refuge operates under a number of these plans.

General cost estimates for the projects are provided in Figure 16. These figures will be updated and adjusted annually. There are no estimates of potential land purchases as land values are subject to time of sale and market value at time of purchase. There are no assurances that these projects will be either fully or partially funded. However, with the assistance and cooperation of conservation partners, the Service will use this plan to focus attention on funding the operation and maintenance needs of the refuge.

For the purpose of achieving the goals and objectives developed for the refuge, the plan has grouped management strategies into specific projects. This plan describes a total of 41 projects including the need for additional personnel to implement the projects. Private lands have been identified for possible enrollment in land protection programs offered by the Service or other partnering agencies.

### Fish and Wildlife Populations

#### *(1) Fish and Wildlife Management Plan*

With the addition of a wildlife biologist, a fish and wildlife management plan will be developed to describe specific wildlife inventory activities and techniques to monitor fish and wildlife populations. The plan will address nuisance animal management, game harvest

needs, comprehensive inventory methods, and reporting requirements. It will describe inventory and water management activities (e.g., stream culverts that block fish movement), as well as identify wetlands and stream restoration projects that will improve habitat conditions for native fish and other aquatic species on the refuge. Monitoring parameters, trends of selected species and groups, and an approach consistent with other refuges in the area will be described.

The existing hunt plan will be revised as appropriate and integrated into the Fish and Wildlife Management Plan. It will define species to be hunted, season structures, hunting methods, and applicable refuge-specific hunting regulations.

*(2) Investigations*

Investigations will be conducted to assess invasive species including zebra mussel, beaver, feral hog, Chinese tallow, and water hyacinth to determine population status and biological parameters. Exploratory investigations will be conducted for the Rafinesque's big-eared bat and the fat pocketbook mussel.

*(3) Surveys and Assessments*

The refuge will complete a comprehensive survey of vertebrates and species diversity. Surveys will include assessing the status of land bird populations and providing baseline data to evaluate the effectiveness of forest management and restoration efforts. This information is critical to implementing programs, formulating habitat management, and correcting deficiencies. White-tailed deer health check surveys and browse surveys will be conducted every 3 years. Annual waterfowl surveys will yield pertinent information to assist in determining how effectively the refuge moist-soil management program is supporting at least 10,000 migrating waterfowl and 12,000 shorebirds.

*(4) Geographic Information System*

Wildlife use and habitat type will be digitized and used for future analysis and monitoring. Data will be stored and maintained in a geographic information system. Additional data will be acquired from partners, while other databases will be developed. Hardware, digitizing equipment, field survey equipment, and aerial surveys and data will be purchased along with a computer, printer, and plotter.

*(5) Nest Boxes*

Artificial nest box programs will be established to support the needs of prothonotary warblers and wood ducks.

*(6) Black Bear Monitoring*

Monitoring will include bear movements, activities, and capture and radio collaring, as well as assessing and evaluating sites for release. As Highway 84 is improved, the Service, along with appropriate agencies, will consider the effects of wildlife movement across the road expanse that may involve enlarging drainage culvert(s) for wildlife movement under the highway.

*(7) Avian Monitoring*

Scheduled monitoring of non-game birds, including small land birds, shorebirds, raptors, colonial nesting birds, and waterfowl will be ongoing. The refuge will participate in regional and national avian monitoring programs. Refuge-specific assessments of forest songbird communities will include songbird use, abundance, and diversity. By 2006, implementation of detailed monitoring will begin in the old growth stand component. Cerulean and Swainson's warbler nest surveys will be conducted to monitor nesting success, predator disturbance, and nesting parasitism.

## Habitats

*(8) Forest Habitat Management Plan*

The Forest Habitat Management Plan will describe specifics of the forest management program. An inventory and mapping of refuge habitats will be part of this planning effort. Forest management will be described to maintain and improve forest age, species, and structural class components to benefit forest breeding birds, Louisiana black bear, and indigenous species. The plan will establish schedules for reforesting open areas and preparation of forest management prescriptions for existing stands. Objectives will be stated in clear and measurable terms and provide an overall framework on which to base plant and wildlife monitoring.

*(9) Weeds/Invasive Species*

An Integrated Pest Management Plan will be developed in 2008. The refuge may seek assistance from entities including local universities, conservation organizations, and the U.S. Department of Agriculture.

