DRAFT COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL ASSESSMENT

BANKS LAKE NATIONAL WILDLIFE REFUGE

Lanier County, Georgia

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

Southeast Region
Atlanta, Georgia

May 2009

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I. Background

INTRODUCTION

The U.S. Fish and Wildlife Service (Service) has developed this Draft Comprehensive Conservation Plan for Banks Lake National Wildlife Refuge in Lanier County, Georgia, to guide the refuge's management actions and direction over the next 15 years. Fish and wildlife conservation will receive first priority in refuge management, while wildlife-dependent recreation will be allowed and encouraged as long as it is compatible with, and does not detract from, the mission of the refuge or the purposes for which it was established.

A planning team developed a range of alternatives that best met the goals and objectives of the refuge and that could be implemented within the 15-year planning period. This draft comprehensive conservation plan and its environmental assessment (Section B) describe the Service's proposed plan, as well as the other alternatives that are being considered and their potential effects on the environment. Both the draft plan and environmental assessment are being made available to state and federal government agencies, conservation partners, and the general public for review and comment. All public comments will be considered in the development of the final plan.

PURPOSE AND NEED FOR THE PLAN

The purpose of the plan is to develop a proposed action that best achieves the refuge's purposes; attains the vision and goals developed for the refuge; contributes to the mission of the National Wildlife Refuge System; addresses key problems, issues and relevant mandates; and is consistent with sound principles of fish and wildlife management.

Specifically, the plan is needed to:

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

U.S. FISH AND WILDLIFE SERVICE

The U.S. Fish and Wildlife Service traces its roots to 1871 with the establishment of the Commission of Fisheries involved with research and fish culture. The once-independent commission was renamed the Bureau of Fisheries and placed in the Department of Commerce and Labor in 1903. The origins of the Service can also be traced to 1886 through the establishment of a Division of Economic Ornithology and Mammalogy in the Department of Agriculture. Research on the relationship of birds and animals to agriculture shifted to delineation of the range of plants and animals, so the name was changed to the Division of the Biological Survey in 1896.

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

The Service is responsible for conserving, enhancing, and protecting fish and wildlife and their habitats for the continuing benefit of people through federal programs relating to wild birds, endangered species, certain marine mammals, inland sport fisheries, and specific fishery and wildlife research activities (142 DM 1.1).

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

NATIONAL WILDLIFE REFUGE SYSTEM

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

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

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

- fulfill the mission of the National Wildlife Refuge System;
- fulfill the individual purposes of each refuge;
- consider the needs of 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, wildlife photography, and environmental education and interpretation are legitimate and priority public uses; and
- retain the authority of refuge managers to determine compatible public uses.

The following are just a few examples of the Service's national network of conservation lands. Pelican Island National Wildlife Refuge, the first refuge, was established in 1903 for the protection of colonial nesting birds in Florida such as the snowy egret and the brown pelican. Western refuges were established for American bison (1906), elk (1912), prong-horned antelope (1931), and desert bighorn sheep (1936) after overhunting, competition with cattle, and natural disasters decimated the once-abundant herds. The drought conditions of the Dust Bowl during the 1930s severely depleted breeding populations of ducks and geese, so the refuges established during the Depression focused on the protection of waterfowl production areas such as those that protected prairie wetlands in America's heartland. The emphasis on waterfowl continues today but also includes the protection of wintering habitat in response to a dramatic loss of bottomland hardwoods. By 1973, the Service began to focus on establishing refuges for endangered species.

Recreational visits to national wildlife refuges generate substantial economic activity. In fiscal year 2006, 34.8 million people visited refuges in the lower 48 states for recreation. Based on a study of the economic impacts of refuges on local communities (*Banking on Nature*, U.S. Fish and Wildlife Service [USFWS] 2006a), visitor expenditures generated almost $1.7 billion of sales in regional economies. As this spending flowed through the economy, nearly 27,000 people were employed and $542.8 million in employment income was generated. Approximately 82 percent of total expenditures were generated by nonconsumptive activities on refuges, while fishing accounted for 12 percent and hunting 6 percent. Local residents accounted for 13 percent of expenditures while visitors coming from outside the local area accounted for 87 percent. In addition, refuge recreational spending generated about $185.3 million in tax revenues at the local, county, state, and federal levels (USFWS 2006a).

Volunteers continue to be a major contributor to the success of the Refuge System. During fiscal year 2006, 36,169 volunteers donated 1,447,421 hours. The value of their labor was $26,111,475. Using the independent sector's current dollar value of $18.04, their in-kind services equaled the equivalent of 696 full-time employees. Ten new "friends of the refuge" volunteer organizations were established in fiscal year 2006, bringing the total of these groups to more than 200 (USFWS 2006b).

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

The National Wildlife Refuge System Improvement Act of 1997 stipulates that comprehensive conservation plans be prepared in consultation with adjoining federal, state, and private landowners and that the Service develop and implement a process to ensure an opportunity for active public involvement in the preparation and revision (every 15 years) of the plans.

All lands of the System will be managed in accordance with an approved comprehensive conservation plan (plan) that will guide management decisions and set forth strategies for achieving refuge unit purposes. The plan will be consistent with sound resource management principles, practices, and legal mandates, including Service compatibility standards and other Service policies, guidelines, and planning documents (602 FW 1.1).

LEGAL AND POLICY CONTEXT

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

Administration of national wildlife refuges is guided by the mission and goals of the National Wildlife Refuge System, congressional legislation, presidential executive orders, and international treaties. Policies for management options of refuges are further refined by administrative guidelines established by the Secretary of the Interior and by policy guidelines established by the Director of the Fish and Wildlife Service. Please refer to Appendix C for a complete list of relevant legal mandates.

These treaties, laws, administrative guidelines, and policy guidelines assist the refuge manager in making decisions pertaining to natural, historical, and cultural resources and research and recreation on refuge lands. They also provide a framework for cooperation between Banks Lake NWR and other partners, such as Moody Air Force Base; the Georgia Department of Natural Resources; Lanier County; the City of Lakeland; The Nature Conservancy; sport fishing organizations; and private landowners.

Lands within the National Wildlife Refuge System are closed to public use unless specifically and legally opened. No refuge use may be allowed unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge. All programs and uses must be evaluated based on the mandates set forth in the National Wildlife Refuge System Improvement Act of 1997. These mandates are as follows:

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

The Act further identifies six priority wildlife-dependent recreational uses: hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. As priority public uses of the National Wildlife Refuge System, they receive priority consideration over other public uses in planning and management.

Biological Integrity, Diversity and Environmental Health Policy

The National Wildlife Refuge System Improvement Act directs the Service to ensure that the biological integrity, diversity, and environmental health of the refuges are maintained for the benefit of present and future generations of Americans. This policy is an additional directive for refuge managers to follow while achieving purposes of the refuge and the mission of the System. It provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on the refuges and their associated ecosystems. When evaluating the appropriate management direction for refuges, refuge managers will use sound professional judgment to determine their refuges' contribution to biological integrity, diversity, and environmental health at multiple landscape scales. Sound professional judgment incorporates field experience; knowledge of refuge resources; the refuge's role within an ecosystem; applicable laws; and best available science, including consultation with others both inside and outside the Service.

NATIONAL AND INTERNATIONAL CONSERVATION PLANS AND INITIATIVES

Multiple partnerships have been developed among government and private entities to address regional environmental problems. A large amount of conservation and protection information defines the role of the refuge at the local, national, international, and ecosystem levels. Conservation initiatives include broad-scale planning and cooperation between affected parties to address declining trends of natural, physical, social, and economic environments. The conservation plans and initiatives described below, along with issues, problems and trends, were reviewed and integrated where appropriate into this draft comprehensive conservation plan.

This draft comprehensive conservation plan supports, among others, the North American Bird Conservation Initiative; North American Waterfowl Management Plan; Partners in Flight Conservation Plan; U.S. Shorebird Conservation Plan; and North American Waterbird Conservation Plan.

North American Bird Conservation Initiative. Started in 1999, the North American Bird Conservation Initiative is a coalition of government agencies, private organizations, academic institutions, and private industry leaders in the United States, Canada, and Mexico working to ensure the long-term health of North America's native bird populations by fostering an integrated approach to bird conservation to benefit all birds in all habitats. The four international and national bird initiatives include the North American Waterfowl Management Plan, Partners in Flight, Waterbird Conservation for the Americas, and the U.S. Shorebird Conservation Plan.

North American Waterfowl Management Plan. The North American Waterfowl Management Plan is an international action plan to conserve migratory birds throughout the continent. Its goal is to return waterfowl populations to their 1970s levels by conserving wetland and upland habitat. Canada and the United States signed the plan in 1986 to address the critically low numbers of waterfowl. Mexico joined in 1994, making it a truly continental effort. The plan is a partnership of federal, provincial, state, and municipal governments, nongovernmental organizations, private companies, and many individuals all working to achieve better wetland habitat for the benefit of migratory birds, other wetland-associated species, and people. The plan's projects are international in scope, but implemented at regional levels. These projects contribute to the protection of habitat and wildlife species across the North American landscape. Banks Lake NWR lies in Waterfowl Conservation Region (WCR) 27, as identified in the plan. These areas are the plan's geographic units for prioritization at the regional scale. WCR 27 includes 13 duck species for which management targets have been determined (North American Waterfowl Management Plan, Plan Committee 2004 and 2007).

Partners in Flight Bird Conservation Plan. Managed as part of the Partners in Flight Plan, the South Atlantic Coastal Plain physiographic area represents a scientifically-based land bird conservation planning effort that ensures long-term maintenance of healthy populations of native land birds, primarily nongame land birds. Nongame land birds have been vastly underrepresented in conservation efforts and many are exhibiting significant declines. This plan is voluntary and nonregulatory, and focuses on relatively common species in areas where conservation actions can be most effective, rather than on rare and peripheral populations in localized areas of emphasis. Banks Lake NWR lies in Physiographic Area 3 (South Atlantic Coastal Plain) and contains priority habitats (and several associated bird species) also identified for conservation and management planning, such as Carolina bays and nonalluvial swamps (Hunter et al. 2001).

U.S. Shorebird Conservation Plan. The U.S. Shorebird Conservation Plan is a partnership effort throughout the United States that works to ensure the protection and restoration of stable and self-sustaining populations of shorebird species. The plan was developed by a wide range of agencies, organizations, and shorebird experts for separate regions of the country. It identifies conservation goals, critical habitat conservation needs, key research needs, and proposed education and outreach programs to increase awareness of shorebirds and the threats they face.

Northern American Waterbird Conservation Plan. The North American Waterbird Conservation Plan provides a framework for the conservation and management of 210 species of waterbirds in 29 nations. Threats to waterbird populations include destruction of inland and coastal wetlands; introduced predators and invasive species; pollutants; mortality from fisheries and industries; disturbances; and conflicts arising from abundant species. Particularly important habitats of the southeast region include pelagic areas, marshes, forested wetlands, and barrier and sea island complexes. Fifteen species of waterbirds are federally listed, including breeding populations of wood storks, Mississippi sandhill cranes, whooping cranes, interior least terns, and Gulf coast populations of brown pelicans. A key objective of this plan is the standardization of data collection efforts to better recommend effective conservation measures. Banks Lake NWR lies within the plan's Southeastern Coastal Plain Bird Conservation Region. For this region, long-legged wading birds, in particular, are identified as requiring increased management attention. A key regional objective is the standardization of data collection efforts and analytical procedures for all waterbirds (Kushlan et al. 2002).

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 shall ensure timely and effective cooperation and collaboration with state fish and wildlife agencies during the course of acquiring and managing refuges. State wildlife management areas and national wildlife refuges provide the foundation for the protection of species, and contribute to the overall health and sustainability of fish and wildlife in the State of Georgia.

The Georgia Wildlife Resources Division (GWRD) of the Georgia Department of Natural Resources (GADNR) is the state agency that is responsible for protecting and managing Georgia's native plants and wildlife. The GWRD owns wildlife management areas; regulates hunting, fishing, aquaculture, and captive wildlife; and operates education centers. In April 1995, the GWRD began a Private Lands Initiative to intensify efforts in promoting, encouraging, and providing technical assistance for wildlife conservation on private lands in Georgia. In addition, the GWRD has developed a model conservation easement program.

The state's participation and contribution throughout this planning process will provide for ongoing opportunities and open dialogue to improve the ecological sustainability of fish and wildlife in the state of Georgia. An essential part of comprehensive conservation planning is integrating common mission objectives where appropriate.

II. Refuge Overview

INTRODUCTION

Banks Lake National Wildlife Refuge (3,559 acres or 1,440 hectares [ha]) is located in Lanier County near Lakeland, Georgia (Figure 1). The refuge was established in 1985 under the Fish and Wildlife Act of 1956 and the Land and Water Conservation Fund Act of 1965. The refuge lies in the Grand Bay–Banks Lake (GBBL) ecosystem, an area that comprises the second-largest freshwater wetland system in Georgia. The GBBL area contains a number of unique ecological systems that support a variety of plants and animals, including freshwater and terrestrial federally and state-listed species.

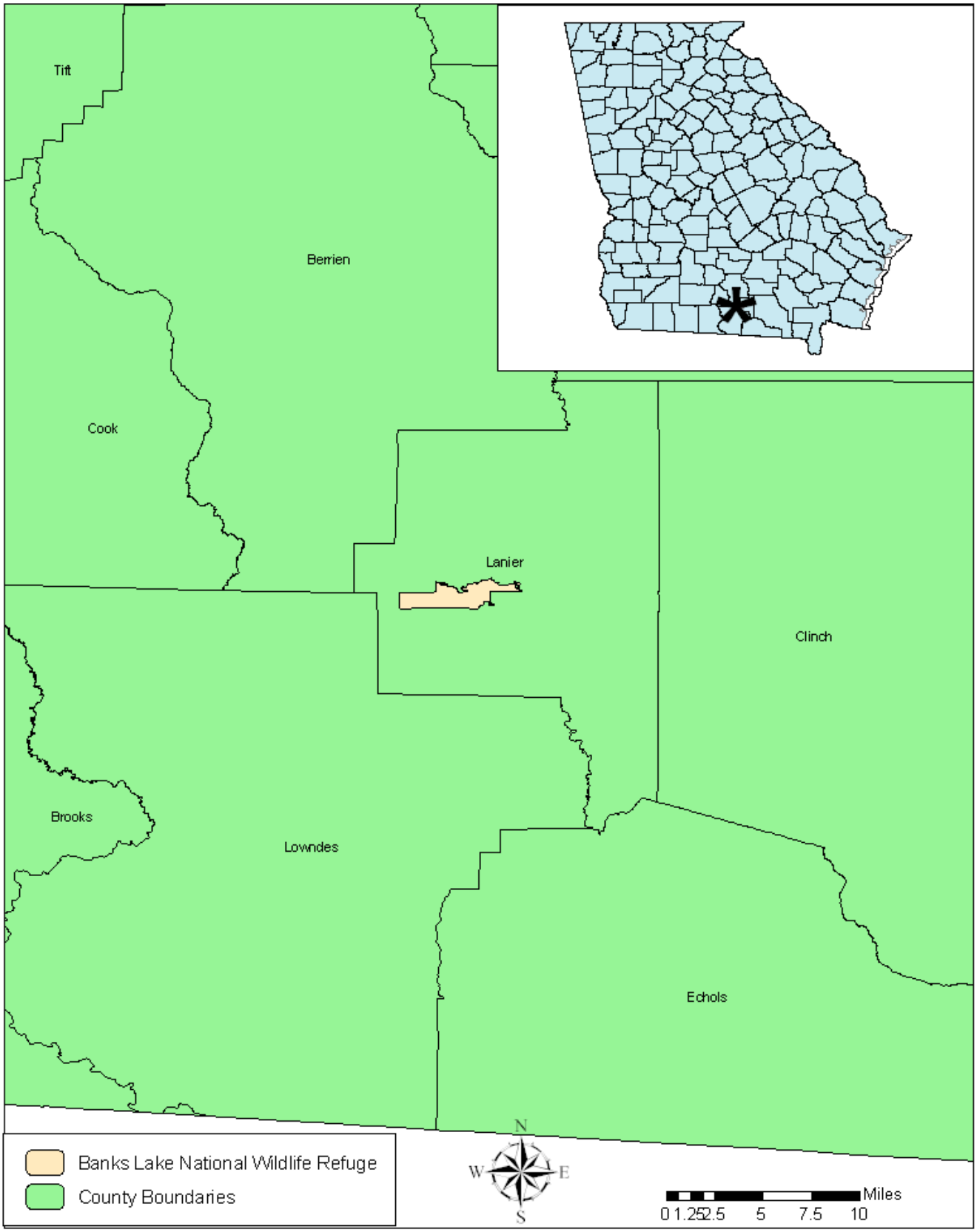
The refuge's most notable feature is Banks Lake, a shallow blackwater lake studded with cypress trees that supports many fish species, as well as other aquatic animals. It was formed when the Carolina bay that makes up most of the refuge was dammed over 150 years ago. The refuge contains a variety of habitat types, including approximately 676 acres (273 ha) of cypress swamp, 582 acres (235 ha) of freshwater marsh, and 634 acres (256 ha) of open water. Scattered through these wetland areas are scrub/shrub, evergreen forest wetlands, and mixed forest habitats. Upland areas make up a very small portion of the refuge's total acreage. Many species of plants, fish, and wildlife are found on the refuge, including state and federally listed species. The refuge's habitat management activities include water level management control and herbicidal spraying for aquatic vegetation control.

REFUGE HISTORY AND PURPOSE

Banks Lake lies in an area that, historically, consisted of a natural Carolina bay which was likely created by tidal action of the ocean and then shaped by a more temperate climate prevailing thousands of years ago. In the mid-1800s, Joshua Lee built a low-level dam across the drainage creek on his property. The impounded water was utilized to power a grist mill to grind corn, wheat, and rice. The "mill pond" and accompanying mill established the area as a trade center along the early stagecoach route between Waycross and Thomasville, Georgia. In the 1920s, the E.D. Rivers family attempted to develop the area around the lake for electric power and home development. Cypress was logged from the lake to provide railroad crossties until the 1930s. In the early 1940s the dam was elevated, forming the existing Banks Lake, and a water control structure/spillway was installed to maximize the water level at approximately 190 feet (58 meters) above mean sea level (MSL). In the 1970s, the E.D. Rivers Estate proposed to drain the lake and harvest the "lightered stumps" and cypress trees. The proposal to drain the lake and remove cypress trees never materialized. Instead, The Nature Conservancy purchased the land from the E.D. Rivers Estate on March 14, 1980.