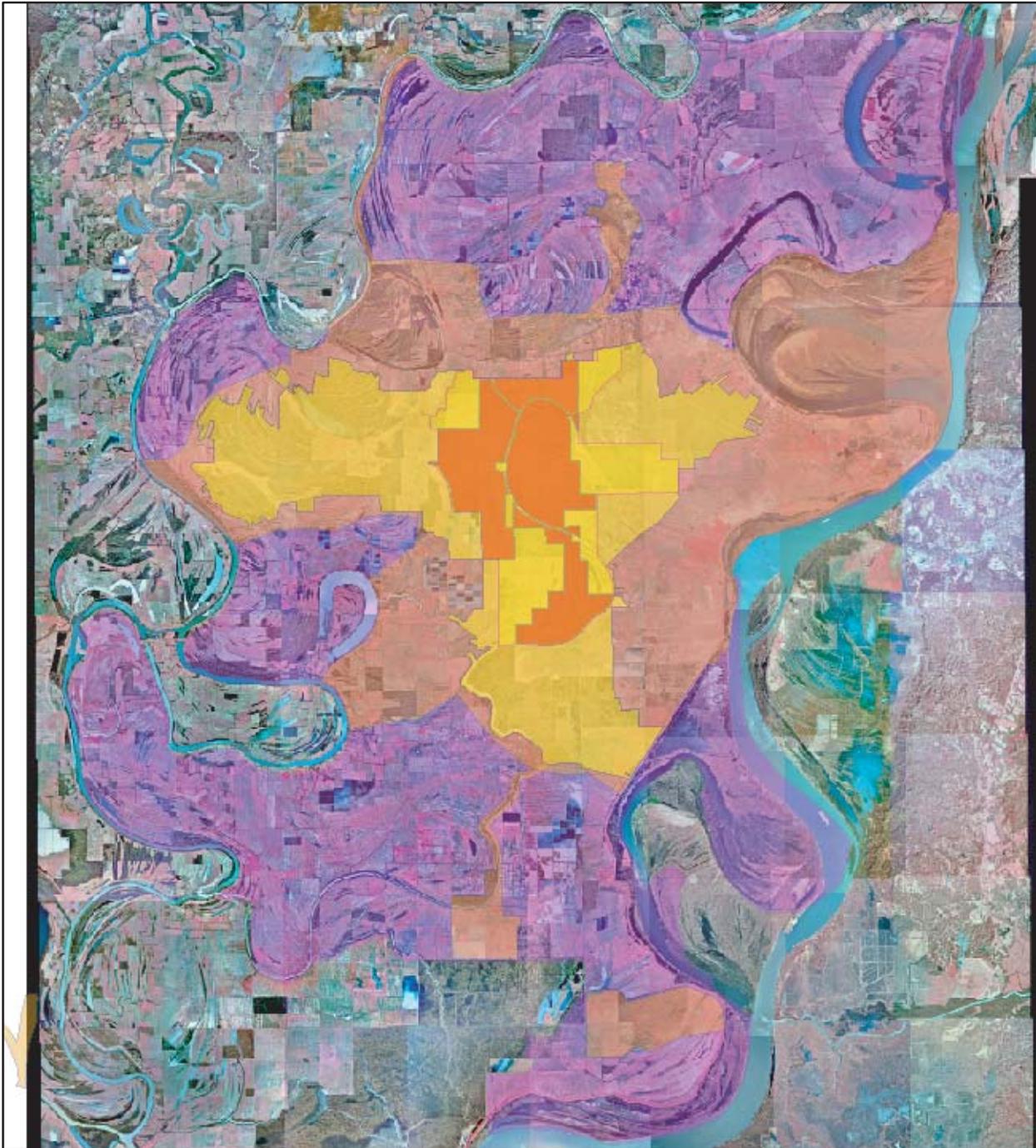
*(10) Reforestation*

Reforestation with a mix of native hardwoods on most open, heavily fragmented areas within the identified priority areas is a long-term goal (Figure 12). All new lands acquired in excess of waterfowl needs will be reforested. Concerted efforts will be made to develop and/or expand partnerships with public and private entities to achieve reforestation goals within identified priority areas to establish travel corridors between existing forest blocks to aid in the recovery of the Louisiana black bear. Replanted sites will also provide migratory songbird habitat and increase natural diversity of wildlife. High priority sites first considered for reforestation include refuge lands (former marginal agricultural sites) and neighboring private lands enrolled in Partners for Wildlife or Wetland Reserve programs.

*(11) Research Natural Area*

The 750-acre old growth area will be proposed as a Research Natural Area with several primary objectives. These are (a) to remain as the best example of old growth bottomland hardwoods remaining in the Lower Mississippi Valley, which continues to provide for those species dependent on habitat conditions found in old growth bottomland hardwoods; (b) to provide a standard by which to measure management activities within the Brooks Break Unit; (c) to provide research

Figure 12. Land protection priority areas



**Legend**

-  BCNWR BOUNDARY
-  BCNWR ACQUISITION BOUNDARY
-  BCNWR PRIVATE LANDS PRIORITY I
-  BCNWR PRIVATE LANDS PRIORITY II
-  BCNWR PRIVATE LANDS PRIORITY III

1:305,000



opportunities focused on old growth functions within bottomland hardwood ecosystems; and (d) to provide other research opportunities compatible with the first three objectives. The forest will generally be left undisturbed, except for research projects as stated in the objectives. Species occurrences, species habitat relationships, and avian surveys are currently being studied in the old growth area and will continue to be studied. The protected old growth will be used as a standard to manage existing forest stands with objectives of providing old growth functions (Figures 13 and 14).

*(12) Forest Management-Brooks Brake Unit*

Management of this unit will focus on providing habitat for forest interior birds that are dependent on habitat characteristics displayed by old growth bottomland hardwoods. Although management will primarily include thinning and small group selection cutting, other silviculture practices may apply as determined through habitat surveys and the prescription process necessary for this unit to meet its habitat objectives. Management techniques will be designed to (a) provide old growth characteristics/functions; and (b) allow this unit to become self-sustaining old growth. The proposed Research Natural Area located within this unit will be the standard by which all management within this unit is based. Management applications on target species will be monitored on a continuing basis and subject to change as effects are determined (Figures 13 and 14).

*(13) Forest Management-Wallace Lake and Cross Bayou Units*

A forest stand components' evaluation will be completed for the Wallace Lake and Cross Bayou units as well as acquired forest lands to determine appropriate management prescriptions needed to meet songbird and black bear objectives. Management applications will be described in the Forest Habitat Management Plan. Initially, forest management may involve thinning and group selection cutting to increase natural diversity and restore forest habitats to a healthier and more natural distribution of stages, and to encourage a diverse understory of native grasses, shrubs, and hardwoods (Figures 13 and 14).

*(14) First Order Vegetative Monitoring*

Pre- and post-treatment habitat monitoring in the Brooks Brake Unit will be conducted. Annual evaluations will be made wherever there is a forest stand management activity to assess the health of forest songbird communities, restore natural diversity to emphasize mature forests, and measure management application success.

*(15) Wetland Restoration*

Currently, moist-soil units have been partially developed by the refuge staff to restore habitat for waterfowl, shorebirds, other water birds and raptors. Phased development of these moist-soil units, including initial levee construction of two water impoundments, was completed in 1999. Additional water management improvements requiring funding include irrigation wells, pumping units, irrigation pipes, and stoplog structures.