On April 16, 1980, the U.S. Fish and Wildlife Service entered into a lease agreement with The Nature Conservancy to manage approximately 3,559 acres (1,440 ha) of the Banks Lake/Grand Bay wetlands complex, located in Lanier and Lowndes counties in southeastern Georgia. The original intent of the lease was to establish a national wildlife refuge. Changes in the emphasis of the land acquisition program resulted in a lack of funds necessary to acquire the land. The area remained in a state of limbo during 1982 and 1983, with the Service maintaining a caretaker position over Banks Lake. In 1984, funds were added to the fiscal year 1985 budget for purchase of the site at a value of $356,000. The refuge designation was authorized under the Fish and Wildlife Act of 1956 and funded through provisions of the Land and Water Conservation Fund Act of 1955, with strong local support from the Lakeland community and the congressional delegation. The area became Banks Lake National Wildlife Refuge on February 22, 1985.

Figure 1. Location of Banks Lake National Wildlife Refuge, Lanier County, Georgia.



The refuge was established for the protection and conservation of a unique environment as well as migratory and resident wildlife. The purposes of the refuge are:

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

"... suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. Section 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. Section 460k-2 (Refuge Recreation Act [16 U.S.C. Section 460k-460k-4], as amended).

Current refuge objectives are to provide:

- Optimum habitat for a wide diversity of native fauna and flora.
- Optimum habitat and protection for endangered and threatened species.
- Opportunities for fish and wildlife-oriented recreation, interpretation, and education.
- A showcase outdoor recreational opportunity for the physically challenged.
- Quality (trophy) fishing opportunities through a naturally sustained sport fishery.

SPECIAL DESIGNATIONS

Banks Lake NWR does not include any areas that have special designations.

ECOSYSTEM CONTEXT

The Service uses an ecosystem approach to more effectively fulfill its mission and serve as a better partner in efforts to conserve fish and wildlife and their habitats. An ecosystem approach generally can be characterized as follows (Noss et al. 1995):

- The primary goal is conserving natural biological diversity and ecosystem integrity, while supporting sustainable human use.
- Common goals are developed, and management decisions are made with the participation of all internal and external stakeholders.
- Management decisions consider the full array of biological and socioeconomic parameters.
- Management decisions are made based on natural, ecologically defined boundaries.
- Managers recognize that ecosystems are dynamic and manage adaptively, in response to changing biological and societal circumstances.

Banks Lake NWR is part of the Peninsular Florida ecosystem (Figure 2), one of the Service's 52 designated ecosystems and watersheds (USFWS 1998). The refuge lies in the northern portion of this ecosystem and in an area of Georgia that has dramatically changed through historical land use practices, and more recently, development. The refuge is important in a regional ecosystem context because it protects important aquatic and wetland habitats that are declining regionally (Dahl 2006). Furthermore, it is located adjacent to Moody Air Force Base and The Nature Conservancy property, effectively producing a large, relatively unfragmented area of land that will be managed to maintain biological integrity and ecosystem function. Together with other federal and state lands, such a

network of conservation lands can help mitigate the effects of habitat loss, provide protection, and serve as wildlife corridors. In addition, vegetated areas of the refuge reduce sedimentation and improve water quality downstream. Another benefit of forested wetlands is that they can function as water retention areas and minimize flood damage during times of excessive rainfall. Furthermore, wetlands provide a valuable habitat for birds and other wildlife.

REGIONAL CONSERVATION PLANS AND INITIATIVES

STATE WILDLIFE ACTION PLAN

In 2001, Congress charged each state and territory with developing a statewide Comprehensive Wildlife Conservation Strategy (CWCS) as part of the Wildlife Conservation and Restoration Program and the State Wildlife Grants Program. These programs were designed to assist states by providing annual allocations for the development and implementation of programs to benefit wildlife and their habitats. The funding was intended to supplement, not duplicate, existing fish and wildlife programs, and to target species in greatest need of conservation, species indicative of the diversity and health of the states' wildlife, and species with low and declining populations, as deemed appropriate by the states' fish and wildlife agencies.

The state wildlife conservation plans provide an essential foundation for the future of wildlife conservation and a stimulus to engage the states, federal agencies, and other conservation partners to think strategically about their individual and coordinate roles in prioritizing conservation efforts across the nation. This includes the use of landscape-based conservation strategies to map existing protected areas and to identify gaps and potential wildlife corridors. Figure 3 shows the Georgia and Florida area conservation lands located in the vicinity of the refuge.

In December 2002, the Georgia Wildlife Resources Division (GWRD) began a process to develop a comprehensive wildlife conservation strategy. Through its Wildlife Conservation and Reinvestment Program, the GWRD made a commitment to develop and begin implementation of this comprehensive wildlife conservation strategy by October 1, 2005 (Georgia Department of Natural Resources 2005). Funding for this planning effort came from a federal grant to GWRD through the State Wildlife Grant program, with matching funds provided through Georgia's Nongame Wildlife Conservation Fund. The goal of the strategy is to conserve Georgia's animals, plants, and natural habitats through proactive measures emphasizing voluntary and incentive-based programs on private lands, habitat restoration and management by public agencies and private conservation organizations, rare species survey and recovery efforts, and environmental education and public outreach activities.

The goals of Georgia's Comprehensive Wildlife Conservation Strategy are as follows:

- Maintain known viable populations of all high-priority species and functional examples of all high priority habitats through voluntary land protection and incentive-based habitat management programs on private lands, and habitat restoration and management on public lands.
- Increase public awareness of high priority species and habitats by developing educational messages and lesson plans for use in environmental education facilities, local schools, and other facilities.
- Facilitate restoration of important wildlife habitats through reintroduction of prescribed fire, hydrologic enhancements, and vegetation restoration.

Figure 2. Peninsular Florida ecosystem.

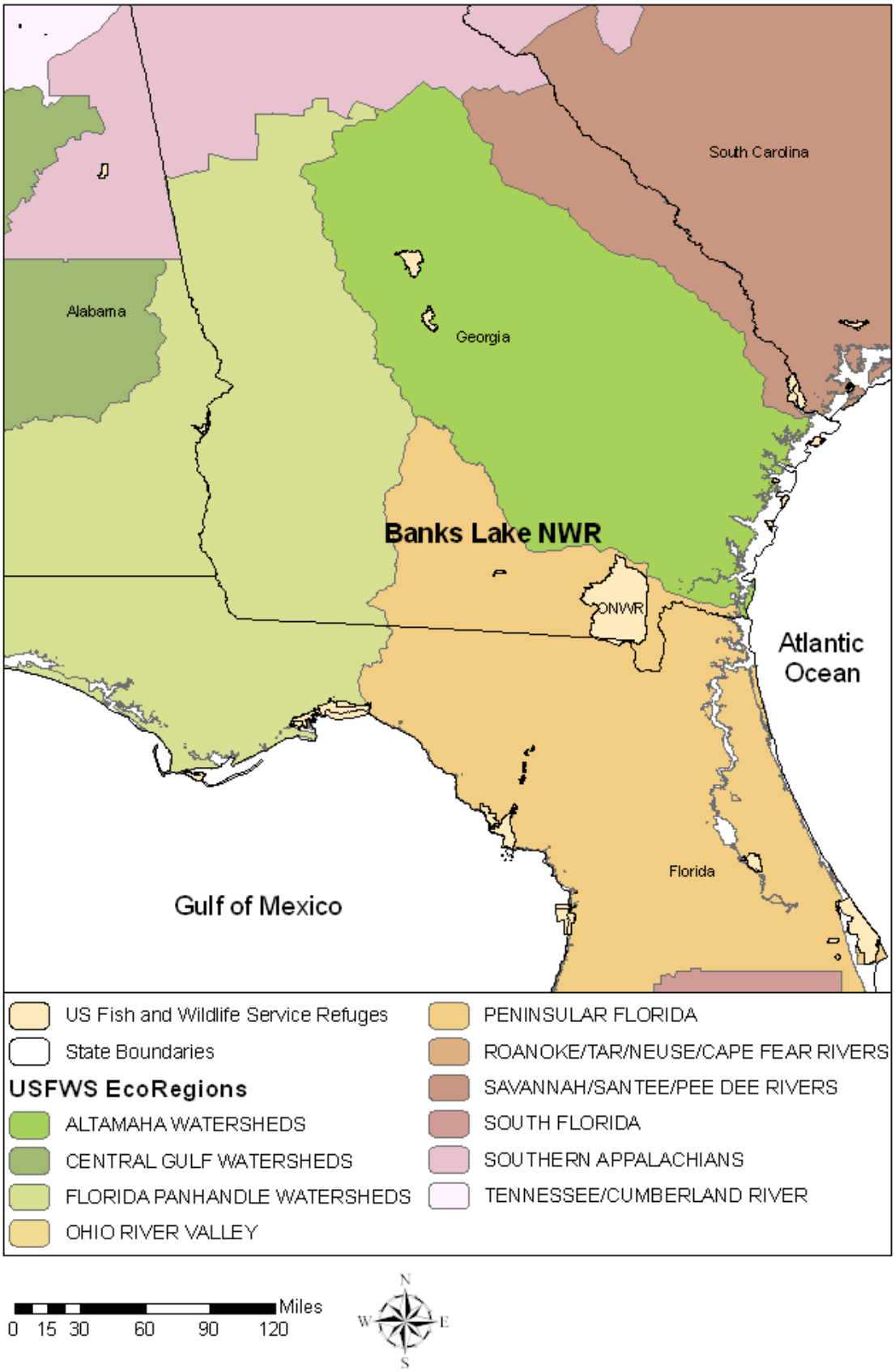
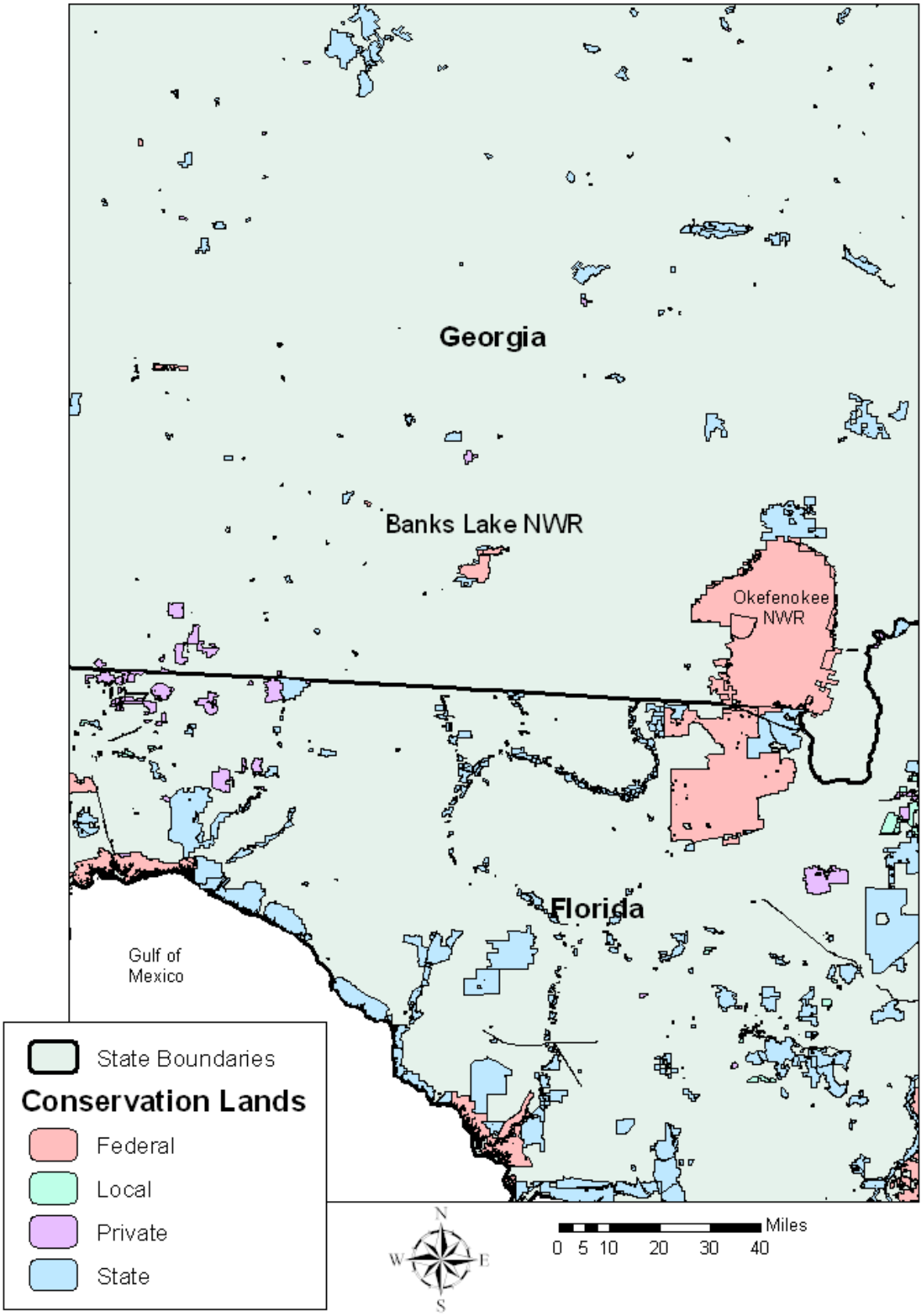


Figure 3. Georgia and Florida area conservation lands.



- Conduct statewide assessments of rare natural communities and habitats that support species of conservation concern
- Improve efforts to protect vulnerable and ecologically important habitats such as isolated wetlands, headwater streams, and caves.
- Combat the spread of invasive/noxious species in high priority natural habitats by identifying problem areas, providing technical and financial assistance, developing specific educational messages, and managing exotic species populations on public lands.
- Minimize impacts from development and other activities on high-priority species and habitats by improving environmental review procedures and facilitating training for and compliance with best management practices.
- Update the state protected species list and work with conservation partners to improve management of these species and their habitats.
- Conduct targeted field inventories of neglected taxonomic groups, including invertebrates and nonvascular plants.
- Continue efforts to recover federally listed species through implementation of recovery plans, and restore populations of other high priority species.
- Establish a consistent source of state funding for land protection to support wildlife conservation, and increase availability and use of federal funds for land acquisition and management.
- Continue efforts to monitor land use changes statewide and in each ecoregion, and use predictive models to assess impacts to high priority species and habitats.

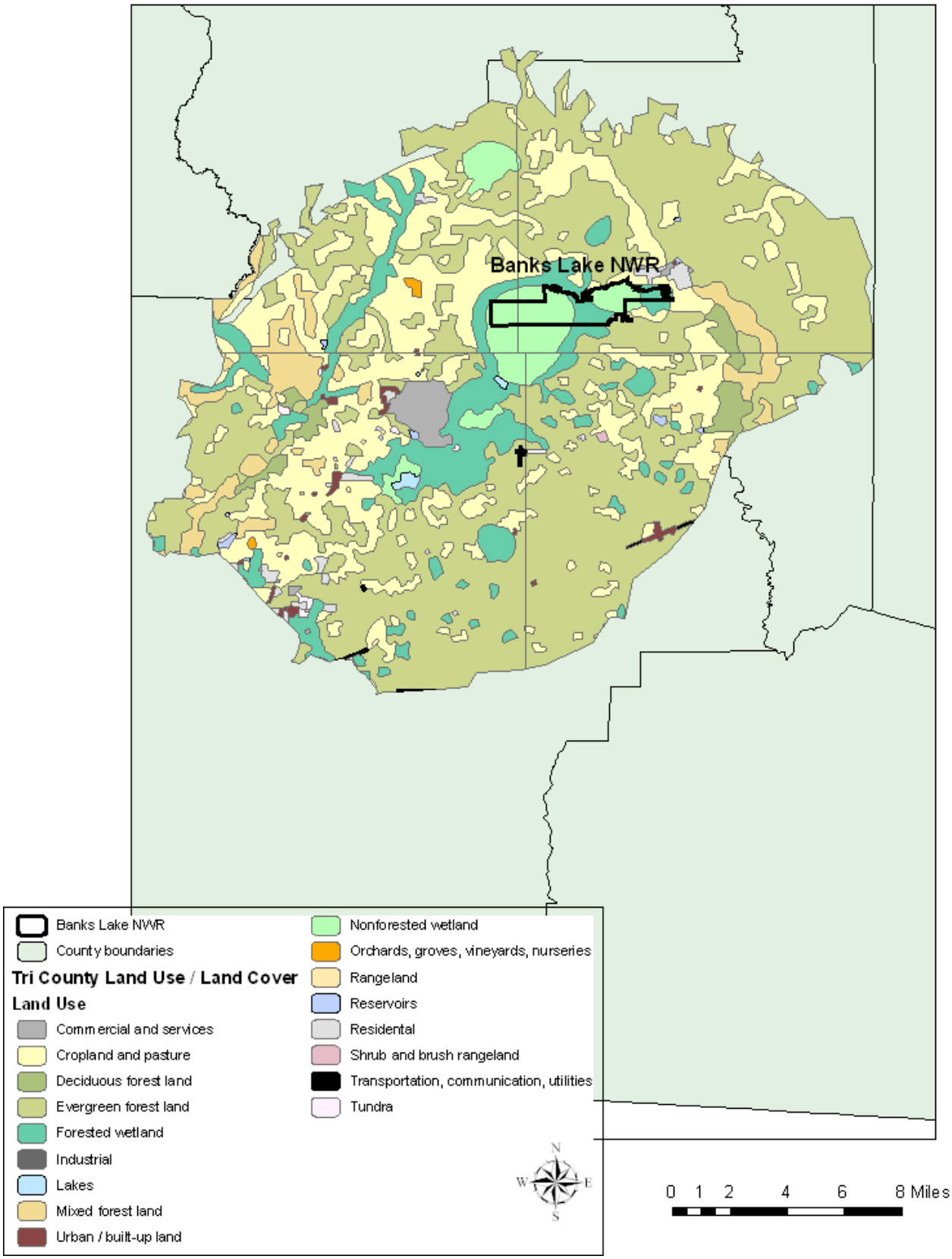
THE GRAND BAY–BANKS LAKE ECOSYSTEM SITE CONSERVATION PLAN

The Grand Bay–Banks Lake (GBBL) area (Figure 4) comprises the second-largest freshwater wetland system in Georgia and contains a number of unique ecological systems and globally imperiled species. A voluntary, cooperative stewardship council comprised of the Georgia Department of Natural Resources (Wildlife Resources Division), Moody Air Force Base, The Nature Conservancy (TNC, Georgia Field Office), and U.S. Fish and Wildlife Service (Banks Lake NWR) was established to develop a management plan for the GBBL area that would ensure the integrity of the ecosystem and long-term viability of native flora and fauna in the context of compatible human use. The Nature Conservancy's Site Conservation Planning (SCP) methodology was used to develop this plan (The Nature Conservancy 2000).