Figure 13. Habitat management (short-term projection)

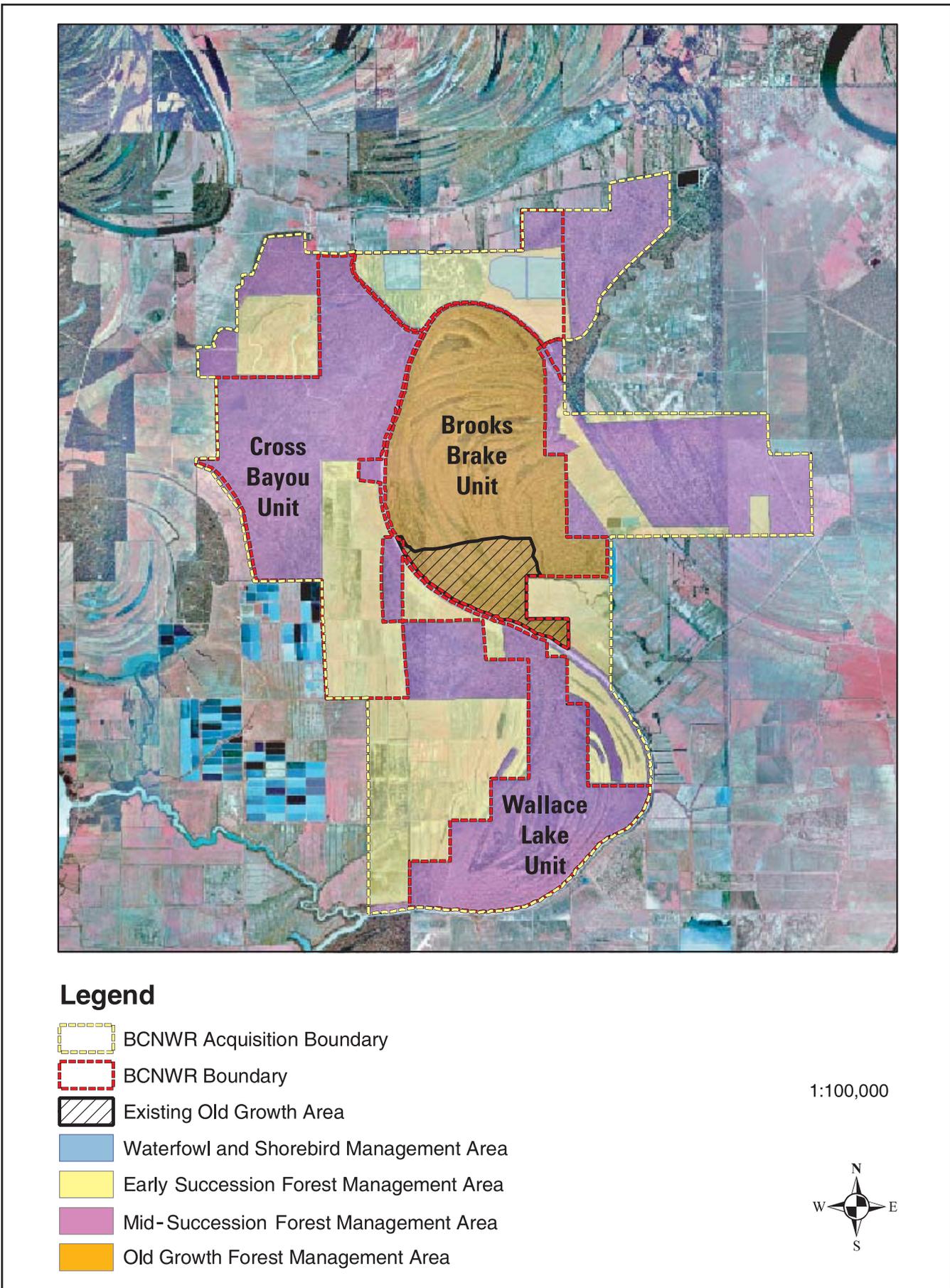
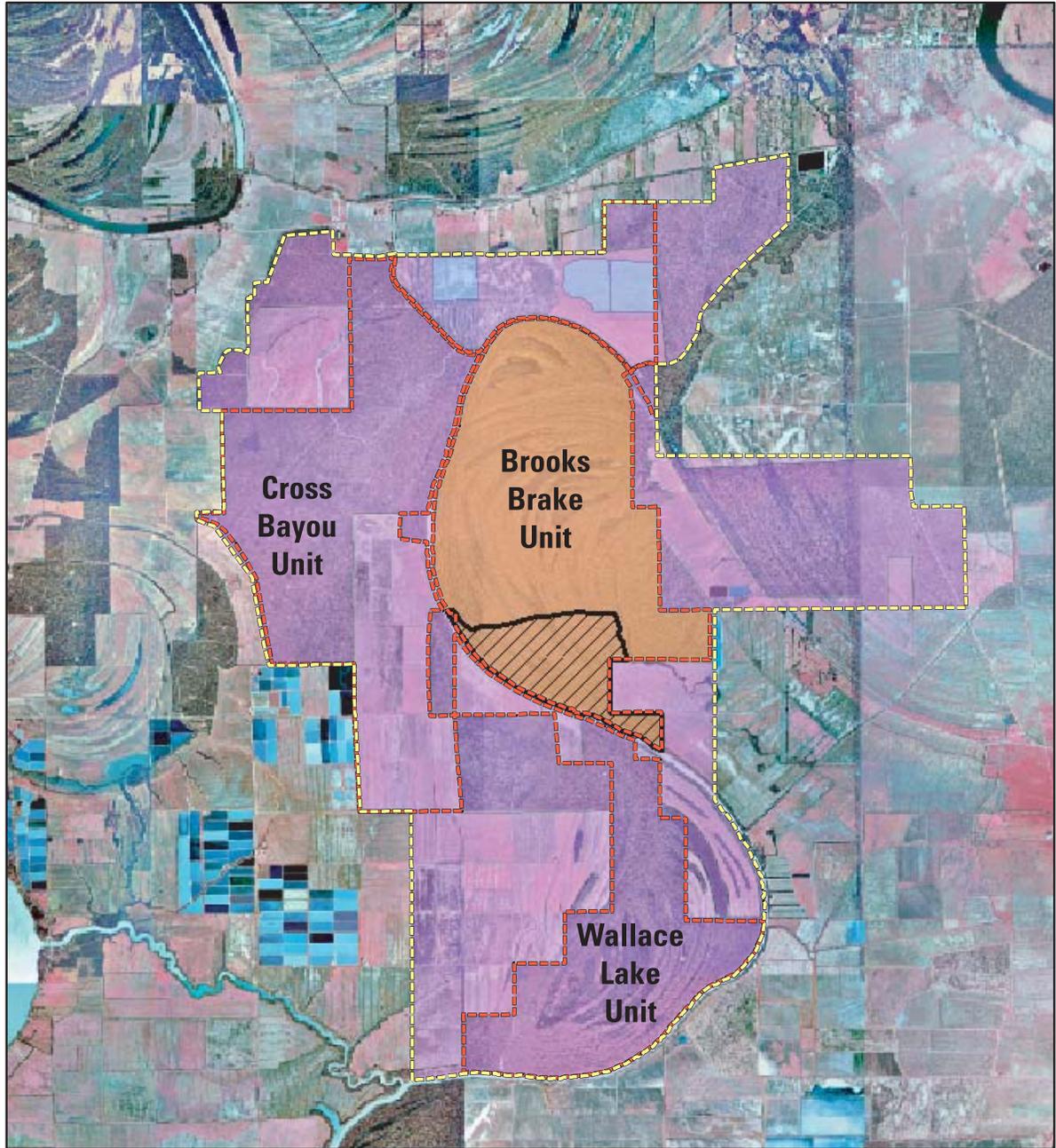


Figure 14. Habitat management (long-term projection)



**Legend**

-  BCNWR Acquisition Boundary
-  BCNWR Boundary
-  Waterfowl and Shorebird Management Area
-  Existing Old Growth Area
-  Old Growth Forest Management Area
-  Mid-Succession Forest Management Area

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## Education and Visitor Services

### (16) Visitor Services Plan

Descriptions of specific materials, displays, and themes to promote the six priority public uses adopted by the Service will be addressed in this plan. Specific visitor use activities including facility requirements, site design, conceptual themes, and accessibility for the disabled will also be addressed.

This plan will also address the specific services (e.g., ecotourism opportunities such as guided tours) the refuge could provide local communities, as well as the cooperative partnerships to increase awareness of fish and wildlife resources and systematically improve visitor use within the area.

### (17) Hunting

Hunting opportunities will be expanded as lands are acquired and initially will include a lottery, modern-day gun hunt for white-tailed deer, and a limited waterfowl hunt in the Brooks Brake Unit. The addition of a permanent law enforcement officer and radio communication system will improve emergency response and the safety of officers in the field. Additional hunter check stations, hunter safety classes, and annual hunt brochures will be provided.

### (18) Sport Fishing

To improve sport fishing opportunities, additional access for both boat and bank fishing will be developed on the Cross Bayou, which is the most suitable site for access (Figure 15). A road, boat ramp, and parking area will be developed. Bank fishing will be universally accessible.

### (19) Wildlife Observation and Photography

Wildlife observation and photography near the refuge headquarters will include the construction of an observation platform at the waterfowl/shorebird area, the addition of a 10-car parking area, informational kiosk, and two vault toilets. In addition, informational panels will illustrate waterfowl and shorebird management (Figure 15).