The SCP process is based on five themes:

- Selected focal conservation targets structure the planning process and become the starting point to conserve biodiversity and ecosystem function.
- An assessment of ecological integrity (called desired future conditions in this document), using the best available ecological information, identifies the spatial and temporal ecological needs of the focal conservation targets and provides the basis for measuring management success. A biodiversity health assessment determines the current status of each target.
- Information on the human context, including the mission, stakeholders, and surrounding communities, is integrated into the planning process. A detailed stakeholder analysis, as was done in this plan, is sometimes conducted.
- Critical threats to targets structure the development of conservation strategies.
- The planning process is iterative and adaptive, incorporating adaptive management to evaluate the success of conservation strategies.

Figure 4. Grand Bay–Banks Lake ecosystem.



In addition to the state and GBBL plans, there are several other state and regional conservation and resource protection plans, as listed below:

- Comprehensive Statewide Water Management Plan
- Department of Natural Resources Strategic Plan
- State Comprehensive Outdoor Recreation Plan
- State Preservation Plan
- Georgia Land Conservation Partnership Plan
- Georgia Aquatic Nuisance Species Management Plan

ECOLOGICAL THREATS AND PROBLEMS

Human impacts and underlying threats to biological diversity on and off the refuge include:

- the introduction and spread of nonnative and nuisance species;
- ongoing wildlife disturbance due to development, military and other human activities;
- impacts of nonpoint sources of pollution and water quality degradation; and
- the effects of climate change on refuge resources.

PHYSICAL RESOURCES

CLIMATE

Banks Lake NWR lies in the Georgia Coastal Plain, which has a humid, subtropical climate. The summers are generally hot and humid, while the winters are typically cool and dry (University of Georgia 2007).

Temperatures

Extremely low temperatures are infrequent due to the refuge's southerly latitude and its close proximity of the Atlantic Ocean and Gulf of Mexico, which moderate the cold, continental air masses that move southward in the winter months. Typically, the coldest month is January, with a record low of 4 °F (-15.5 °C) documented in 1985. The average winter lows are approximately 47 °F (8.3 °C), while winter highs around 63 °F (17.2 °C) are the norm (Table 1). The average number of days with freezing temperatures is 17.

During spring the temperatures quickly rise, and the average May highs and lows are 85 °F (29.4 °C) and 65 °F (18.3 °C), respectively. July is the hottest month with highs averaging 91 °F (32.8 °C) and lows near 73 °F (22.8 °C). Although July is the warmest month on average, a record high temperature of 105 °F (40.6 °C) was recorded in June 2007 (Moody Air Force Base 2007). Average high temperatures rapidly decline to 63 °F (17.2 °C) in early December. The first frost generally occurs in mid-November, and the last frost usually is in early April (University of Georgia 2007a).

Relative Humidity

Relative humidity is generally high in this part of Georgia with an annual average of 68 percent. The highest daily humidity is recorded in the early morning with an average at dawn of 83 percent. The average humidity at midday in spring is generally less than 50 percent, and during the rest of the year it averages 54 percent. The mean cloud cover is approximately 60 percent during the summer and 50 percent in winter. On the average, some fog is encountered 185 days per year (Moody Air Force Base 2007).

Table 1. Temperature and precipitation data collected at Moody Air Force Base adjacent to Banks Lake National Wildlife Refuge.

	Mean Daily Temperature (°F / °C)			Monthly Precipitation (in / cm)		
Month	*Maximum*	*Minimum*	*Mean*	*Maximum*	*Minimum*	*Mean*
January	62 / 17	42 / 6	52 / 11	8.0 / 20.3	0.4 / 1.0	3.8 / 9.7
February	65 / 18	45 / 7	55 / 13	11.1 / 28.2	1.3 / 3.3	4.2 / 10.7
March	72 / 22	51 / 11	62 / 17	12.1 / 30.7	0.7 / 1.8	4.9 / 12.4
April	79 / 26	58 / 14	68 / 20	11.6 / 29.5	0.3 / 0.8	3.7 / 9.4
May	85 / 29	65 / 18	75 / 24	11.3 / 28.7	0.2 / 0.5	3.8 / 9.7
June	90 / 32	71 / 22	80 / 27	11.7 / 29.7	0.8 / 2.0	4.5 / 11.4
July	91 / 33	73 / 23	82 / 28	11.2 / 28.4	1.6 / 4.1	6.3 / 16.0
August	90 / 32	73 / 23	82 / 28	15.5 / 39.4	1.3 / 3.3	5.2 / 13.2
September	87 / 31	70 / 21	78 / 26	9.0 / 22.9	0.1 / 0.3	3.4 / 8.6
October	79 / 26	59 / 15	69 / 21	7.3 / 18.5	0.0 / 0.0	2.0 / 5.1
November	71 / 22	50 / 10	61 / 16	6.4 / 16.3	0.1 / 0.3	2.4 / 6.1
December	63 / 17	44 / 7	54 / 12	9.1 / 23.1	0.1 / 0.3	3.6 / 9.1
Annual Precipitation				***124.3/315.7***	***7.5/16.0***	***47.8/121.4***

Source: Moody Air Force Base 2007

Precipitation

The mean annual precipitation recorded in the vicinity of the refuge is 47.0 inches (119.4 cm) (Table 1). This rainfall is well distributed throughout the year, although the summer is generally the wettest season (averaging 5.3 inches / 13.5 cm) and the fall is the driest (averaging 2.6 inches / 6.6 cm). Summer rainfall is often poorly distributed due to the localized nature of thundershower activity. During normal years, showers will occur nearly every afternoon in July and August. An average of 58 thunderstorm days per year is recorded in the immediate vicinity of the refuge. Extreme storm events, sometimes accompanied by tornadoes, occur occasionally in the area. Tropical storm systems accompanied by several days of heavy rains occur with a frequency of about one in five years. Maximum rainfall recorded at Moody Air Force Base, located next to the refuge, in a 24-hour period is 8.6 inches / 21.8 cm (Moody Air Force Base 2007). In 2007, Lanier County was in a Level 2 drought, with the year-to-date precipitation approximately 13 inches (33 cm) below the 30 year average, prompting various water restrictions and conservation measures (University of Georgia 2007b).

Lightning

Lightning poses a hazard to refuge visitors and personnel and can cause infrastructure damage. Lightning strikes are common in Georgia, and the state ranks among the top 10 in terms of lightning casualties (National Oceanic and Atmospheric Administration 1997).

Wind
Although wind data is currently unavailable at the refuge, wind speed at nearby Moody Air Force Base averages only 4.6 mph (7.4 kph), and a maximum wind speed of 74.8 mph (120 kph) has been recorded. Wind direction is generally from the north during the winter, from the west during the spring and early summer, and from the east during the late summer and fall (Moody Air Force Base 2007).

GEOLOGY AND TOPOGRAPHY

Geology
Lanier County is located in the Coastal Terrace Region, and the geologic processes are typical of the lower Coastal Plain of Georgia. This area was part of a large, shallow sea during the Late Cretaceous (100-65 million years ago). Banks Lake NWR is located on the Claxton Terrace, a generally flat area except where cross-cut by streams and lime sinks. Ground water has dissolved the underlying Tampa Formation limestone producing considerable areas of wetlands and numerous sinks and ponds. Grand Bay is the largest swamp area on the Claxton Terrace and forms the south end of Banks Lake. The Claxton Formation is of the middle Miocene age overlain by Pliocene age deposits with most recent deposition of Pleistocene (1.8 million - 10,000 years before present) and Holocene (10,000 before present to present) deposits located in the river valleys and swamps.

Topography
Geological processes have produced the varied topography found on the refuge. The once flat seabeds are being cut by streams and groundwater erosion, producing a variety of geomorphic formations, such as steep-sided stream valleys, lime sinks, creek swamps, open-water shallow lakes, ponds, flatwoods, and an elevated hammock. Elevation in the area is approximately 200 ft (61 m) above mean sea level.

A novel topographical feature of the refuge is Banks Lake. The lake averages 633 acres (256 ha) and is less than 10 ft (3 m) in depth. Banks Lake was formerly a classic Carolina bay with a sandy rim and an oval shape that is oriented from northwest to southeast. Because of the dam on the northwest side, the sandy rim has been inundated and a ring of pond cypress has become established. The GBBL ecosystem that includes the refuge contains several Carolina bays (Figure 5). Carolina bays are small wetland depressions that are symmetrically oval in shape. When seen from the air, they are very distinct and the long axis of the oval is always oriented northwest to southeast. These wetlands occur only in the coastal plain regions of North Carolina, South Carolina, and Georgia and vary in size from one to thousands of acres. Theoretical origins of these unique topographic features include: meteor showers, ocean currents, and sinkholes (Prouty 1952; Savage 1982). Regionally, Carolina bays have become rare due to conversion to agriculture or urban areas.

SOILS

Banks Lake is situated on the Lakeland soil series, which consist of very deep, excessively drained, rapid to very rapidly permeable soils (in uplands areas, see Figure 6). They formed in thick beds of eolian or marine sands, typically submerged deposits that are of Pleistocene age. Slopes are dominantly from 0 to 12 percent but can range to 85 percent in dissected areas. The lake bed is lined with clayey sand, and on top of this lays silty sand and a thick humus layer. The soils in the area are low in fertility and organic matter and strongly acidic (USDA 2007).

HYDROLOGY

Groundwater

Groundwater occurs within two major water-bearing zones, the surficial aquifer system and the Floridan aquifer system. Although groundwater is generally 10 to 20 feet (3-6 m) below the ground surface, the main water-bearing formation underlying Banks Lake NWR is an artesian aquifer. The surficial aquifer is composed of fine to coarse sands, gravels, silt, clayey silts, and clays. The Floridan aquifer is the primary water-bearing unit in the area. The Floridan aquifer furnishes almost all the local water for commercial, industrial, domestic, irrigation, and municipal use. The aquifer is typically encountered at a depth of 150 feet (46 m) and is usually under artesian conditions (Moody Air Force Base 2007).

Watersheds, Wetlands, and Drainage Patterns

Banks Lake NWR is located within the Suwannee River Basin, which discharges to the northeastern Gulf of Mexico (Gulf). Major drainages in this basin include the Withlacoochee River to the west and the Alapaha River to the east. A major feature of this basin is the Grand Bay–Banks Lake wetland complex, which includes Banks Lake NWR. Exclusive of the Okefenokee Swamp, the 13,000-acre Grand Bay–Banks Lake wetland complex is the largest freshwater lake/swamp system in the coastal plain of Georgia. This complex is composed of several broad Carolina bays (1 to 4 miles across) and shallow lakes, interconnected by cypress-gum swamp. Banks Lake is the only major body of water within this wetland complex.

The wetland system is recharged primarily by precipitation falling within the catchment basin, although the bays may receive a portion of their recharge water from adjacent shallow groundwater sources. Recharge by precipitation occurs mainly during the period December through March, when rainfall is typically heavy and evapotranspiration is low. Although rainfall can be heavy during July and August, summer storms generally are of short duration and a large part of the water is lost to evapotranspiration and soil-moisture replenishment. In years when tropical weather systems move through the area, heavy rainfall can result in significant recharge to the Grand Bay wetland complex. Based on hydrological studies conducted within this wetland complex, it would take approximately 124 hours, or 5.2 days, to move the stored volume of water resulting from a significant rainfall event, from Grand Bay into Dudley Bay (Moody Air Force Base 2007).

Surface water flow within and between the bays is driven by gravity. Grand Bay and Old Field Bay have the highest elevations among the bays: 192.2 (58.6 m) and 191.0 ft (58.2 m) ASL, respectively. The elevation of Banks Lake is the same as Old Field Bay, 191.0 ft (58.2 m) ASL. Essentially, Moody Bay, Rat Bay, Dudley Bay, and Moccasin Bay each share the same approximate elevation, ranging from 186.5 ft (56.8 m) to 186.8 ft (56.9 m) ASL. Based on the reported elevations, Grand Bay and Old Field Bay would contribute flow into the other bays (Moody Air Force Base 2007).

Water flow through the Grand Bay wetland complex is generally southeastern and southward. Banks Lake receives overland inflow from Copeland Creek and Darsey Creek, located on the eastern side of the lake. The northern parts of Banks Lake and approximately one-third of the shrub/swamp area known as Old Field Bay drain to the northeast via a water-control structure (flashboard riser) into Mill Creek, which supplies Lake Irma, an artificial waterbody in Lakeland. Mill Creek is a tributary of Big Creek, which discharges to the Alapaha River, and ultimately into the Suwannee River and the Gulf of Mexico. Between Old Field Bay and Grand Bay lies a system of open marsh and creek swamp. Watersheds from the two bays converge here to form Grand Bay Creek, the major surface water collector for the wetlands complex. Southern parts of Banks Lake, and the remainder of Grand Bay, drain to the southeast through Grand Bay Creek. Grand Bay Creek eventually flows into the Alapaha River (Hicks and Clayton 2006).

Figure 5. Carolina bays within the Grand Bay–Banks Lake ecosystem.

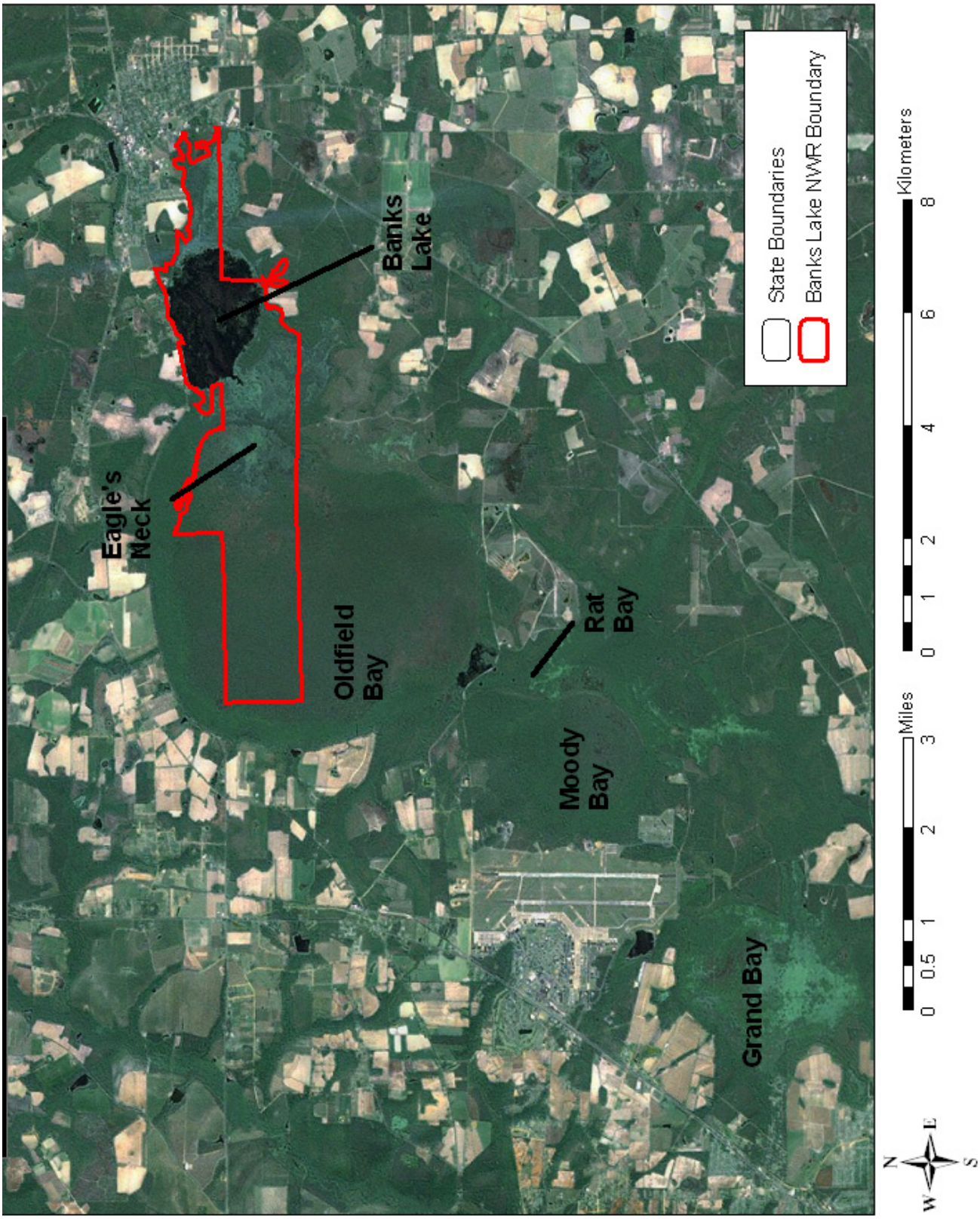
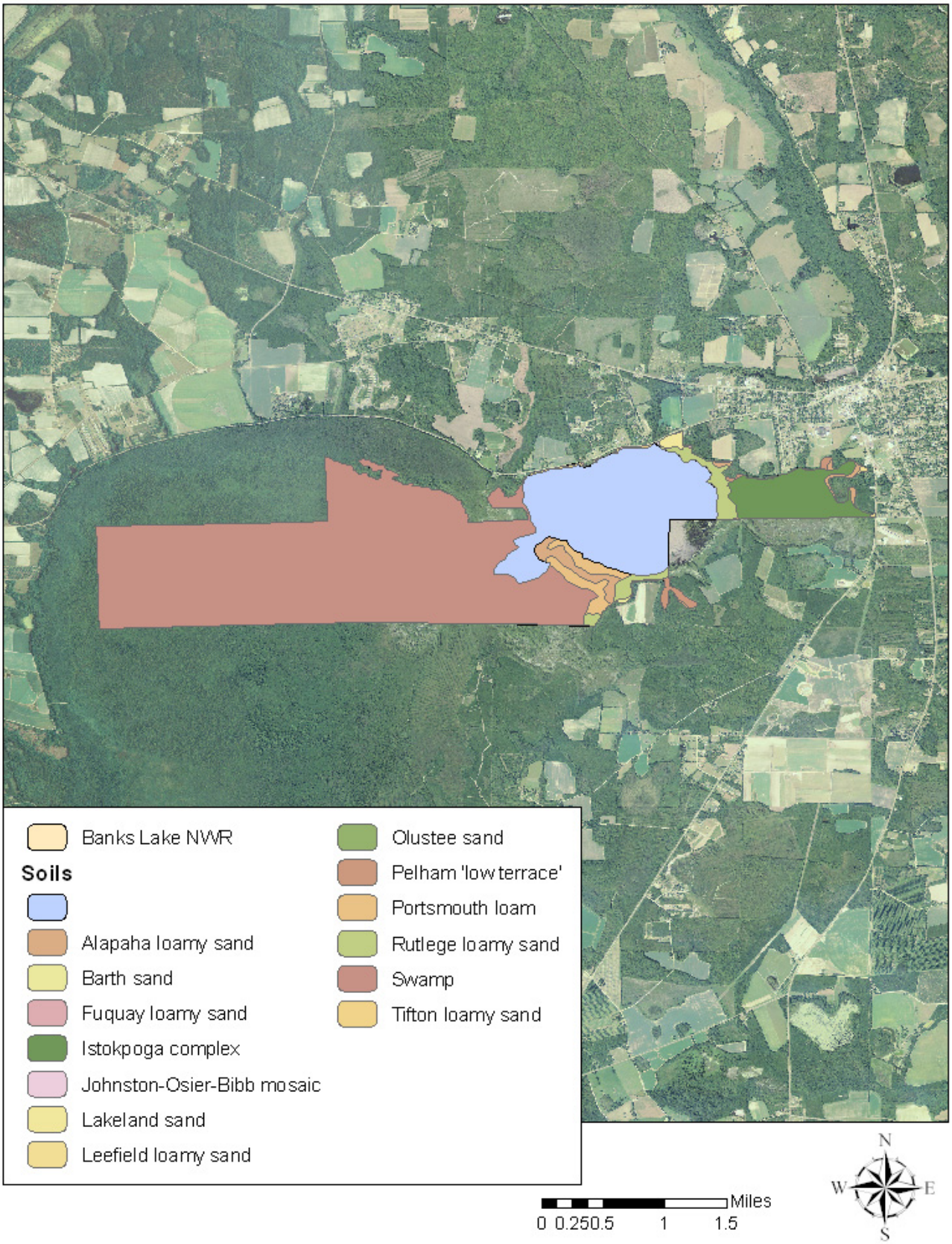


Figure 6. Soils of Banks Lake National Wildlife Refuge.



AIR QUALITY

The air quality on the refuge is generally good, and there are no Environmental Protection Agency (EPA) nonattainment areas in Lanier County (EPA 2007). Areas of the country where air pollution levels persistently exceed the national ambient air quality standards may be designated "nonattainment" by the EPA. Occasionally, the air quality on the refuge may be temporarily reduced due to wildfires in the vicinity.

WATER QUALITY AND QUANITY

Water Quality

Water quality is a measure of the physical and chemical characteristics of water, and includes parameters such as specific conductance, dissolved oxygen, pH (level of acidity), suspended solids, and other dissolved chemicals. Numerous factors determine the natural water chemistry of an area, such as the local climate, soil/rock types, and plant communities. All animals and plants have certain water quality requirements, depending on their life history stages, the season, and other attributes. Water quality can be negatively influenced by humans through pollution from a variety of sources, including runoff containing fertilizers and pesticides, leaking septic systems, oil spills, and other chemical releases.

Several water quality parameters were tested in the Grand Bay–Banks Lake area by Hicks and Clayton from March until October 2006 (see Table 2), including specific conductance, pH, dissolved oxygen, and temperature.

Specific conductance (conductivity) is a measure of how well water can conduct an electrical current and is the reciprocal of specific resistance in ohms. It is typically reported in microsiemens per centimeter (µS/cm) at 25 °C. Conductivity increases with increasing amount and mobility of ions. These ions, which come from the breakdown of compounds, conduct electricity because they are negatively or positively charged when dissolved in water. Therefore, specific conductance is an indirect measure of the presence of dissolved solids such as chloride, nitrate, sulfate, phosphate, sodium, magnesium, calcium, and iron, and can be used as an indicator of water pollution. The median specific conductance was 3.2 µS/cm in Banks Lake (Table 2).

The pH of water is a measure of the concentration of hydrogen ions. It ranges from 0 (highly acidic) to 14 (very basic). Pure water has a pH of 7 and is considered to be neutral. The pH of natural waters depends on the relative concentrations of carbonate ions, hydrogen carbonate ions, and dissolved carbon dioxide. Rain water in southern Georgia is generally slightly acidic with a pH=5.7 (Hicks and Clayton 2006). Every aquatic organism is adapted to live within a certain pH range, and typically invertebrate species with shells made of calcium (crayfish, snails, mussels) require higher pH values (greater than 7 or more alkaline) than fish. In addition, fish eggs and larvae are generally more sensitive to low pH values than adults. When pH values approach 4 (acidity of vinegar) most fish die. Banks Lake had a median pH of 5.0 during the study period (Hicks and Clayton 2006).

Adequate dissolved oxygen (DO) is necessary for good water quality, as oxygen is a necessary element to all forms of life. It is typically measured in milligrams per liter (mg/l). As DO levels in water drop below 5.0 mg/l, aquatic life is put under stress. Oxygen enters the water column through diffusion at the air-water interface, through aeration (mixing) and as a by-product of photosynthesis in aquatic plants. DO can decrease through the decay of organic matter, and if oxygen levels remain below 1-2 mg/l for a few hours large fish kills can result. Oxygen requirements differ among fish species, with catfish and bowfin having lower DO needs than species such as bass and sunfish. The median DO level for Banks Lake during the study period was 6.3 mg/l.

Biological and chemical processes are dependent on water temperature. Temperature influences the amount of dissolved gasses and DO concentrations are lower in warmer water. In addition, warm water can stimulate the growth of algae, which consume oxygen during decomposition. Many fish species are adapted to live in a specific temperature range, and this parameter is an important factor in determining the distributions of fish species. The temperature range for Banks Lake during March to October was 24 – 32 °C.

Table 2. Selected water quality parameters for the Grand Bay–Banks Lake area.

Parameter	Banks Lake	Grand Bay	Grand Bay Creek	Shiner Pond
Specific Conductivity (µS/cm)	3.2	2.5	8.0	7.4
pH	5.0	5.0	4.3	5.8
Dissolved Oxygen (mg/l)	6.3	1.2	<2.0	1.2
Temperature Range (°C)	24 - 32	24 - 32	22 - 26	24 - 32

Source: Hicks and Clayton 2006

Water Quantity

Water availability on the refuge is governed predominantly by precipitation patterns within the catchment basin. This means water levels are primarily controlled by the balance between precipitation, evapotranspiration and anthropogenic modifications in the system. Banks Lake was formed in circa 1830 by the construction of an earthen dam along the north-east portion of the refuge (USFWS 1992). A flood breached the dam in 1921, after which most of the lake drained and remained low until 1940 when the dam was repaired and the lake rose to its current level (TAI Environmental Sciences 1994). Water levels generally fluctuate less than a foot (30 cm) up or down annually and can be controlled through the flashboard riser at the north-east end of the lake. Four lake drawdowns have been conducted to control nuisance aquatic vegetation, during which the lake level can drop six feet (1.8 m) or more (USFWS 2007a).

BIOLOGICAL RESOURCES

HABITAT

Banks Lake NWR encompasses a variety of habitat types, open water, freshwater marshes, hardwood swamps, and upland areas that are typical of the Tifton Uplands ecoregion (GDNR 2005) found in southcentral Georgia (Figure 7). Habitat descriptions are based on the vegetation types outlined in “Current and Historic Land Cover of Grand Bay–Banks Lake (GBBL) Ecosystem in Lanier and Lowndes Counties, Georgia” (Squire et al. 2006). Table 3 lists habitat types and sizes found on the refuge while Figure 8 displays the vegetation map for the refuge. On Figure 8, approximately 26 acres of refuge lands remain unclassified in terms of habitat type because the vegetation data layer does not cover the latest refuge boundary layer in its entirety. Also noteworthy is that the habitat sizes were calculated for the areas within the latest refuge boundary (ownership) dataset, which totals 2,981 acres (1,206 ha). Presently, the refuge’s known acquisition acreage comprises 3,559 acres (1,440 ha). For additional details regarding refuge-owned lands and the acquisition boundary, please refer to Chapter IV, Management Direction, under the section “Resource Protection.” The definition of “acquisition boundary,” as it applies to national wildlife refuges, is provided in the Glossary (Appendix A).

Table 3. Habitat types and sizes on Banks Lake National Wildlife Refuge.

Habitat Type	Acres / Hectares
Cypress-Gum Swamp	676 / 273
Open Water	634 / 256
Herbaceous Marsh	582 / 235
Scrub/Shrub	580 / 235
Evergreen Forested Wetland	440 / 178
Mixed Forest	29 / 12
Clear-cut Wetland	10 / 4
Pine Plantation	3 / 1
Total	**2,954 / 1,196**

Cypress-Gum Swamp
The margins of the marshes and areas of the lake are dominated by black gum-cypress forests, with significant amounts of red maples, tupelos (*Nyssa* spp.), gums (*Liquidambar* spp.), sweetbay, cypress and other wetland trees. These swamps have a moderate to dense understory layer, consisting of heaths (Family Ericaceae), redbay (*Persea borbonia*), wax myrtle (*Myrica cerifera*), cinnamon fern (*Osmunda cinnamomea*), and greenbriers (*Smilax rotundifolia*). Many of the hardwood swamps on the refuge have succeeded or are succeeding toward denser and less diverse shrub vegetation as a result of long-term maintenance of artificially high water levels and the resultant lack of periodic fires.

Open Water
Within the refuge, there are areas of open water, the largest of which is Banks Lake. These areas are typically characterized by their dark acidic water resulting from an accumulation of tannic and humic acids in the system. Open water areas contain typical aquatic plants, including water lily (*Nymphaea odorata*), water shield (*Brasenia schreberi*), fanwort (*Cabomba caroliniana*), and other associated emergents. A prominent tree found scattered throughout the lake is pond cypress (*Taxodium ascendens*), most of which support Spanish moss (*Tillandsia usneoides*) and other epiphytic plants. Throughout the GBBL and especially in the Eagle's Neck area which includes a section of the refuge, open water has been transitioning to herbaceous marsh. Likewise, open water is declining in size on the refuge, and over the last 20 years, at least 25% of open water has been replaced by wetlands (Squire et al. 2006).

Herbaceous Marsh
Marshes are a type of wetland which is subject to frequent or continuous inundation. These habitats are dominated by emergents such as reeds (*Phragmites* spp.), cattails (*Typha* spp.), and rushes (*Scirpus* spp.). Other taxa that make up this habitat include: chain fern (*Woodwardia virginica*), pitcher plants (*Sarricenia* spp.), swamp loosestrife (*Decodon verticillatus*) and paint root (*Lacnanthes tinctoria*). On the refuge, marshes are found primarily in the Old Field Bay.

Scrub-Shrub
The scrub-shrub community exists as a transition area between the herbaceous marsh and evergreen forested wetlands. Scrub-shrub areas are nonforested areas dominated by woody shrubs, seedlings, and saplings averaging less than 20 feet in height. These wetlands intergrade with forested wetlands, nonforested emergent wetlands, and open water. The scrub-shrub areas are dominated by sweetbay (*Magnolia virginiana*), white titi (*Cyrilla racemiflora*), fetterbush (*Lyonia lucida*), Virginia sweetspire (*Clethra alnifolia*), red maple (*Acer rubrum*), and stunted pond pine (*Pinus serotina*).

Evergreen Forested Wetland
This community includes bay shrubs and wet pine species such as slash (*Pinus elliottii*). The evergreen "bay" shrubs include black titi (*Cliftonia monophylla*), titi (*Cyrilla racemiflora*), and blaspheme-vine (*Smilax laurifolia*). On the refuge, these areas are typically surrounded by scrub-shrub.

Mixed Forest
Only a small percentage of the refuge comprises this vegetation type. On the refuge, it generally consists of a combination of deciduous and coniferous trees and is found on elevated “islands” among the cypress-gum swamp.

Clearcut Wetlands, Pine Plantation, and Urban Areas
Several very small areas of cleared cypress/gum exist on the refuge. A small portion of formerly forested area on the refuge was converted to pine plantation prior to acquisition. The “urban” areas consist primarily of the roads, buildings, and parking lots on the public access areas at the northeast portion of the lake and make up less than one acre.

WILDLIFE

The lands and waters of Banks Lake NWR provide habitat for a variety of wildlife, including fish, amphibians, reptiles, mammals, and birds (see Appendix I, Refuge Biota). Several representative species from each taxonomic category are described below.

Fishes
A fish survey was completed for Banks Lake, Grand Bay, Grand Bay Creek, and Shiner Pond (Vives 2003) with a total of 23 species encountered. Common species included largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), and sunfish (*Enneacanthus* and *Lepomis* spp.). Other species captured were yellow bullhead (*Ameiurus natalis*), chain and redfin pickerel (*Esox niger and E. americanus*), line topminnows (*Fundulus lineolatus*), and eastern mosquitofish (*Gambusia holbrooki*). At least two state-listed species of concern were documented, the eastern mudminnow (*Umbra pygmaea*) and golden topminnow (*Fundulus chrysotus*).

The fishery dynamics were studied for Banks Lake by Herrington et al. (2005), using electrofishing catch per unit effort data (Table 4). Based on these findings, the fish assemblage structure appeared stunted and persistent, with little species turnover and changes in species abundance over the 12-year study period. Sportfish dynamics indicated that bluegill (*Lepomis macrochirus*) and largemouth bass populations exhibited poor relative weights. The authors concluded that bluegills were stunted due to overcrowding caused by low predation by largemouth bass. The weedy conditions were believed to hinder efficient feeding by bass on bluegill, and lake drawdowns and other aquatic vegetation control techniques were suggested to improve the fishery. The Georgia Department of Natural Resources Division of Wildlife Resources stocked the lake with bluegill and largemouth bass fingerlings in 2002 following a lake drawdown and replacement of a 1940s water control structure (USFWS 2002).

Figure 7. Georgia ecoregions.

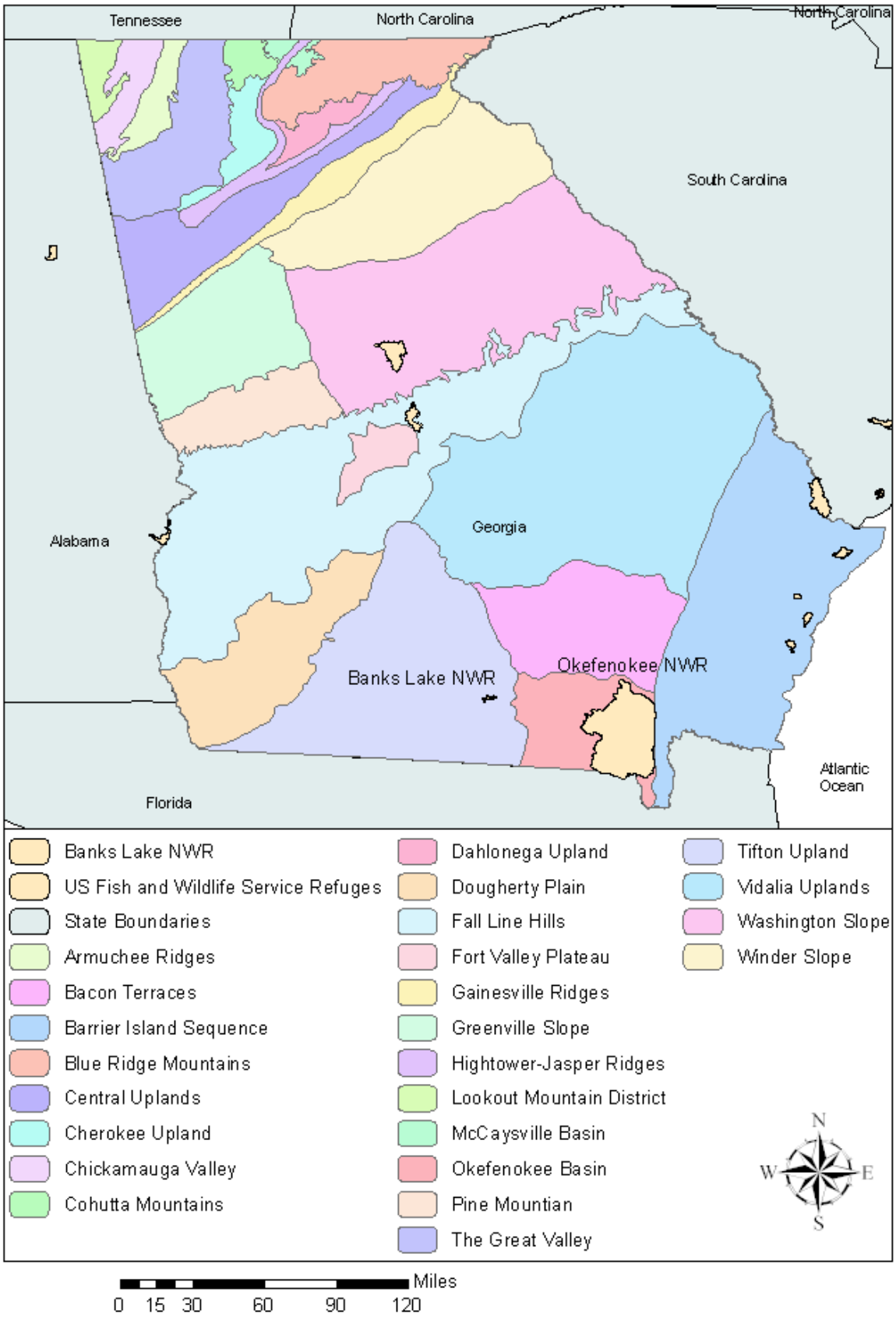


Figure 8. Vegetation of Banks Lake National Wildlife Refuge.