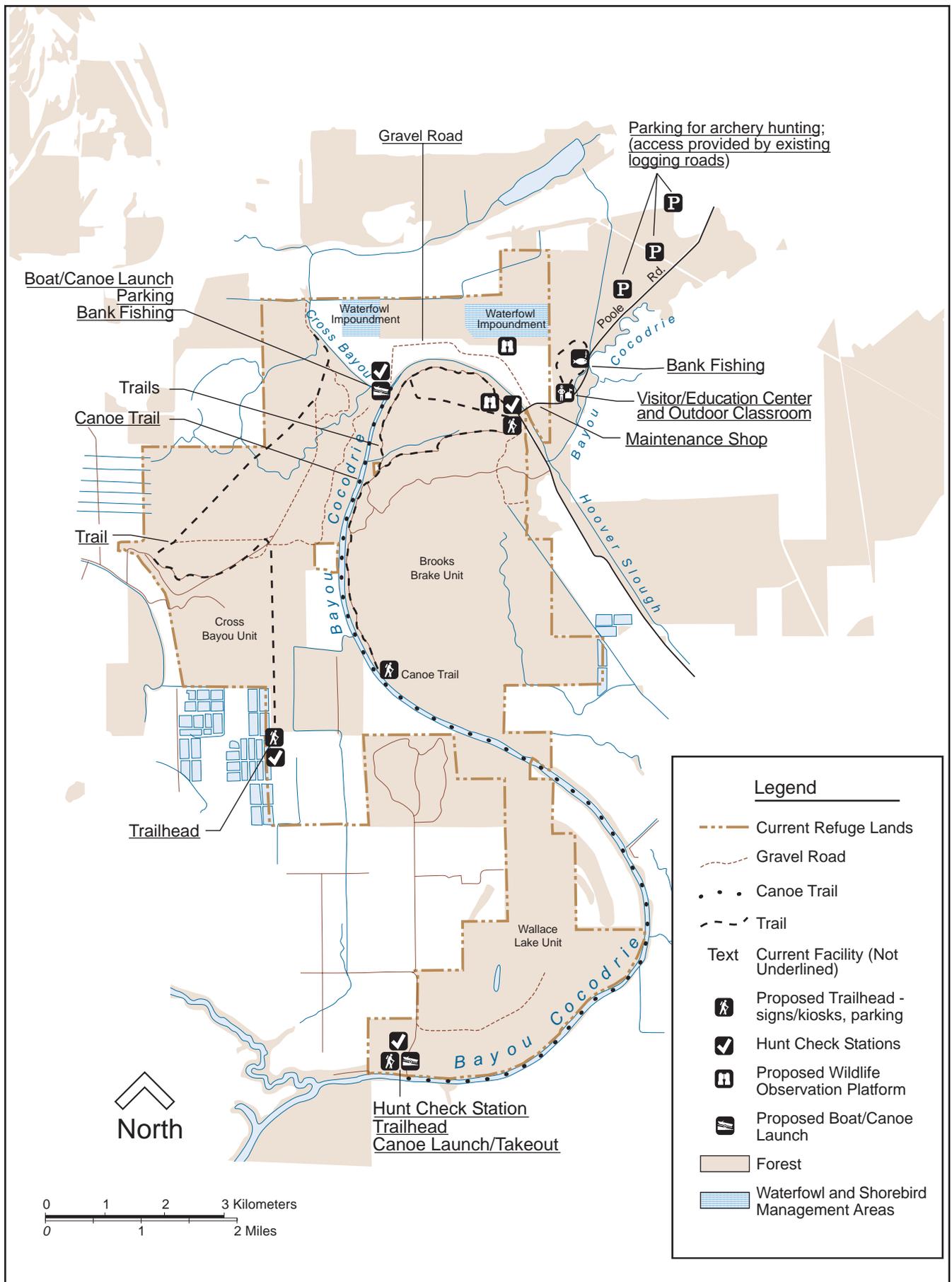
### (20) Boardwalk to Old Growth Area

A 3/4-mile boardwalk will be constructed leading to the edge of the old growth/research natural areas and will be open year-round except for the nesting season (Figure 14).

### (21) Canoe Trail

Bayou Cocodrie is designated as a Scenic River by the State of Louisiana. It flows through the oldest remaining bottomland hardwood forest stands in the area. There is limited access along its length, since much of it flows through private lands. The refuge offers one of the few opportunities for public canoe access. A parking area and canoe launching area will be developed near the refuge headquarters and Poole Road bridge at Cross Bayou, and off Boggy Bayou Road. The canoe trail will also offer 2 - 3 designated stops along its route for visitors to walk a short distance into the forest (Figure 15).

**Figure 15. Current and proposed visitor facilities**





GIS mapping  
USFWS Photo

*(22) Parking/Trailhead Development*

This area supports the 13-mile trail system located throughout the Brooks Brake Unit. Trails provide access for hunting and wildlife observation and photography. The Brooks Brake Unit is the primary location for recreation opportunities on the refuge, providing access deep into the bottomland hardwood forest community. All trails leading into the Brooks Brake Unit begin from a central parking area. The area is in need of improvements, trailhead development, and signs. Portions of the trail system will be upgraded to include photo/observation blinds at selected sites (Figure 15).

*(23) Visitor Center/Headquarters Complex*

Key to the success of providing additional visitor services is having office space for additional staff and an indoor area to conduct environmental education activities. A dual administrative and visitor services facility, to be located along Poole Road, will provide much needed office space for the expanded staff, as well as a central point for visitors to obtain information about the refuge. In addition to offices, it will include an exhibit area, an auditorium for interpretive and education programming, and a classroom space for school field trips. Besides working with local schools, the refuge staff will be available to offer educational programs to visitors and local residents (Figure 15).

*(24) Kiosks*

A 3-panel kiosk with basic information regarding the Service, the refuge, and recreation opportunities will be developed and located at all parking areas and trailheads. There will be from four to six of these located throughout the refuge (Figure 15).

*(25) Environmental Education*

There are a number of elements required for successful administration of a new interpretive/environmental education program. Many of these elements have annual operating expenses related to materials for program participants. The addition of one permanent Outdoor Recreation Planner will provide services at the refuge, as well as at Lake Ophelia and St. Catherine Creek National Wildlife Refuges. Other costs associated with program development will include brochures, teacher activity guides, curriculum development, education program equipment (e.g., microscopes, dip nets, sampling kits), projection equipment, and various guides/manuals.

*(26) Outreach*

Outreach to local constituencies and beyond is becoming a valuable tool for refuge managers. Communication with the public regarding the refuge's role in management and protection of natural resources results in direct support of refuge programs. Making use of other local facilities and developing an ecotourism program, portable exhibits, and special issue fact sheets are just a few of the items that can be useful outreach tools. Outreach programs are supported with the use of reference materials, portable exhibits, and off site permanent exhibits.

## **Refuge Administration**

### *(27) Base Operations and Existing Staff*

The refuge is currently managed with six full-time staff members. In its current operation, with minimal staff and low funding, the refuge conducts only essential activities such as law enforcement and outreach. Adequate funding and staffing of the refuge is necessary to attain the wildlife goals and objectives identified in this plan (Figures 16 and 17).

### *(28) Wildlife Enforcement Officer*

Protecting refuge resources and the safety of visitors is a fundamental responsibility of refuge management. Game is commonly taken out of season and night poaching is a continual enforcement problem. The illegal sale of white perch from the Bayou Cocodrie River has resulted in prosecution. With the proposed increase in public hunting opportunities, a full time law enforcement officer is required (Figure 17).

### *(29) Forestry Technician*

Proposed forest management work will require the addition of a forestry technician to assist the forester. The addition of this position will allow technical assistance to be provided to nearby refuges, as well as to private landowners enrolled in conservation programs that involve forest improvements or forest restoration projects.

### *(30) Wildlife Biologist and Biologist Technician*

One full-time wildlife biologist and a full-time biologist technician are needed to develop plans, baseline studies, and biological assessments; monitor and evaluate management programs; manage black bear; and develop, with aid of the forester, a forest management program (Figure 17).

### *(31) Park Ranger/Public Use Specialist*

As the refuge staff becomes increasingly involved in community partnerships and in providing recreation and environmental education to local schools, civic organizations, and on the refuge, it will be necessary to add a full-time position to serve these needs. The park ranger/public use specialist will also contribute to building recreation and environmental education programs at St. Catherine Creek and Lake Ophelia National Wildlife Refuges. The recreational and environmental education opportunities developed by the refuge will provide an economic benefit to the local community. Local merchants who sell outdoor recreation equipment, and businesses that provide food, lodging, and other commercial services to visitors and tourists, will benefit from this outreach program (Figure 17).