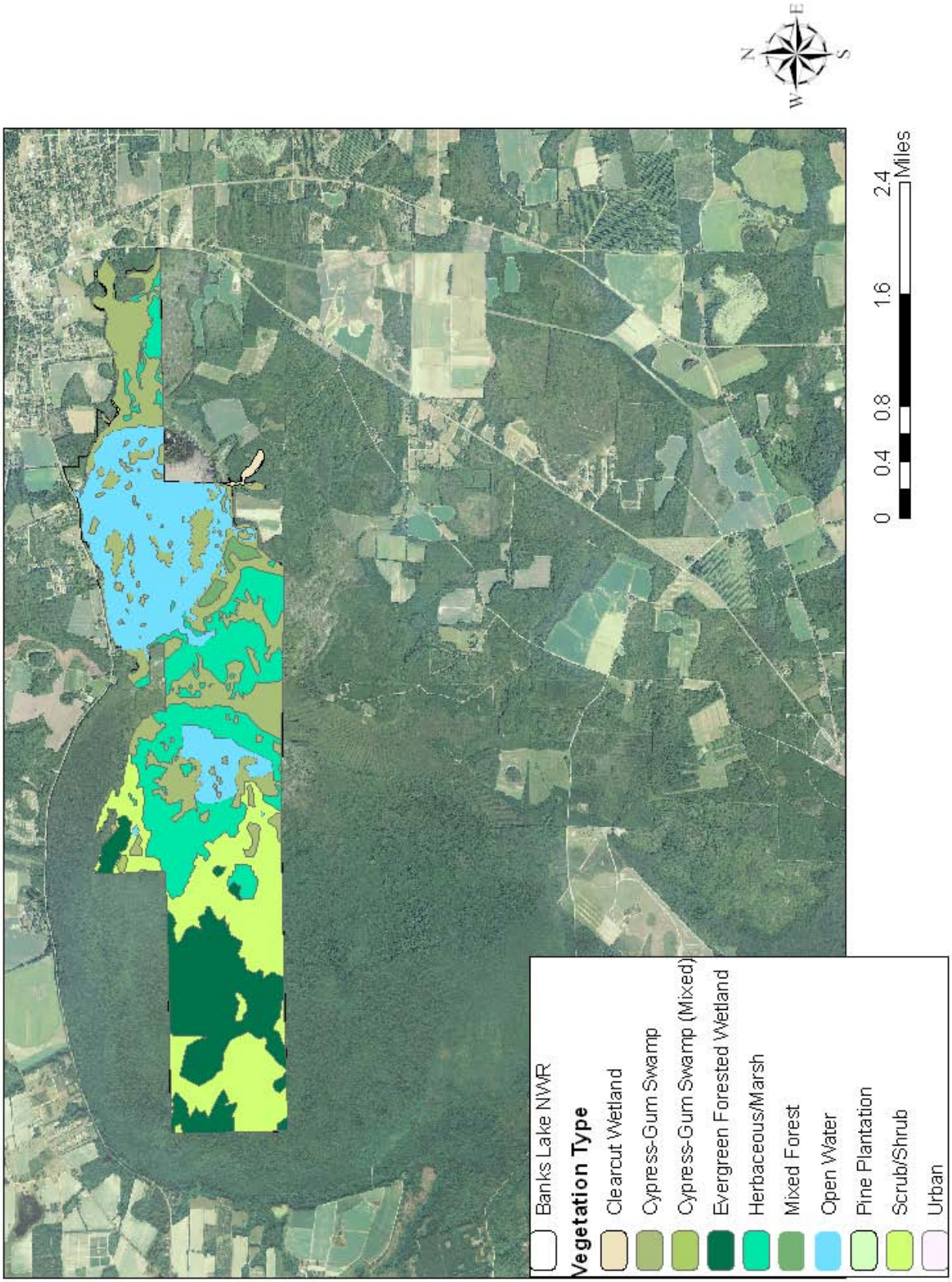


Table 4. Electrofishing summary for Banks Lake (CPUE = catch per unit effort).

Species	Jun 1992	Oct 1994	Nov 1995	Nov 1996	Dec 1997	Nov 1999	Sept 2001	Dec 2005	Dec 2006
Chain Pickerel	3.14	2.43	6.5	7.71	7.67	11.14	8.57	10.15	4.57
Bluegill	28.14	57	170.25	57.57	18.33	38.43	12	41.23	14.57
Largemouth Bass	15.29	30.71	35.25	18.71	15.33	15	13.57	16	11.86
Lake Chubsucker	8.43	9.29	50.5	0.43	3.67	51.14	8.86	32	10.29
Gar	7.29	3.86	10.75	5.57	1	7.86	2.86	13.85	1.14
Warmouth	2.43	2	9.75	4.86	4.67	7.71	2.57	19.38	3.14
Golden Shiner	6.14	65.86	1.5	0.71	1.17	5.14	2.86	6.77	0.14
Black Crappie	0	0	21.75	0.57	1.83	1.57	0	38.15	2.57
Bowfin	0.71	2.14	27	3.29	1.83	4.71	0.43	32.92	5.71
NOTES: In November 2001, a new water control structure was installed, followed by a drawdown during which the lake drained further than anticipated, resulting in a fish kill. Subsequently, 421,000 bluegill fingerlings were released in February 2002 by GADNR, followed by 30,000 largemouth bass fingerlings in April 2002.									

Amphibians

Amphibians have not been intensively surveyed on the refuge, but at least 24 species have been documented on the adjacent Moody Air Force Base (Palis 2003) and many of these will likely be present on the refuge. They include several frogs such as American bullfrogs (*Rana catesbeiana*), green frogs (*R. clamitans*), pig frogs (*R. grylio*), and southern leopard frogs (*R. sphenocephala*), and spring peeper (*Pseudacris crucifer*). Six treefrog species (*Hyla* spp.) have the potential to be found on the refuge. Southern toads (*Bufo terrestris*) are likely to be found in upland areas of the refuge. Salamanders documented on the refuge include the more aquatic eastern newt (*Notophthalmus viridescens*), greater siren (*Siren lacertina*), and two-toed amphiuma (*Amphiuma means*), while the mole salamander (*Ambystoma talpoideum*) is primarily a terrestrial species. The dwarf siren (*Pseudobranchus striatus*), a state-listed species, has not been documented on the refuge, nor was it found during a rare-species survey on Moody Air Force Base (Geo-Marine, Inc. 2004). In addition, a survey on Moody Air Force Base for the federally-threatened flatwoods salamander (*Ambystoma cingulatum*) did not encounter this species (Palis 2005), and it has not been documented on the refuge. Flatwoods salamanders have narrow habitat requirements, living in longleaf pine flatwoods with scattered ponds and are unlikely to be found on the refuge.

Reptiles

A thorough reptile survey has not been performed on the refuge, but at least 38 species have been documented on the adjacent air base (Moody Air Force Base 2007). Most of these include aquatic or wetland species that would likely be found on the refuge. The list includes a few upland species, which could be found on higher areas of the refuge.

The largest and most prominent reptile on the refuge is the American alligator (*Alligator mississippiensis*). Alligators are the top predator on the refuge, an important role in maintaining the ecological balance. The alligator population has not been systematically assessed on the refuge, but they are believed to be common (USFWS, pers. comm., Jan 2008). Other aquatic reptiles include several species of turtles, such as the chicken turtle (*Deirochelys reticularia*), musk turtle (*Sternotherus odoratus*), snapping turtle (*Chelydra serpentina*), Florida softshell turtle (*Apalone ferox*), and yellowbelly slider (*Trachemys scripta scripta*). Although the refuge lies within the range of the alligator snapping turtle (*Macrochelys temminckii*), a state-listed species, it has not been documented there. Likewise, it was not found during a survey for rare species on Moody Air Force Base (Geo-Marine, Inc. 2004). Eastern box turtles (*Terrapene carolina carolina*) are terrestrial, and can be found in a variety of wetland and upland habitats on the refuge. The only true tortoise east of the Mississippi, the gopher tortoise (*Gopherus polyphemus*), a state-listed species, has been infrequently observed on the refuge. This species prefers drier, more upland habitats, and would be unlikely to be found on the refuge.

The green anole (*Anolis caroleninsis*) is relatively common on the refuge, while several skinks such as the broadheaded skink (*Eumeces laticeps*) and ground skink (*Scincella lateralis*) may be occasionally found in the refuge uplands.

Snakes are likely the most diverse group of reptiles on the refuge. Many of these are aquatic or wetlands-associated such as several true water snakes (*Nerodia* spp.), eastern mud snakes (*Farancia abacura abacura*), and two crayfish snakes (*Regina* spp.). More upland species include the eastern hognose snake (*Heterodon platyrhinos*), eastern kingsnake (*Lampropeltis triangulurn triangulum*), gray rat snake (*Elaphe obsoleta spiloides*), and southern black racer (*Coluber constrictor priapus*). Three venomous snakes potentially found on the refuge are the eastern coral snake (*Micrurus fulvius*), cottonmouth (*Agkistrodon piscivorus piscivoris*), and timber rattlesnake (*Crotalus horridus*), although the latter prefers drier areas and has a large home range (Martin 2000, Adams 2005), making it unlikely on the refuge. Likewise, the federally protected eastern indigo snake (*Drymarchon couperi*) is unlikely to be found on the refuge due to habitat limitations since it has a large home range (Speake et al. 1978, Layne and Steiner 1996, Legare 2002). Eastern indigo snakes were not documented during a survey on Moody Air Force Base (BHE Environmental, Inc. 2002).

Birds

A variety of birds, including waterfowl, shorebirds, wading birds, water birds, birds of prey, vultures and other land birds are found on the refuge. More than 150 species have been documented on neighboring Moody Air Force Base (see Appendix I, Refuge Biota), and many of these are likely to be supported by refuge habitats.

Waterfowl. The refuge's lake and wetlands provide resting and foraging habitat for several species of waterfowl, including mallard (*Anas platyrhynchos*), blue-winged teal (*A. discors*), ring-necked duck (*Aythya collaris*), American coot (*Fulica arnericana*), common moorhen (*Gallinula chloropus*), Canada goose (*Branta canadensis*) and wood duck (*Aix sponsa*). The refuge is particularly suited to wood ducks, since this species is more dependent on forest land than is any other American waterfowl. Hardwood forests, especially bottom land hardwoods that contain permanent freshwater ponds with at least some brushy borders and swampy areas, provide especially suitable foraging areas and cover for wood ducks.

Shorebirds. Banks Lake NWR provides habitat for shorebirds, mostly along the lakes edges. Temporary habitat is available during lake drawdowns, which are periodically scheduled to control excessive aquatic plant growth (USFWS 2007a). Shorebird species likely to utilize the refuge include upland sandpiper (*Bartramia longicauda*), least sandpiper (*Calidris minutilla*), killdeer (*Charadrius*

vociferous), common snipe (*Capella gallinago*), lesser and greater yellowlegs (*Tringa flavipes and T. melanoleuca*), and solitary sandpiper (*T. solitaria*).

Wading Birds. Wading birds at the refuge utilize the broad range of wetland habitat types for foraging and roosting. The refuge's wading birds include the great blue heron (*Ardea herodias*), American bittern (*Botaurus lentiginosus*), green heron (*Butorides striatus*), great egret (*Casmerodius albus*), snowy and little blue egrets (*Egretta thulla* and *E. Ecaerulea*), tricolor heron (*E. tricolor*), white ibis (*Eudocimus albus*), sandhill cranes (*Grus canadensis*), and wood stork (*Mycteria arnericana*), a federally listed species. A resident population of Florida sandhill cranes (*G.c. pratensis*), a species listed as Threatened in Florida, was introduced into the GBBL area by GADNR.

Raptors, Owls and Vultures. Several raptors are found on the refuge, ranging from the tiny American kestrel (*Falco sparverius*) to the large bald eagle (*Haliaeetus leucocephalus*). Other birds of prey that utilize the refuge include Cooper's and sharp-shinned hawks (*Accipiter cooperii* and *A. striatus*), red-tailed and red-shouldered hawks (*Buteo jamaicensis* and *B. lineatus*), northern harrier (*Circus cyaneus*), Mississippi kite (*Ictinia mississippiensis*), and osprey (*Pandion haliaetus*). Owls include the great horned owl (*Bubo virginianus*), barred owl (*Strix varia*), and eastern screech owl (*Otus asio*). Turkey vultures (*Cathartes aura*) and black vultures (*Coragyps atratus*) are found on the refuge.

Neotropical Migratory Birds. A variety of neotropical migratory birds (passerines) can be found on the refuge year-round or during their fall and spring migrations. Major groups include finches, thrushes, woodpeckers, night hawks, doves, orioles, sparrows, tanagers, grackles, nuthatches, swallows, vireos, and warblers (please refer to Appendix I, Refuge Biota, for a more detailed Birds list).

Mammals

Mammals found on Banks Lake NWR are likely to include those which are relatively common state-wide. Bobcats (*Lynx rufus*) and coyotes (*Canis latrans*) are the largest predators and will be found in a variety of habitats. Smaller predators include opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), red fox ((*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), and otter (*Lutra canadensis*). Conspicuous herbivores include white-tailed deer (*Odocoileus virginianus*), gray squirrel (*Sciurus carolinensis*), and fox squirrel (*Sciurus niger*). In addition, numerous small mammals, including rats, mice, voles, shrews, and moles occupy various habitats on the refuge. Seven species of bats, including two that are state-listed—the southeastern bat (*Myotis austroriparius*) and the northern yellow bat (*Lasiurus intermedius*)—have been documented on Moody Air Force Base and could potentially be found on the refuge (BHE Environmental 2001).

NONNATIVE AND NUISANCE SPECIES

Nonnative or exotic species are animals and plants that have established populations outside of their historical range. In their new environment, nonnative species often do not have significant predators or competitors to help control their numbers. Under these conditions they can become an important component of an ecosystem, sometimes having profound effects on ecological processes that include predation, competition, soil moisture, fire regimes, and disease vectors (Mooney and Hobbs 2000). Sometimes, nonnative species will flourish to the detriment of native animals and plants. One such problematic species on the refuge is water hyacinth (*Eichhornia crassipes*). This floating plant, a native of South America, grows rapidly and spreads quickly through budding. Large mats of water hyacinth can block the light essential to submerged aquatic plants. In extreme cases, oxygen levels can decline significantly underneath these floating weed beds to the detriment of fish and invertebrates (Schmitz et al. 1993). Floating mats of water hyacinth can also impede boat traffic. Since its establishment, the refuge has controlled invading water hyacinth through the application of approved herbicides. These and other nonnative species that may occur on the refuge are listed in Table 5.

Nuisance species are native, but are potentially injurious to humans, fish, wildlife, or habitats. On the refuge, nuisance species consist of submerged aquatic plants, primarily fanwort (*Cabomba caroliniana*). Fanwort grows in long strands that can reach the surface. At high densities, submerged aquatic vegetation can limit fish production and be an impediment to boat traffic. On the refuge, management for submerged aquatic vegetation consists of conducting periodic lake drawdowns during the winter months in order to freeze and kill the exposed plants (USFWS 2007a).

Table 5. Nonnative species documented or potentially occurring on Banks Lake NWR.

Common Name	Scientific Name
PLANTS	
Alligator Weed	*Alternanthera philoxeroides*
Annual Bluegrass	*Poa annua*
Asiatic False Hawksbeard	*Youngia japonica*
Bermuda Grass	*Cynodon dactylon*
Black Medic	*Medicago lupulina*
Brazilian Vervain	*Verbena brasiliensis*
Chinese Privet	*Ligustrum sinense*
Common Bedstraw	*Galium tinctorium*
Common Chickweed	*Stellaria media*
Curly Dock	*Rumex crispus*
Glossy Privet	*Ligustrum lucidum*
Hop Clover	*Trifolium campestre*
Japanese Honeysuckle	*Lonicera japonica*
Ladysthumb	*Polygonum persicaria*
Narrow-leaved Vetch	*Vicia angustifolia*
Quaking Grass	*Briza minor*
Southern Rockbell	*Wahlenbergia marginata*
Sticky Chickweed	*Cerastium glomeratum*
Water Hyacinth	*Eichhornia crassipes*
Yellow foxtail	*Setaria glauca*
BIRDS	
Cattle Egret	*Bubulcus ibis*
Eurasian Collared Dove	*Streptopelia decaocto*
European Starling	*Sturnus vulgaris*
House Sparrow	*Passer domesticus*
Rock Pigeon	*Columba livia*
MAMMALS	
Black Rat	*Rattus rattus*

Common Name	Scientific Name
Coyote	*Canis latrans*
Feral Hog	*Sus scrofa*
House Mouse	*Mus musculus*
Nine-banded Armadillo	*Dasypus novemcinctus*
Norway Rat	*Rattus norvegicus*

RARE, ENDANGERED AND THREATENED SPECIES

Several federally- and state-listed endangered or threatened species as well as species of concern are known to occur or potentially occur within the refuge. They include reptiles, birds, and mammals (Table 6).

American Alligator
The American alligator (*Alligator mississippiensis*) is federally listed as threatened only as a result of its similarity in appearance to the federally listed American crocodile. The species is not regulated under Section 7 of the Endangered Species Act and is not in danger of becoming extinct. Its current listing is the result of a successful recovery program. American alligator populations reached all-time lows in the 1950s, primarily due to market-hunting and habitat loss. In 1967, under a law that preceded the Endangered Species Act of 1973, the alligator was listed as endangered. A combined effort by the U.S. Fish and Wildlife Service and state wildlife agencies in the southern U.S. saved these unique animals and, in 1987, the alligator was pronounced fully recovered, making it one of the first endangered species success stories. Currently, approximately 200,000 alligators exist in the state of Georgia (GADNR 2008a). The rise in alligator numbers and concurrent development of human settlements in or near alligator habitat has resulted in some human/alligator conflicts. In 1989, the Georgia Department of Natural Resources initiated a nuisance alligator program that allows licensed agent trappers to capture and harvest specific nuisance alligators over four feet in length. A nuisance alligator is one that exhibits aggressive behavior toward humans or domestic animals, shows symptoms of some debilitating illness or injury, or inhabits recreational waters intended primarily for swimming. The state regulates an alligator hunting program. The status of alligators on the refuge is currently unknown, but they are believed to be common.

Bald Eagle
The bald eagle (*Haliaeetus leucocephalus*) is a large raptor whose populations declined through poaching, habitat loss, and pesticide poisoning (Buehler 2000). In 1967 it was listed as endangered. Through various conservation efforts the bald eagle's status was changed to threatened in 1995 and eventually removed from the Federal Endangered and Threatened Species List in July 2007. It remains federally protected under the 1940 Bald and Golden Eagle Protection Act and is state-listed as threatened. Juvenile eagles and nonnesting adults can be seen throughout Georgia, but known nesting activity is concentrated mostly along the coast and near major rivers, wetlands, and reservoirs in the southern and central parts of the state. Historically, the coastal area, including the barrier islands, marsh islands, and nearby mainland, has provided good eagle nesting habitat and still supports the greatest population density. However, construction of reservoirs has increased suitable inland nesting habitat. Bald eagles prefer isolated sites for nesting but adapt to the presence of human disturbance in some areas (GADNR 1999). Nests are usually built in a large, open-topped pine near open water, often on high ground if available, but occasionally cypress trees are also used. Based on 2008 GADNR survey data, the nearest known active bald eagle nest is located approximately

15 miles (24 km) southwest of the refuge (J. Ozier, GADNR, pers. comm., 30 Jul 2008). Bald eagles have been known to nest on the refuge, but no active nests have been documented for over 10 years.

Wood Stork

The wood stork (*Mycteria americana*) is a large wading bird that typically nests in the upper branches of black gum (*Nyssa biflora*) or cypress (*Taxodium distichum*) trees that are in standing water. Standing water deters mammalian predators and is an essential element of colony sites. Wood storks are tactile feeders and frequently forage in large groups in open wetlands where prey species are available and water depths are less than 20 inches (50 cm). From the 1960s to the mid-1980s, the wood stork nesting population shifted from southern Florida to northern Florida, Georgia, and South Carolina (Ogden et al. 1987). Prior to 1970, a majority (70%) of the population nested south of Lake Okeechobee, Florida and declined from 8,500 pairs in 1961 to fewer than 500 pairs in the late 1980s and early 1990s as a result of changes in the Everglades hydrology caused by channelization and other water control efforts. During the same period, nesting in Georgia increased from 4 to 1,501 pairs and nesting in South Carolina increased from 11 to 829 pairs (USFWS 1997). In 2005, 1,817 pairs were documented at 19 colonies in Georgia, and in 2006 there were 1,928 pairs at 21 colonies (USFWS 2007b). Several colonies in Georgia and north Florida are within 75 miles (120 km) of Banks Lake NWR (Brooks and Dean, in press), and wood storks have been observed foraging on the refuge. This species is state- and federally-listed as endangered.

Round-tailed Muskrat

The round-tailed muskrat (*Neofiber alleni*) is a species of conservation concern (listed as threatened in Georgia) that represents a monotypic genus with a patchy distribution restricted to Florida and southern Georgia (Bergstrom et al. 2000; Lefebvre and Tilmant 1992). Habitat loss and alteration are the primary causes of their decline. Round-tailed muskrats are semiaquatic, nocturnal herbivores usually found in shallow marshes with emergent vegetation (Birkenholz 1963; Lefebvre and Tilmant 1992). Preferred habitat appears to be floating mats of vegetation in the vicinity of open water with emergent sedges and floating-leafed vegetation. At Grand Bay in South Georgia, preferred habitat appears to exist mainly along the ecotone between mixed emergent marsh and dense chain-fern marsh (GADNR 1999). They have been common in the marshes of Grand Bay Wildlife Management Area (GADNR, 1999; S. Aicher, USFWS, pers. comm., Feb. 2008), where their densities have been estimated to reach 100-121 animals per acre or 250-300 per hectare (GADNR 1999).

Table 6. Listed wildlife species documented or potentially occurring on Banks Lake NWR.

Common Name	Scientific Name	Status	
		GWRD	USFWS
REPTILES			
American Alligator	*Alligator mississippiensis*	-	T(S/A)
BIRDS			
Bald Eagle	*Haliaeetus leucocephalus*	T	-
Wood Stork	*Mycteria americana*	E	E
MAMMALS			
Round-tailed Muskrat	*Neofiber alleni*	T	-

Key: E=endangered, T=threatened, T(S/A) = Similarity of Appearance (to Threatened American crocodile)

Listed Plants
Several state-protected plant species of concern are listed as occurring in Lanier County (GWRD 2007). Listed species have declined due to habitat loss resulting from urbanization and agriculture, changes in land-use (e.g. fire suppression), competition with exotic plants, and changes in hydrology. Listed plant species potentially occurring on Banks Lake NWR are shown in Table 7 (Dr. R. Carter, Valdosta State University, pers. comm., 20 Jun 2008).

Table 7. State-listed plants likely to occur on Banks Lake National Wildlife Refuge.

Common Name	Scientific Name	Status	
		GWRD	USFWS
Greenfly Orchid	*Epidendrum conopseum*	SC	-
Hooded Pitcherplant	*Sarracenia minor*	SC	-
Yellow Flytrap	*Sarracenia flava*	SC	-

CULTURAL RESOURCES

The cultural history of the Banks Lake area extends back to at least 15,000 years before present (BP) covering the Paleo-Indian, Archaic, Woodland, Mississippi, and Historic Periods. Human occupation of Georgia likely occurred during the end of the last ice age, which marked a climatic transitional period during which the vast grasslands, boreal forests, and associated mega-fauna found in this part of the state began to give way to oak-hickory forests and smaller wildlife species, most of which continue to inhabit the area (Anderson et al. 1990). This timeframe is also called the Paleo-Indian Period (15,000 - 10,000 BP), during which humans were predominantly nomadic hunters and engaged in supplemental gathering of nuts and other plant resources. The Clovis people, one of several Paleo-Indian groups, were long-regarded as the first human inhabitants of the New World and ancestors of all the indigenous cultures of North and South America. Clovis points found on the refuge indicate that the area was inhabited by humans by 11,000 BP (USFWS 1992).

The Archaic Period (10,000 - 3,000 BP) followed the Paleo-Indian Period. The climate continued to become warmer and wetter, reestablishing deciduous forests and consequently forcing a shift in food procurement (White 1988). With the nomadic mega-fauna largely extinct, the Archaic Indians switched to smaller, more elusive forest prey such as deer, raccoon, squirrel and turkey. They also began fishing, and collecting mollusks. The gradual shift from a nomadic to sedentary lifestyle also led to the development of horticulture and pottery-making. Pottery shards found on the refuge have been dated to the Archaic Period (USFWS 1992).

The Woodland Period (3,000 - 1,000 BP) followed the Archaic Period. Sedentism continued, with more varieties of crops being grown (White 1988). Mollusks disappeared from the diet due to changes in climate. Pottery manufacturing and decorating became more sophisticated (ceramics were first used) and ceremonial activities grew more elaborate. Chert (silica rock) tools, diagnostic of the Woodland Period, have been identified on the refuge (USFWS 1992).

The Mississippi Period (1,000 - 460 BP / Anno Domini [AD] 1540) is considered the pinnacle of native American culture in this region, the culmination of over 1,000 years of development resulting in large ceremonial and political centers. The Mississippian way of life was dominated by agriculture, being supplemented by hunting, gathering, and fishing. The decline of the Mississippian cultural traditions

was brought about by the arrival of Europeans, whose military expeditions and introduced diseases killed thousands of Native Americans and destabilized their cultural and political centers (Anderson et al. 1990). Although Mississippian cultures were likely present in the area, no artifacts dating from this period were recovered during the 1992 archaeological survey.

The Historic Period (1540 AD - Present) marks the final disintegration of the Mississippian Chiefdoms into smaller tribal affiliations. During this period, most of Georgia was part of the Creek Confederacy. The Creeks were part of the larger Muskogee group, which also included Choctaw and Chickasaw groups. The DeSoto expedition was the first to contact the Creeks in 1540. Later the Creeks formed alliances with the English, which lasted through the American Revolution and the War of 1812. The Creek Confederacy broke up when it accepted aid from the US and was forced into land concessions in 1814 and later moved to Oklahoma (White 1988). In 1819, the land ceded by the Creeks was surveyed and divided, a portion of which eventually became Lanier County (Roquemore 1989). The first settler, J.D. Patten arrived in 1820, followed in 1825 by Joshua Lee, who damned the outlet of the Grand Bay Swamp, creating Lee's Millpond. The mill, which processed grist, cotton and rice became the focal point for agricultural activity in the area. A flood destroyed the mill and dam in 1848, and Lee sold the property. It was purchased by William Lastinger, who raised the dam and built a sawmill. Lastinger sold the mill in 1857 to Henry Banks, who renamed the pond, Bank's Millpond. In 1926, James Banks, son of Henry Banks, sold the lake to State Senator E.D. Rivers, who named it Banks Lake. Rivers proposed several commercial and recreational uses for the lake, none of which materialized (Scheimer 1988). From 1935 to 1939, a Civilian Conservation Corps camp was located at Banks Lake, and assisted with forestry and firefighting tasks. After 1939, the land was purchased by the Tobacco Belt Trust Company, which later deeded it to Mrs. E.D. Rivers. In 1980, Mrs. Rivers transferred the land to The Nature Conservancy, which held it in trust until 1985, when the Service acquired it. Numerous historical artifacts have been found on the refuge, including stoneware, glass, ceramic, and brass items (USFWS 1992).

SOCIOECONOMIC ENVIRONMENT

HUMAN POPULATION GROWTH AND ASSOCIATED LAND USE CHANGES

Georgia is considered one of the seven fastest-growing states in the nation (U.S. Census Bureau 2007) and has an estimated population growth of 160,700 people annually (approximately 7.9%). Consequently, between 1974 and 2005, an average of 86,387 acres (34,959 ha) was developed each year in association with the population increase. Development is primarily in the form of low-density residential areas, commercial buildings, and associated parking lots and roads. In recent years, the rate of urbanization has accelerated with an average rate of conversion to urban land use approximating 333,028 acres (134,771 ha) annually between 2001 and 2005 based on Georgia land-use trend analyses (University of Georgia 2007c). The land use change has been primarily at the expense of forested areas (deciduous forests and forested wetlands), not agricultural lands (University of Georgia 2007). The state's population was estimated at 9,363,941 in 2006 and is expected to surpass 12 million by 2030 (U.S. Census Bureau 2007). If current land conversion rates associated with this rise in population are applied (with the assumption, among others, that housing densities remain at current levels), approximately 7,326,616 additional acres (2,964,976 ha) will be developed by 2030 or an additional 19% of the state’s total surface area. Already, more than two percent or 1,287 square miles (3,335 km^2) of the state is covered by impervious surfaces (University of Georgia 2007). Although Lanier County and neighboring counties have relatively low population densities, their growth rates are higher than the state average (see Table 8) and these areas will likely change significantly in future land use.

Table 8. Regional county population data for Banks Lake National Wildlife Refuge.

County	2000 Population	% Increase 2000-2015	Predicted 2015 Population*
Atkinson	7,609	23.0%	9,358
Berrien	16,235	8.4%	17,605
Clinch	6,878	9.3%	7,521
Echols	3,754	34.8%	5,061
Lanier	7,241	9.1%	7,897
Lowndes	92,115	13.7%	104,767

Source: State of Georgia 2005

COUNTY DEMOGRAPHICS AND ECONOMIC INDICATORS

In 2000, there were 7,241 people in Lanier County (Table 9) with a population density of 38.7/mi² (100.2/km²). There were 3,219 housing units at an average density of 17.2/mi² (44.4/km²). The racial makeup of the county was 72.9% White, 25.2% Black or African American, 2.4% Hispanic/Latino, 0.7% Native American, 0.4% Asian, 0.1% Pacific Islander and the remainder of other or mixed races (U.S. Census Bureau 2007). The median income for a household in the county was $29,171, and the median income for a family was $34,512. Males had a median income of $26,023 versus $20,021 for females. The per capita income for the county was $13,690. About 15.30% of families and 18.50% of the population were below the poverty line, including 22.90% of those under age 18 and 24.20% of those of age 65 or over (U.S. Census Bureau 2007). Major economic activities include construction, manufacturing (furniture), retail, accommodation/food services, agriculture, and forestry (Georgia Department of Labor 2006). Land use (1998 data) is primarily evergreen forest, forested wetland, agriculture, clearcut, and urban (University of Georgia 2007).

The counties bordering Lanier County have similar demographics (Table 9). Their populations are approximately two-thirds white, with African Americans ranging between 29 and 7 percent. Population densities are relatively similar, except for Lowndes County where it is much higher. Median annual household incomes range between $25,000 and $32,000, well below the American average ($44,334). In terms of their percentage of people, the age classes are very similar, with a relatively high number of young people, indicating a growing population. Major economic activities vary between some of the counties. Atkinson, Berrien and Clinch counties have mostly agriculture and forestry, wood manufacturing, retail, health care and accommodation/food service sector jobs. Echols County industries are mostly related to agriculture and forestry. Lowndes County has the most diverse industries, including agriculture, forestry, textiles, wood/paper production, chemical manufacturing, plastics/rubber manufacturing, furniture, retail as well as technical and professional services (Georgia Department of Labor 2006). Land use among the neighboring counties is similar, with evergreen forests comprising the largest component (range: 30-50%), except for Berrien County, where agricultural lands are the largest component (35%). Next, forested wetlands are the major land use type (range: 15-35%), followed by clearcut or sparse areas (range: 10-15%) and urban lands comprising 10% or the land in each of these counties (University of Georgia 2007).

STATEWIDE WILDLIFE-ASSOCIATED ACTIVITIES

Fishing, hunting, and other wildlife-associated activities are an important component of the recreational opportunities available in Georgia (U.S. Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, U.S. Census Bureau 2001). More than 2 million Georgia residents and nonresidents engage in hunting, fishing, and wildlife-watching activities. Wildlife watchers comprised the largest component (68%) of the wildlife-related activities, with over 1.5 million people engaged in this activity.

In 2001, state residents and nonresidents spent nearly $1.7 billion on wildlife recreation in Georgia. Of that total, trip-related expenditures were $561 million and equipment purchases totaled $909 million. The remaining $194 million was spent on licenses, contributions, land ownership and leasing, and other items and services. Expenditures by anglers and wildlife watchers in Georgia rose significantly. Anglers spent $1 billion in 2006 compared to $543 million in 2001, while wildlife watcher expenditures rose from $535 million in 2001 to $1.8 billion in 2006. Hunting expenditures rose slightly from $503 million in 2001 to $651 million in 2006 (USFWS 2006c).

REFUGE ADMINISTRATION AND MANAGEMENT

This section describes the refuge's land protection and conservation efforts; its visitor services program; and its personnel, operations and maintenance.

LAND PROTECTION AND CONSERVATION

Banks Lake National Wildlife Refuge is part of the Grand Bay–Banks Lake ecosystem, and a large section of its southern boundary abuts Moody Air Force Base and is therefore largely protected from potential adjacent development (Figure 9). Along the northwest side of the refuge, the Georgia Department of Transportation (GADOT) owns a wetlands mitigation area, which provides an added buffer between private lands and the refuge. However, to the north and east, the refuge lies against private lands that were, until recently, largely rural and agricultural in nature, but are becoming increasingly developed.

Currently, only a portion of the refuge's acquisition boundary is officially established as a result of surveys that were mandated as part of recent legal proceedings regarding land ownership between the refuge and private land owners whose properties lie along the lake's edge off of West Main Street (SR 122). In addition, the lack of formal boundaries has led to some issues regarding the use of lake water by adjacent private or commercial land owners. Figure 10 shows land parcel information in relationship to the refuge.

VISITOR SERVICES

Refuge visitation averages 82,000 visitors annually. The primary visitor activity on the refuge is freshwater fishing for largemouth bass, bluegill, crappie, and catfish. Peak use of the lake is during March, April, and May, coinciding with the fish spawning season. The refuge provides specially designed fishing piers that can accommodate anglers with disabilities.

Many visitors experience fishing and wildlife observation simultaneously. However, a growing number of visitors are citing wildlife observation and photography as their main reasons for visiting. Wading birds, ospreys, and bald eagles continue to be the top species of viewing and photography interest. In addition, the photography of Carolina bay habitats is growing in popularity.

Table 9. Demographics for Lanier County and neighboring counties, Georgia.

Parameter	Atkinson	Berrien	Clinch	Echols	Lanier	Lowndes
Total Area (mi²/ km²)	344/891	458/1,186	824/2,125	421/1,090	200/518	511/1,323
Population	7,609	16,235	6,878	3,754	7,241	92,115
% White	66	85	69	75	72	62
% Black	19	11	29	7	25	34
% Latino	14	2	1	17	2	3
% Other Races	1	2	1	1	1	1
Population Density(per mi²/ km²)	22/9	36/14	8/3	9/4	39/15	183/71
Housing Density(per mi²/ km²)	9/4	16/6	4/1	4/1	16/6	72/28
Median Income (household)	$26,470	$30,044	$26,755	$25,851	$29,171	$32,132
% < 18 years	30	27	28	29	27	26
% 19 - 44 years	39	37	43	43	38	46
% 45 - 64	20	23	23	18	20	18
% > 65	11	13	6	10	15	10

Source: US Census 2007

Figure 9. Land status map of Banks Lake National Wildlife Refuge and adjacent areas.

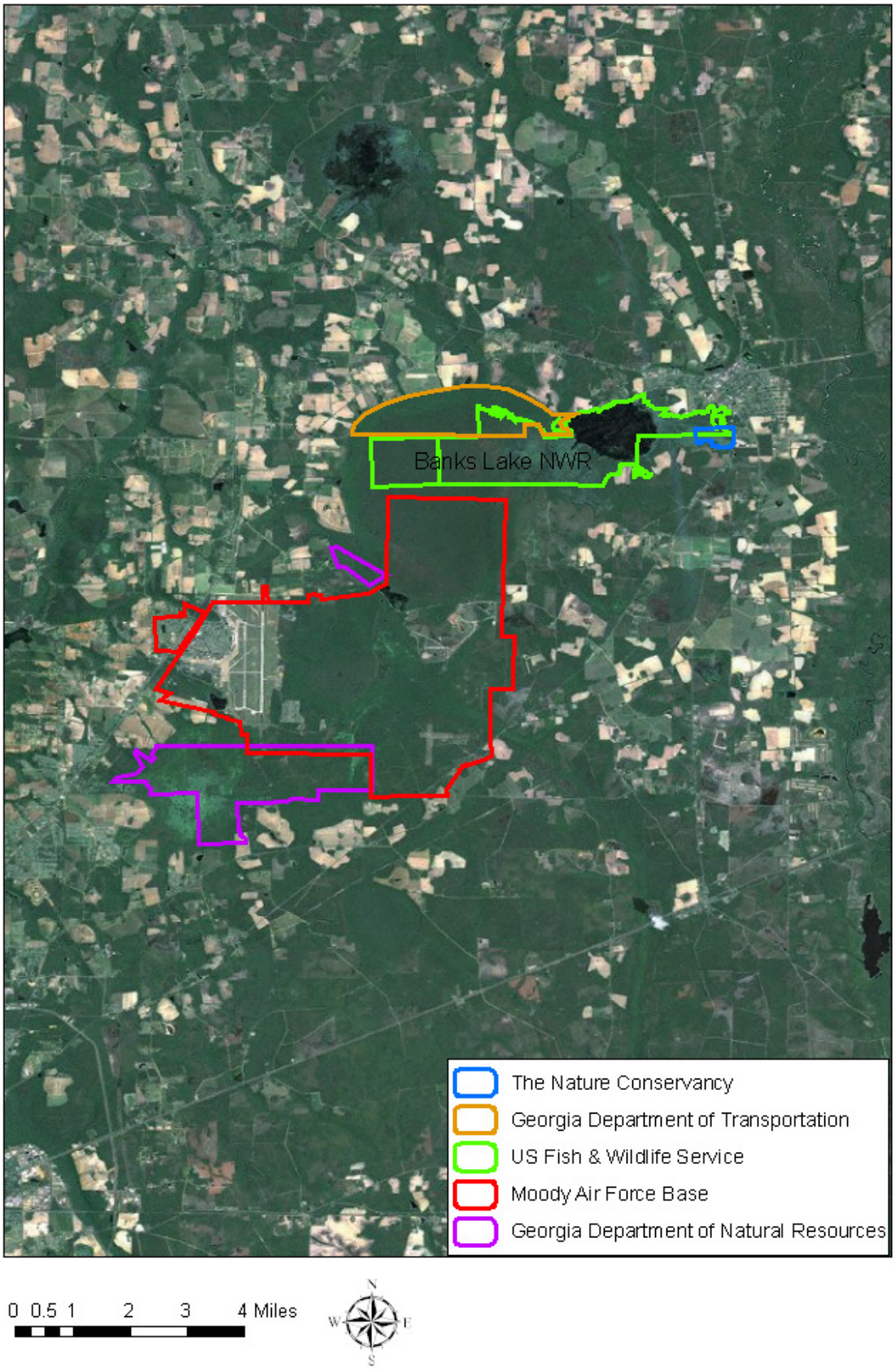
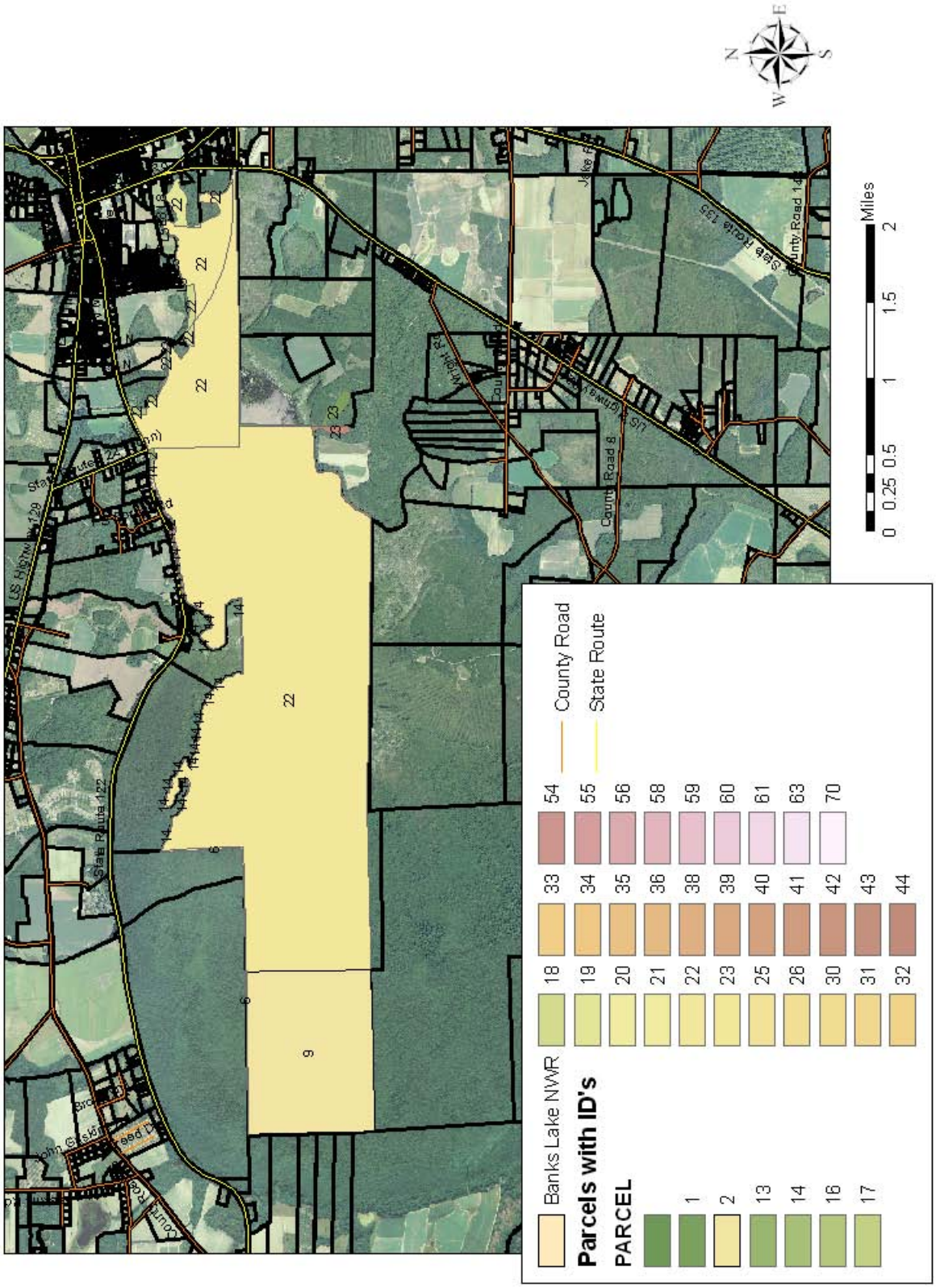