### *(32) Equipment Shed Construction*

Currently, 75 percent of refuge equipment is unprotected and exposed to heat and moisture throughout the year. Because of this, routine replacement is expensive and constant exposure to the elements is causing deterioration to hydraulic lines, tires, and other soft coverings. This deterioration could also become a safety factor as an unexpected rupture of hydraulic lines could lead to serious burns. The addition of an equipment shed will reduce maintenance costs and extend the longevity of the equipment.

*(33) Oil Storage Facility*

Currently, the refuge lacks a storage facility for small engine tools, antifreeze, fuels, petroleum products, and paints. As a result, items are purchased on an as needed basis that is disruptive to management activities. The installation of a prefabricated oil storage facility is an immediate need.

*(34) Radio Communication System*

The staff is provided with cellular telephones for communication in the field. These phones operate well in open areas, but are ineffective over most of the refuge due to operating limitations under a thick forest canopy. As a result, communication is often interrupted and could place staff at serious risk. With the addition of a radio communication system, services will be shared with local police enforcement, as well as with St. Catherine Creek National Wildlife Refuge.

*(35) Vehicle and Heavy Equipment Fleet*

Equipment replacement needs include: one 4-wheeled backhoe, two tractors, one pressure washer, one motor grader, one bat wing mower, and two pickup trucks. The purchase of heavy equipment for erosion control is an important need. A priority whenever agricultural land is acquired is to eliminate topsoil runoff. Another priority is to restore 700 acres of interior forest damaged by beaver activity. A 4-wheeled backhoe will be used for multiple purposes including beaver dam removal and installation of pipe drops in the agricultural field bordering the Bayou Cocodrie River. The pipes will help prevent soil erosion. A motor-grader and bat-wing mower will be used to maintain refuge facilities and properties including impoundment levees, refuge access roads, trails, and parking areas.

*(36) Entrance Road Rehabilitation*

There is a need to rehabilitate approximately 3.5 miles of Poole Road from the refuge boundary, east to Highway 15. Poole Road is the only access to the refuge headquarters and will serve as the only access to planned visitor and education facilities. Boggy Bayou Road provides the only access to the south end of the refuge and is in need of major repairs. Because both are parish roads, partnerships will be developed with the Concordia Parish Police Jury and funding sought from the Federal Highway Administration.

*(37) Refuge Road Improvements*

An existing dirt road will be overlain with gravel, culverts, and drains to provide access for maintenance of waterfowl impoundments and for use by the public, as new facilities are constructed.

*(38) Survey and Boundary Signs*

Thirty-one miles of mostly remote property boundary are not posted. As a result, repeated game violations occur near refuge borders. Posting Service boundary signs will aid the refuge in prosecuting game violators and provide clear delineation of refuge lands where fish and wildlife are fully protected.

## Cultural Resources

### (39) *Archaeological and Historic Resource Investigations*

A comprehensive inventory and procurement of information on historic sites, as well as site eligibility for the National Register of Historic Places, will occur as appropriate. The refuge will procure pertinent scientific reports and articles and produce an annotated bibliography to document the region's history, geomorphology, and the utility of the scientific methodology. Native American and African American communities will be consulted to address how management activities might impact archaeological sites deemed important to those groups.

## Land Protection and Conservation

### (40) *Land Acquisition*

Implementation of this comprehensive conservation plan will result in the acquisition of up to 9,101 acres of wildlife habitat within the approved acquisition boundary for the Bayou Cocodrie National Wildlife Refuge. Additionally, private lands within identified priority areas will be targeted for various conservation programs and partnerships. The Service believes these are the minimum interests necessary to preserve and protect the fish and wildlife resources and meet conservation objectives.

The success of meeting wildlife and habitat management objectives identified in this plan is closely tied to the Service having management and/or protection interest on current refuge lands, additional lands within the current acquisition boundary, and identified priority areas.

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

- Biological significance;
- Existing and potential threats;
- Significance of the area to refuge management and administration; and
- Existing commitments to purchase or protect land.

Three categories of land protection have been established, with the highest priority being the Priority I lands. A description of the lands within each of the three priority groups is given below. Figure 12 shows the locations of the project areas and their respective priority groups.

**Priority Group I:** All lands within approved acquisition boundary and lands outside the acquisition boundary that, if reforested and protected, would significantly expand the core forest area and protect key habitats for the Louisiana black bear.

**Priority Group II:** Lands included within identified priority bird areas or bear corridors.

Priority Group III: Lands that, if reforested and protected, would serve to join existing blocks of forests (defragmentation), establish travel corridors between habitat blocks, or expand core forest areas within existing forest patches, but that are not included in identified priority bird areas or bear corridors.

*(41) Private Lands Coordination and Enrollment in  
Conservation Programs*

In order for the refuge to restore and connect forests to serve as wildlife corridors, the staff must coordinate with landowners and agencies within Concordia, Tensas, and Catahoula parishes. The Service will accelerate joint planning at the watershed, landscape, and eco-region level with the U.S. Department of Agriculture and Louisiana Department of Wildlife and Fisheries. Further, the Service will coordinate with other agencies and organizations the enrollment of up to 12,000 acres of private lands in other private lands conservation programs. The Natural Resources Conservation Service and Farm Service Agency have been instrumental in implementing conservation measures to improve conditions for black bear by enrolling lands in the Wetlands Reserve Program and the Conservation Reserve Program. The Service will continue to provide technical assistance and support to enroll farmlands in these programs.

Black bear recovery success will depend upon landowner participation in various conservation programs coordinated with private, local, state, and federal organizations. Priority lands evaluated for enrollment will consider black bear movement and administrative access for monitoring.