Figure 10. Land ownership map with parcel identification numbers for Banks Lake National Wildlife Refuge and surrounding area.



Hunting is currently not permitted on the refuge. The refuge staff has coordinated the refuge's environmental education and other activities with the Georgia Department of Natural Resources through their Grand Bay Environmental Education Center, which is located south of Banks Lake and just east of Moody Air Force Base. The refuge continues to pursue an environmental education partnership with the local Lanier County School System.

During fiscal year 2007, the Lowndes County Regional Development Council successfully applied for and managed an environmental education grant-in-aid which supported the development of a website that highlights the refuge. The website was designed to provide teachers and schools with general information on the refuge and environmental education trips to Banks Lake NWR. Interpretation about the refuge is provided through the refuge's website, a refuge informational kiosk, and via paid Banks Lake Outpost staffers, as well as refuge volunteers. The annual one-day Kids Fishing Derby provides valuable interpretation as well.

PERSONNEL, OPERATIONS AND MAINTENANCE

Banks Lake NWR is a satellite refuge under the care and administration of Okefenokee National Wildlife Refuge. Typically, the Okefenokee NWR's refuge manager and chief of visitor services maintain contacts, work with local officials and adjacent landowners, and address management issues as they arise. The maintenance worker(s) stationed at the Highway 177 entrance near Fargo, Georgia, provides the majority of the maintenance work needed at Banks Lake NWR's public access area. In addition, the Okefenokee Refuge's full-time law enforcement officer, stationed at Homerville, Georgia, attends to visitor safety and conducts periodic law enforcement patrols. Okefenokee NWR's visitor services division administers the recreational, volunteer, environmental, and special event programs for Banks Lake NWR. The other Okefenokee NWR staff assists as needed.

The amount of staff time and funding that Okefenokee NWR has spent each year to administer the Banks Lake Refuge has slowly grown over the years, as public use facilities were developed and the population in the adjacent area increased. Okefenokee NWR will spend approximately $125,000 during fiscal year 2008 to administer Banks Lake NWR. Approximately $109,000 or 87% of this annual cost of managing the Banks Lake Refuge can be attributed to the time that Okefenokee NWR's employees spend on this satellite refuge. The remaining $22,000 or 13% of the annual cost of managing Banks Lake NWR will be involved in paying for utilities and purchasing materials and visitor program supplies. Table 10 provides a breakdown of the projected funds that Okefenokee NWR will spend in fiscal year 2008 to administer Banks Lake NWR.

The refuge attempts to keep a refuge volunteer onsite 365 days per year, but this is not always possible. Volunteers are responsible for grounds maintenance, trash pickup on the uplands and along the lake edge, and dock maintenance, as well as checks of restrooms and recording of hourly visitation for specified dates. Volunteers have worked an average of 200 to 250 staff-days annually for the last three years (2005-2007). The Okefenokee volunteer coordinator and the Okefenokee Wildlife League (OWL) are responsible for the recruitment, coordination, supervision, and supplies for this volunteer position. The refuge staff is responsible for periodic water level drawdowns, while volunteers help with trash cleanup and other maintenance functions associated with the reduced water levels.

Table 10. Projected fiscal year 2008 costs for Okefenokee National Wildlife Refuge to administer Banks Lake National Wildlife Refuge.

Item	Estimated Staff Days	Estimated Cost	Percent
Administrative Support	55	$21,653	17%
VCS Support	255	$74,781	60%
Fire Program	56	$12,585	10%
Utilities/Supplies	N/A	$15,785	13%
Total:	***366***	***$124,804***	

Last Update: 09/2008

III. Plan Development

OVERVIEW

Although Banks Lake National Wildlife Refuge has prepared several step-down management plans in the past, no comprehensive conservation plan exists to address all refuge programs. The comprehensive planning process has allowed the Service, governmental and nongovernmental partners, and the public the opportunity to take a detailed look at the refuge and its management, resources, and future. The Service's comprehensive planning process provides the opportunity for public involvement in developing a plan for future refuge management. The comprehensive conservation plans (CCPs) are revised every 15 years or earlier, if monitoring and evaluation determine that significant changes are needed to achieve the refuge's purposes, vision, goals, and/or objectives. The basic steps of the comprehensive planning process involve the gathering information; scoping for public input; developing the draft plan; gathering public input on the draft plan; developing the final plan; and implementing and monitoring the actions identified in the final plan.

PUBLIC INVOLVEMENT AND THE PLANNING PROCESS

The planning process for Banks Lake NWR began with various data-gathering sessions. As part of this process, the Service conducted several reviews that included a wildlife and habitat management review, a visitor services review, and a wilderness review. In addition, the Service established a CCP Planning Team that obtained input from the public and from an intergovernmental coordination planning team. The CCP Planning Team was the primary decision-making team for the CCP. The key tasks of this group involved defining and refining the refuge vision; identifying, reviewing, and filtering the issues; defining the goals; and outlining the alternatives.

The CCP Planning Team met regularly to review public comments, data, and information as assimilated to write the plan. Professional reviews of the refuge were conducted to determine the status, trends, and condition of the refuge's resources and facilities. Experts from the Service (including those from the Ecological Services and Fisheries Resources Divisions), the State of Georgia (including the Georgia Department of Natural Resources), Moody Air Force Base, Jones Ecological Research Center, and The Nature Conservancy participated in the wildlife and habitat management review of the refuge in 2007. A visitor services review was conducted in September 2007 involving staff from the Service's Southeast Regional Office, Lower Suwannee NWR, and the Savannah Coastal Refuges Complex. This review focused on the refuge's existing visitor use activities and provided recommendations to improve program development and public use facilities. The information garnered from these reviews helped the planning team analyze and develop recommendations for this comprehensive conservation plan.

A Notice of Intent to prepare a CCP for the refuge was published in the *Federal Register* on December 6, 2007. The Service also placed advertisements in local newspapers; posted information on the refuge's website regarding the upcoming public meeting and how to submit comments; posted information on the meeting in the local community (e.g., local shops, post offices, the Okefenokee NWR visitor center, refuge kiosk, and local libraries); and distributed flyers announcing the public meeting. Invitations were sent to everyone on the key contact list. During January 2008, the Service's intention to develop a CCP and information regarding a public meeting appeared in six local and regional newspapers: the *Lanier County News, Valdosta Daily Times, Berrien Press, Clinch County News, The Florida Times Union* (Jacksonville, Florida), and the *Waycross Journal-Herald*.

The CCP Planning Team then held a public scoping meeting at the Lanier County Courtroom in Lakeland, Georgia, on January 24, 2008, with 28 attendees. During the public scoping period, more than 15 comments were submitted by individuals and organizations spanning several states. Planning updates kept the public informed of the progress of the CCP. To date, more than 25 people are on the refuge's CCP mailing list. Appendix D, Public Involvement, provides a summary of the public scoping comments.

SUMMARY OF ISSUES, CONCERNS AND OPPORTUNITIES

The planning team identified a wide range of issues, concerns, and opportunities related to fish and wildlife protection, habitat restoration, recreation, and management of threatened and endangered species. Additionally, the planning team considered federal and state mandates, as well as applicable local ordinances, regulations, and plans. The team also directed the process of obtaining public input through public scoping meetings, open planning team meetings, comment packets, and personal contacts. All public and advisory team comments were considered; however, some issues that are important to the public are beyond the scope of the Service's authority and cannot be addressed within this planning process. The team did consider all issues identified through this planning process, and has developed a plan that attempts to balance the competing opinions regarding important issues. The team identified those issues that, in its best professional judgment, are the most significant to the refuge. The priority issues for Banks Lake National Wildlife Refuge were identified as follows:

- The refuge has not established strategic habitat and wildlife conservation goals.
- The refuge does not have baseline data on its biological, hydrological, or ecological health.
- There is an ongoing need to control invasive species and nuisance aquatic vegetation.
- The refuge has not fully addressed the opportunities for public recreation and use.
- There is significant urban development occurring within the ecosystem and impacting the refuge.
- The refuge has not evaluated the appropriate size and staff needed to accomplish its established purposes.
- The refuge needs to broaden and strengthen its relationships and partnerships.
- There is a need to better understand the potential impacts of climate change on refuge resources.

In addition to these priority issues, other issues also include the refuge's trust responsibilities. The issues for the refuge to address during the 15-year life of the CCP are divided into four categories: wildlife and habitat management; resource protection; visitor services; and refuge administration. They are summarized in the following sections.

WILDLIFE AND HABITAT MANAGEMENT

Threats to Biodiversity, Listed Species, and Migratory Birds

The refuge is biologically diverse, with numerous resident and migratory species of fish, wildlife, and plants. The habitat diversity and location of the refuge offer fish and wildlife, including federally and state-listed species, migratory birds, and native species, an undeveloped landscape of prime habitat. However, increased human population growth, urbanization, and the development of lands around the refuge will eventually increase public use demands on the refuge and are expected to increase associated impacts to the refuge. Direct and indirect activities that may impact the refuge include commercial, residential, and recreational uses adjacent to the refuge (potentially resulting in reduced water quality, the spread of exotic species, and increased wildlife and habitat disturbance). Ongoing

development of the landscape is consuming and fragmenting the remaining off-refuge habitats, which are also used and needed by many refuge wildlife species (e.g., for breeding, nesting, loafing, feeding, migrating, and dispersing). The spread of exotic, invasive, and nuisance species; the threats to imperiled species; and the decline in fish stocks and habitats are priority wildlife and habitat management issues that need to be addressed in the 15-year lifespan of the plan.

Data Needs and Comprehensive Habitat Management
The refuge currently lacks sufficient data on the number of species utilizing the refuge, as well as their populations and trends. In addition, detailed habitat data have not been collected. This lack of information has made it difficult for the refuge to implement many of the goals and objectives outlined in the Grand Bay-Banks Lake Ecosystem Site Conservation Plan (The Nature Conservancy 2003). In addition, improved information on its resources will help the refuge to better understand the potential impacts of climate change.

Water Quantity and Quality
The increased water demand for human uses and the degradation of water supplies from seepage of lakeside septic systems, agricultural runoff, and other forms of pollution has the potential to negatively affect water quantity and quality on the refuge. These issues will intensify as a growing population occupies more land in the immediate vicinity of the refuge. Therefore, ensuring appropriate water quantity and quality on the refuge will be critical to the long-term ecological health of the refuge.

RESOURCE PROTECTION

The resource protection at Banks Lake NWR must address many issues with respect to boundary delineation, land acquisition, drainage easements, land management agreements, cultural resources, and law enforcement.

Acquisition Boundary
Currently, the refuge does not have an official acquisition boundary. A refuge acquisition boundary is an administrative line delineating areas in which the Service may consider negotiations for inclusion of those areas within the management of the particular national wildlife refuge in question. The Service's policy is to acquire property or interests in property only from willing sellers. Lands within a refuge acquisition boundary do not become part of the refuge unless and until a legal interest is acquired (e.g., through a management agreement, easement, lease, donation, or purchase). Properties within an acquisition boundary are not subject to any refuge regulations or jurisdiction unless and until an interest is acquired. With less than one tenth of the boundary surveyed and established, the refuge is unable to adequately protect refuge resources and resolve issues with adjacent landowners.

Land Acquisition
Acquiring ecologically important lands is one of the most effective ways in which to protect vulnerable habitat and associated wildlife species. The refuge is located in an area where obtaining land from willing sellers is still an option, since neighboring lands are largely undeveloped.

Drainage Easement
Increasingly, small water control structures have been built along the drainage creek that flows through Lakeland, thereby hampering the flow from Bank Lake. These additional structures are increasing the time and effort it takes to drain Banks Lake to desirable levels.

Georgia DOT Wetland Mitigation Area
The Georgia Department of Transportation (GADOT) owns a large (approximately 1,100 acres / 445 ha) section of land on the edge of Banks Lake, consisting primarily of bottomland hardwoods. Currently, this land is held by GADOT as a wetlands conservation easement. The refuge recognizes this area as valuable habitat and an important buffer from more land development, but does not have a management agreement with GADOT for this land. Such an agreement would help the refuge meet some of its conservation objectives and those of the greater GBBL ecosystem.

Cultural Resources
Banks Lake was originally created as a mill pond through the construction of a dam. An archaeological and historical survey has been conducted on the old dam site and the current public access area surrounding the boat ramp and concession building. However, the majority of the refuge remains poorly evaluated in terms of its cultural resources.

Law Enforcement
Currently, the refuge provides a generally safe experience to the visiting public during daylight hours. However, there has been a documented increase in illegal activities during the early morning and evening hours. The accelerating population growth of the surrounding region is likely to result in an increase of inappropriate and illegal activities on the refuge. The refuge contains large areas that are relatively remote and difficult to patrol. Increased law enforcement and patrols will be required to protect and maintain the refuge's resources.

VISITOR SERVICES

The growing human population will increase use of the refuge as undeveloped and natural areas decline in the region. Higher visitation rates will result in increased use of existing facilities, roads, and parking areas; and increased associated waste disposal issues. The quantity of litter may likely increase. The need for environmental education, outreach, and interpretation will increase; particularly those that focus on helping the public appreciate the benefits of nature and the projects that foster environmentally sound behaviors. Subsequently, the refuge’s staff size should grow to meet the increased demand for educational and interpretive opportunities and programs, and to better manage the visitor services program. Furthermore, refuge fisheries have declined, potentially affecting future fishing opportunities. Continued efforts to control nuisance aquatic vegetation, that limits boating access, will be required to maintain or improve this valuable resource.

REFUGE ADMINISTRATION

Important issues related to refuge administration involve staffing, funding, and intergovernmental coordination. The lack of sufficient staffing and funding to address management concerns continue to be important issues for the refuge. Given the complexity of management on the refuge and the need for the involvement of multiple partners in developing and implementing solutions, intergovernmental coordination was identified as one of the priority issues to be addressed in the CCP.

WILDERNESS REVIEW

Refuge planning policy requires a wilderness review as part of the comprehensive conservation planning process. The results of the wilderness review for Banks Lake NWR are provided in Appendix H.

IV. Management Direction

INTRODUCTION

The Service manages fish and wildlife habitats considering the needs of all resources in decision-making. But first and foremost, fish and wildlife conservation assumes priority in refuge management. A requirement of the National Wildlife Refuge System Improvement Act of 1997 is for the Service to maintain the ecological health, diversity, and integrity of refuges. Public uses are allowed if they are appropriate and compatible with wildlife and habitat conservation. As part of the 1997 Act, the Service identified six priority wildlife-dependent public uses. Therefore, evaluating the opportunities for fishing, hunting, wildlife observation, wildlife photography, and environmental education and interpretation are emphasized in this plan.

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

Three alternatives for managing the refuge were considered: Alternative A, Current Management (No Action); Alternative B, Expanded Management by the Service; and Alternative C, Cooperative Administration with State Natural Resource Agencies. Each of these alternatives is described in Chapter III of the Environmental Assessment (Section B). The Service chose Alternative B, Expanded Management by the Service, as the proposed management direction.