**Figure 16. Project/staff cost summary for 2001-2016**

CCP Project Description No. Project	RONS/MMS Project No.	Estimated Cost (1999)	
		Initial	Recurring
<b><i>Fish and Wildlife Populations</i></b>			
1. Fish and Wildlife Management Plan	RONs 00004, 00005	*	
2. Investigations	RONs 00004, 00007	100,000	10,000
3. Surveys and Assessments	RONs 00004,00007	237,000	
4. Geographic Information System	Proposed	10,000	3,000
5. Nest Boxes	Proposed	5,000	2,500
6. Black bear Monitoring	RONs 00004	*	90,000
7. Avian Monitoring	RONs 00007, 00005	*	
<b><i>Habitats</i></b>			
8. Forest Habitat Management Plan	RONs 00002	54,500	
9. Weeds/Invasive Species	00007	110,000	10,000 ©
10. Reforestation	RONs 00002	7,500 ©	
11. Research Natural Area	RONs 00004,00007,00002	*	
12. Forest Management - Brooks Brake Unit	RONs 00002, 00004	*	
13. Forest Management - Wallace Lake and Cross Bayou Units	RONs 00002, 00004, 00023	*	
14. First Order Vegetative Monitoring	RONs 00004,00002	*	
15. Wetland Restoration	RONs 00023	45,000	5,000
<b><i>Education and Visitor Services</i></b>			
16. Visitor Services Plan	Proposed	*	
17. Hunting	RONs 00019	28,000	7,000
18. Sport Fishing	RONs 00019	20,000	5,000
19. Wildlife Observation and Photography Platform	MMS 00009	90,000	5,000
20. Boardwalk to Old Growth Area	MMS 00010	20,000	5,000
21. Canoe Trail	MMS 00010	10,000	5,000
22. Parking/Trailhead Development	MMS 04001, 04002, 04003, 04004	50,000	5,000
23. Visitor Center Headquarters/Complex	MMS 00001	2,163,000	50,000
24. Kiosks	Proposed	40,000	10,000
25. Environmental Education	Proposed	25,000	20,000
26. Outreach	Proposed	25,000	10,000
<b><i>Refuge Administration</i></b>			
27. Base Operations and Existing Staff	NA	NA	421,500 (FY04)
<b><i>Salary/Benefits</i></b>			
28. Wildlife Enforcement Officer	RONs 00019	100,000	100,000
29. Forestry Technician	RONs 00002	80,000	80,000
30. Wildlife Biologist and Bio Tech	RONs 00005	130,000	130,000
31. Outdoor Recreation Planner/Public Use Specialist	Proposed	80,000	
32. Equipment Shed Construction	MMS 00015	150,000	5,000
33. Oil Storage Facility	MMS 00017	53,000	3,000
34. Radio Communication System	RONs 00013	23,000	5,000
35. Vehicle and Heavy Equipment Fleet	RONs 00016, 11 MMS Projects	250,000	5,000
36. Entrance Road Rehabilitation (Poole Road)	MMS 00003, 00004	945,000**	20,000
37. Refuge Road Improvements	MMS 00003, 00004	234,500	
38. Survey and Boundary Signs	RONs 00018	150,000	5,000
<b>Total</b>		<b>5,235,500</b>	<b>1,017,000</b>
39. Archaeological and Historic Resource Investigations***			
40. Land Acquisition***			
41. Private Lands Coordination and Enrollment in Conservation Programs***			

Key:

RONs - Refuge Operation Needs (RONs) projects identified in this plan describe new projects in the first year, one-time expenses, and recurring annual costs.

MMS - Maintenance Management System (MMS) projects identified in this plan describe deferred maintenance or the backlog of maintenance and equipment needs that exist.

Both RONs and MMS projects are in addition to the base operating budget of the refuge.

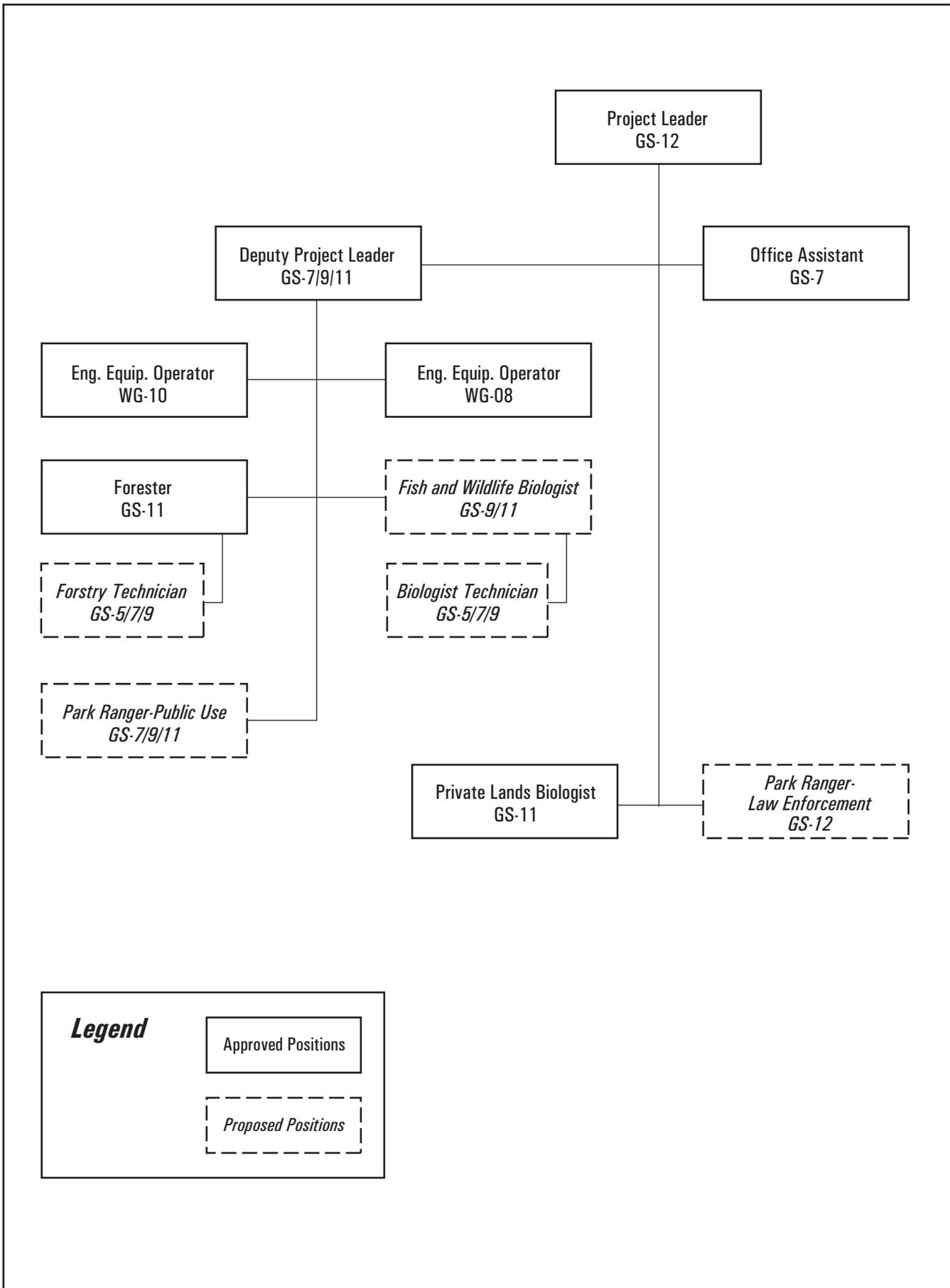
\* Project cost is part of proposed staff cost

\*\* Project cost primarily supported by partners

\*\*\* Project cost is undetermined

© Project primarily completed by Contracted Services

**Figure 17. Current and proposed organizational structure**





**Canoe launch**  
*USFWS Photo*

## STEP-DOWN MANAGEMENT PLANS

Refuge policy (Refuge Manual, Part 4, Chapter 3) requires that specific management plans be developed for each refuge. Some plans require annual revisions and others are on a 5- or 10-year revision schedule (Figure 18). The hunting and fishing plans are currently being revised.

**Figure 18. Step-down plans**

Plans Required	Completion Date Fiscal Year
Forest Management Plan	2005
Sign Plan	2006
Public Use Plan	2006
Water Management Plan	2006
Wildlife Inventory Plan	2007
Predator Control Plan	2007
Fire Management Plan	2008
Law Enforcement Plan	2008
Integrated Pest Management Plan	2008
Education and Visitor Services Management Plan	2009

## PLAN PERFORMANCE

Specific survey, inventory, and monitoring protocols will be adopted for the refuge. Before doing so, a detailed biological assessment will be conducted. A geographic information system will be used to store and analyze information.

The National Wildlife Refuge System Improvement Act requires that the Service monitor fish, wildlife, and plants on refuges in order to establish status and trends of both resident and migratory wildlife. Monitoring is an essential component of this plan, and specific strategies have been integrated into the goals and objectives. All habitat management activities will be monitored to assess whether the desired effect on wildlife and habitat components has been achieved. Monitoring the number of breeding pairs and the reproductive parameters of the priority suite of songbird species will follow established statewide protocols, at a minimum. Baseline surveys will be established for other species of wildlife for which existing or historical numbers are not well known. It also will be important to begin studies to monitor the response of wildlife to increased visitor use.

Management of projects is dependent on monitoring and evaluation to sustain the function and dynamics of forests, maintaining biological diversity, protecting target species, and providing a variety of wildlife-dependent recreation and education experiences of value to visitors. Information derived from monitoring and evaluation will enable managers to adjust and test the management objectives outlined in this plan.

This plan will be reviewed annually to determine the need for revision and to adjust and set priorities. A revision will occur if significant information becomes available, such as a change in ecological conditions, a major refuge expansion, or if new step-down plans are developed. The plan will be augmented by detailed step-down plans to address completion of specific strategies in support of refuge goals and objectives. Revisions to the plan will be subject to National Environmental Policy Act review, as well as public review. Management performance is documented in annual narratives. A new plan is required after 15 years.

## **PARTNERSHIP OPPORTUNITIES**

Public outreach entails a variety of services and support that refuges provide to the public, special groups, other government agencies, and individuals. It includes technical assistance to state agencies on special problems and publications, and presentations to local civic groups and schools.

Many biologists and private citizens, as well as environmental organizations, scientific organizations and other agencies, have expressed a great interest in the management of the refuge. Maintaining and developing partnerships will enable the refuge to achieve its goals and objectives, minimize costs, share funding, and bridge relationships with others. To maintain and enhance wildlife outside of the refuge, the Service will focus its efforts on continuing to develop partnerships with landowners, the Louisiana Department of Wildlife and Fisheries, The Nature Conservancy, the Natural Resources Conservation Service and the Farm Service Agency. Although the Service does not have management responsibilities for those lands outside the refuge, it is important to articulate the wildlife resource needs area wide. Collaboration with colleges and universities and with conservation organizations will enable the refuge to carry on its extensive plans for research, monitoring, and education. To create awareness and expand environmental education efforts in the community, partnerships will be established with organizations and school systems.

## **MONITORING AND EVALUATION**

Wildlife population monitoring, primarily of breeding birds, black bear, white-tailed deer, and invasive species, as well as habitat monitoring, will be emphasized. Wildlife monitoring will include surveys during the hunting and breeding seasons, brood surveys, collar observations, species richness measurements, and relative abundance figures. Habitat monitoring will primarily involve the amount and distribution of forested wetland habitats, vegetation and water quality surveys, community composition and structure, and representative components and habitat parameters addressed in plan objectives.

Adaptive management is a process in which projects are implemented within a framework of scientifically driven experiments to test predictions and assumptions as outlined in this plan. The biological programs are systematically evaluated to determine management

effects on wildlife populations. This information is used to refine approaches and to determine how effectively goals and objectives are being accomplished. Evaluations will be conducted on a regular basis to provide feedback to stakeholders and partners. If monitoring and evaluation yield undesirable effects for target and non-target species and/or communities, management projects will be altered and the comprehensive conservation plan will be revised.

*Bayou Cocodrie  
National Wildlife Refuge*

**Comprehensive  
Conservation Plan**

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**Plan Implementation**