Implementing the proposed alternative would result in a better understanding of the biological resources present on the refuge and allow increased future management that will benefit listed species, migratory birds, and wildlife and habitats. Nonnative and nuisance species would be controlled or eradicated, and their spread limited. In addition, more information would be made available on water quality and quantity, enabling improved management and protection. Under this alternative, resource protection would increase. The official refuge boundary would be established, allowing the Service to more efficiently and thoroughly manage and protect its lands and waters from encroachment. Furthermore, increased information concerning the status and biological value of surrounding lands would assist in potential future acquisition efforts, as lands are made available by willing sellers. The extent of archaeological and historical resources on the refuge would be better understood, allowing improved management and protection. This alternative would assist in the development of cooperative land management agreements which would benefit the refuge, partners, and the local community. Access to the refuge would be improved. Under this alternative, the visitor service program would be expanded. Hunting opportunities (currently prohibited on the refuge) would be evaluated. Fishing opportunities would be improved, with the objective of obtaining a trophy largemouth bass fishery. There would be increased opportunities for wildlife observation, photography, environmental education, and interpretation. A Banks Lake NWR Friends Group would be established, and the volunteer program would be expanded. Through the implementation of this alternative, refuge administration would increase. The refuge, currently unstaffed, would obtain four permanent positions and one shared position. Intergovernmental coordination would expand, and existing partnerships would be strengthened and new ones forged.

VISION

The silent swirl of a large fish breaks the glossy surface of Banks Lake. The lonesome call of a sandhill crane echoes between the Spanish moss-draped cypress trees that rise from tannin-stained waters. These enchanting images exemplify Banks Lake NWR, where one can explore secluded bays to relax and enjoy the beauty of nature or experience the excitement of a largemouth bass striking a surface lure. The vision of Banks Lake National Wildlife Refuge is to preserve, restore, and enhance a unique Carolina bay ecosystem while providing quality fishing and wildlife viewing opportunities. The refuge will be a model for effective collaboration in natural resource management, education, and interpretation among diverse public interests.

GOALS, OBJECTIVES, AND STRATEGIES

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

These goals, objectives, and strategies reflect the Service's commitment to achieve the mandates of the National Wildlife Refuge System Improvement Act of 1997, the mission of the National Wildlife Refuge System, and the purposes and vision of Banks Lake National Wildlife Refuge. With adequate staffing and funding as outlined in Chapter V, Plan Implementation, the Service intends to accomplish these goals, objectives, and strategies within the next 15 years.

WILDLIFE AND HABITAT MANAGEMENT

Wildlife and habitat management goals include rare, threatened, and endangered species; migratory birds; exotic, invasive, and nuisance species; wildlife and habitat diversity; water resources, and climate change.

Biological Resources

WILDLIFE AND HABITAT MANAGEMENT GOAL I: Restore, maintain, protect, and promote native flora and fauna, biological integrity, and ecological health on and off the refuge.

I.A. Wood Stork

Wildlife and Habitat Management Objective I.A: Over the plan's 15 year life span, develop and implement surveys to determine trends (relative numbers and use patterns) for wood stork.

Discussion: The breeding population of wood storks in Georgia has increased in recent years. From 1975 to 1984, Georgia averaged 3 colonies and an average total of 210 nesting pairs. Beginning in 1992, surveys in Georgia were expanded and 1,091 pairs were documented at 9 colonies. In 2005, 1,817 pairs were documented at 19 colonies. In 2006 there were 1,928 pairs at 21 colonies of which several were located within 100 miles of the refuge (USFWS 2007b). The closest known wood stork rookery is next to I-75 in Hahira, about 14 miles (23 km) to the southwest of the refuge, and the largest wood stork site is in Brooks County, about 45 miles (73 km) to the southwest of the refuge (B. Winn, GADNR, pers. comm., 4 Aug 2008). Currently, wood storks are occasionally sighted on the refuge, but accurate information on their numbers, distribution, and use patterns are unknown.

Strategy:

- Conduct aerial surveys.

I.B. Round-tailed Muskrat

Wildlife and Habitat Management Objective I.B: Over the plan's 15 year life span, develop and implement surveys to determine trends (relative numbers and use patterns) for round-tailed muskrat.

Discussion: Although round-tailed muskrats have not been documented or surveyed on the refuge, they may be present in the marshes, which are difficult to access. They were documented on nearby Moody Air Force Base in 1993 (The Nature Conservancy 1995), but have not been observed during subsequent aerial surveys (Moody Air Force Base 2004). Bergstrom et al. (1994) concluded that the majority of the marsh habitat in the Grand Bay wetlands complex was no longer suitable for the species, but some may persist in certain areas given occasional sightings in recent years (J. Ozier, GADNR, pers. comm., 1 Aug 2008). Through persistent low water levels and fire suppression, natural plant succession has decreased the amount of available quality habitat for round-tailed muskrats (Bergstrom et al. 1994). Without fire, marshes are replaced by woody vegetation (scrub-shrub), habitat unsuitable to round-tailed muskrats. Under natural conditions, periodic fires, particularly during summer droughts, remove woody vegetation and burn deep holes in the peat bottoms. They drive a cyclical process of floating mat and open sedge marsh production so that suitable habitat is continuously created (GADNR 1999).

Strategies:

- Conduct aerial surveys.
- Develop habitat and fire plans that address management needs to restore optimal habitat conditions for round-tailed muskrats.

I.C. Bald Eagle

Wildlife and Habitat Management Objective I.C: Over the plan's 15-year life span, support foraging habitats and minimizing disturbance to nesting bald eagles on the refuge.

Discussion: A bald eagle nest within the refuge produced two young during each of the 1995 and 1996 nesting seasons. This was the first time this nest was used, and subsequent searches by Okefenokee NWR staff and GADNR have revealed no nesting activity. Based on 2008 survey data, the nearest known occupied nest is approximately 15 miles (24 km) to the southwest of the refuge, and 10 known nests are within 30 miles (48 km), all to the south and west of the refuge (D. Foster, GADNR, pers. comm., 30 Jan 2009). Bald eagles are generally more sensitive to a variety of human activities during the breeding season, however, not all respond to human activities in the same manner (USFWS 2007c). Establishing buffers around nests is an effective way to minimize the impacts of human activities. Detailed strategies for buffers, including those near watercraft use areas, are outlined in "National Bald Eagle Management Guidelines" (USFWS 2007c). Banks Lake drawdowns are expected to benefit nesting bald eagles based on the successful 1995 nesting pair that followed a drawdown initiated on this lake in late 1994 (USFWS 2007a, J. Ozier, GADNR, pers. comm., 30 Jul 2008). Most drawdowns would end and water levels rise around the time eagles generally initiate nesting. Prior to this, the fish would be concentrated, resulting in favorable and efficient eagle foraging. In addition, after a drawdown, the reduction in aquatic vegetation should improve water visibility, also benefiting foraging eagles (S. Aicher, USFWS, pers. comm., 1 Aug 2008).

Strategy:

- Install signs around eagle nesting trees.

I.D. American Alligator

Wildlife and Habitat Management Objective I.D: Over the plan's 15-year life span, continue to respond to nuisance alligator issues and protect the refuge's alligator population.

Discussion: Once rare, alligator populations have rebounded following several decades of successful protection and management at the State and federal levels. The refuge lies in a region of Georgia that is considered by GADNR to support some of the highest population densities in the State. Through sustainable alligator population management, GADNR has been able to implement and operate a quota-based alligator hunting program. However, no hunting is currently permitted on the refuge. The refuge documents approximately nine to ten alligator issues at Banks Lake annually, ranging from visitors feeding alligators to poaching. The primary issue is overly tame alligators at the refuge pier interfering with fishing activities of visitors. When refuge visitors illegally feed the alligators, the animals lose their natural fear of humans and become more aggressive. This complaint is also made by lake-side property owners describing private piers with fish cleaning tables and scraps are thrown in the lake, attracting alligators. Thus far, bothersome alligators have been relocated to more remote areas of the refuge, and none have been destroyed. Refuge staff is periodically called (two to three times a year) to capture alligators and remove hooks or fishing line that may cause injury to the gator (J. Shelton, USFWS, pers. comm., 7 Aug 2008).

Strategies:

- Continue to ban alligator hunting until population data are available.
- Increase public awareness of the dangers of feeding alligators (brochure, website).
- Work closely with GADNR to respond appropriately to nuisance alligator complaints.
- Monitor alligator populations in association with GADNR.

I.E. State-listed Plants

Wildlife and Habitat Management Objective I.E: Over the plan's 15-year life span, conduct refuge-wide surveys for state listed plants.

Discussion: Currently, no federally listed plant species are known to occur on the refuge. Two wetlands species (listed as "Unusual" and requiring special consideration), the green-fly orchid and hooded pitcher plant, have been documented on the air base (Moody Air Force Base 2007) and are likely to occur on the refuge, in addition to the yellow flytrap (Dr. R. Carter, Valdosta State University, pers. comm., 11 Jun 2008). A systematic plant survey of the refuge has not been performed.

Strategy:

- Coordinate survey efforts with local universities or state agencies.

I.F. Migratory Birds

Wildlife and Habitat Management Objective I.F: Over the plan's 15-year life span, develop and implement migratory bird surveys to determine trends (relative numbers and use patterns).

Discussion: The wetlands and open waters provide a range of habitats for migratory birds, especially waterbirds. Waterfowl, wading birds, shorebirds, and others can be observed foraging and loafing throughout the refuge. It is estimated that as many as 1,500 greater sandhill cranes winter within the GBBL area. They often spend the evenings and nights within the wetlands and forage on the surrounding agricultural fields during the day. They are in the area between November and February. In addition, six

Florida sandhill cranes were released on Grand Bay Wildlife Management Area by GADNR in 1993 in hopes of establishing a nonmigratory population. Upland areas are utilized by neotropical migratory birds (passerines) and raptors. The refuge does not have baseline data on the relative numbers of birds and their use patterns. In order to determine trends in these, more information needs to be obtained. Breeding Bird Surveys, Christmas Bird Counts, and other means of obtaining much-needed data on migratory bird use of the refuge need to be developed. Bird data obtained on the refuge could also be provided to Moody Air Force Base. A Bird Avoidance Model (BAM) was developed for Moody Air Force Base in 1999. Since 1985, there have been over 38,000 bird-aircraft strikes recorded by the United States Air Force that killed 33 aviators, destroyed 30 aircraft, and caused more than $500 million dollars worth of equipment damage. If the population of sandhill cranes, including a resident population, increases, these large birds may have significant impacts to aircraft in the area. Monitoring of these large birds year-round will give insight on use patterns.

Strategies:

- The BAM program objective was to develop a predictive bird avoidance model using Geographic Information System (GIS) technology as a key tool for analysis and correlation of bird habitat, migration, and breeding characteristics, combined with key environmental and man-made geospatial data (U.S. Avian Hazard Advisory System 2008). Since the refuge lies in the zone of flight operations for Moody Air Force Base, additional bird data could be used to supplement the BAM for Moody AFB, to further reduce the risks to pilots, property, and birds.
- Conduct aerial surveys to monitor sandhill populations year-round.

I.G. Native Fishes

Wildlife and Habitat Management Objective I.G: During the life of the plan, work with partners to document the native fish species present on the refuge, as well as their health and current population sizes.

Discussion: A large portion of the refuge consists of open waters and wetlands, which are important habitats for a diversity of fishes. With few exceptions, electrofishing surveys to determine population structure and dynamics have been conducted annually since 1992 by the Service's Panama City Fisheries Assistance Office and the Georgia DNR's Fisheries Department. Largemouth bass and bluegills were released into Banks Lake in 2002. The Georgia DNR is currently looking at the impacts of air quality by examining mercury levels in large mouth bass over a 20-year period. In order to gain a better understanding of all the fish species present and their population sizes and health on this "fishing refuge," additional surveys need to be implemented.

Strategies:

- Implement creel surveys.
- Continue monitoring the fisheries.
- Perform additional surveys in backwaters and other areas that have not been assessed.
- Collaborate with GADNR to establish a trophy largemouth bass fishery at Banks Lake.

I.H. Herpetological Species

Wildlife and Habitat Management Objective I.H: Over the plan's 15-year life span, develop and implement herpetological surveys to determine trends (relative numbers and use patterns).

Discussion: A large range of reptiles and amphibians inhabit the refuge and in 2003, a survey for rare herpetofauna was performed on GBBL, during which parts of the refuge were surveyed (Palis 2003). Not much is known about the reptile and amphibian populations on the refuge, and future management efforts should focus on establishing baseline data for these species.

Strategy:

- Coordinate survey efforts with local universities or state agencies.

I.I. Exotic, Invasive, and Nuisance Species

Wildlife and Habitat Management Objective I.I.1: During the life of the plan, continue to work with partners to identify, locate, and control water hyacinth to covering no more than 20 percent of the lake.

Discussion: Water hyacinth are free-floating perennial aquatic plants native to South America that were first introduced to North America in 1884 and since, have colonized numerous states in areas where winters are mild. In most places these plants are a harmful invasive species. When not controlled, water hyacinth will cover lakes and ponds entirely, dramatically impeding water flow and boat traffic, blocking sunlight from reaching submerged native aquatic plants, and starving the water of oxygen, sometimes leading to fish kills. Water hyacinth is now well established in Banks Lake, and if left unchecked, could completely cover the entire surface. Complete eradication is unlikely to be attainable, as seeds can remain viable for up to 20 years in the sediment (University of Florida 2008). Currently, water hyacinth on Banks Lake is controlled through periodic herbicidal applications (USFWS 2007a). The plants disperse downstream by way of the water control structure located near the boat ramp. Additionally, boaters may inadvertently move the plants to other water bodies via trailers.

Strategies:

- Install boat cleaning stations.
- Implement herbicides.
- Obtain equipment for applying herbicides.
- Screen water control structure to prevent down-stream spread.

Wildlife and Habitat Management Objective I.I.2: During the life of the plan, continue to work with partners to identify, locate, and control nuisance submerged aquatic vegetation covering to no more than 30 percent of the lake.

Discussion: Submerged aquatic vegetation (SAV) in Banks Lake is primarily fanwort, with some bladderwort (*Utricularia* spp.). If left unmanaged, these aquatic plants would reach unacceptably high densities, with negative consequences to fish and public use opportunities. At high densities, SAV can decrease the amount of dissolved oxygen and during periods of extreme low levels of dissolved oxygen, fish could die off. In addition, light penetration will be reduced, decreasing productivity and food for fish and wildlife. The movement of fish and wildlife is limited as vegetation increases which can also result in stunted growth, low weight and low proportional fish stock densities. Herrington et al. (2005) reported that it is desirable to have less than 30 percent aquatic vegetative cover to benefit fisheries. Wading birds also have less success in capturing prey items in dense vegetative cover. Furthermore, public access can be seriously impeded due to increased vegetation, limiting movement through the lake. A thick bed of submerged vegetation also makes it difficult to fish. In 2007, an environmental assessment (Submerged Aquatic Plant Management of Banks Lake) was conducted to analyze the effects of lake drawdowns and other SAV management alternatives on Banks Lake and the surrounding area (USFWS 2007a). A lake drawdown was conducted during the 2007-2008 winter, with previous drawdowns performed in 1987, 1994, and 2001.

Strategies:

- Periodic drawdowns per direction in 2007 EA on submerged aquatic plant management of Banks Lake.
- Implement catch and release of game fish to protect stocks during low water levels.

Wildlife and Habitat Management Objective I.I.3: During the life of the plan, continue to work with partners to identify, locate, control, and eliminate (where possible) invasive species.

Discussion: Georgia ranks sixth in the nation for overall native biological diversity (4,004 species) and twelfth for number of endemic species (58 species). In addition, Georgia ranks second in amphibian diversity (77 species), third in freshwater fish diversity (268 species), and seventh in vascular plant diversity (2,986 species). However, as of 2007, 117 nonnative aquatic species had been introduced into the state. Most of these species are fish, but this number also includes plants, crayfish, molluscs, amphibians, crustaceans and crabs (GADNR 2008b). Some nonnative species can have undesirable consequences to native species and ecosystems. Preventing the establishment of a nonnative species is the best management approach, because once an invasive species achieves a self-sustaining population, eradication is usually impossible (With 2002). Therefore, increased public awareness of the ecological and economic impacts associated with the release (accidental or intentional) of nonnative species is an important component of nonnative species management. In addition, the early detection of a nonnative species increases the opportunity for eradication. These and other nonnative species management elements are outlined in the Georgia Aquatic Nuisance Species Management Plan (GADNR 2008b), which also identifies aquatic nuisance species of concern. The refuge has conducted surveys for nonnative giant apple snails, which are a Priority 1 Species. The Georgia DNR currently spends significant resources on Priority 1 species and intends to continue for the next five years (GADNR 2008b).

Strategies:

- Survey refuge at least once a year for invasive species.
- Implement identification training to staff, volunteers, and partners.
- Evaluate control measures after each effort, and review survey methodology and update to include best management practices before initiating new surveys.

I.J. Habitat Diversity

Wildlife and Habitat Management Objective I.J: During the life of this plan, map and classify vegetation communities sufficient to manage habitat to achieve refuge mission and GBBL habitat site conservation goals.

Discussion: The refuge is part of the GBBL ecosystem, the second-largest freshwater wetland system in Georgia after the Okefenokee Swamp. A Grand Bay-Banks Lake Stewardship plan was developed in 1998 with the four council members: Georgia Department of Natural Resources, Moody Air Force Base, The Nature Conservancy, and the U.S. Fish and Wildlife Service (GADNR, MAFB, TNC and USFWS 1998). The Partnership has identified six conservation targets whose future health is considered to be crucial to maintaining the ecological integrity of the GBBL ecosystem. Four of these focal conservation targets comprise vegetative communities: Carolina bays, hardwood hammocks, riverine aquatic systems, longleaf pine; the other two being wading and migratory birds, as outlined in the Grand Bay–Banks Lake Ecosystem Site Conservation Plan (TNC 2003). This objective will help the refuge contribute to the goals, objectives, and strategies outlined in the 2003 GBBL Plan.

Strategies:

- Develop a GIS database.
- Develop a habitat management plan for the four focal vegetative communities.

Water Quality and Hydrology

WILDLIFE AND HABITAT MANAGEMENT GOAL II: Work with the partners to ensure adequate water quantity and quality levels and downstream flowage water rights necessary to support wildlife and habitat objectives of the refuge.

II.A. Water Quality

Wildlife and Habitat Management Objective II.A: During the life of the plan, document water quality dynamics of Banks Lake and identify and address sources of contamination.

Discussion: Most of the refuge habitats consist of open water and various types of wetlands, making water of critical importance to the refuge. However, the refuge currently has little information on the water quality of the refuge. During fish surveys, a few water quality parameters are collected, including pH, dissolved oxygen, and conductivity. There is no information available on nitrogen, phosphorus, metals, or pesticides. In addition, with the exception of lake-side septic systems, most sources of contamination that may be present in the watershed have not been quantified. The refuge will benefit from a better understanding of the lake's water quality and potential sources of contamination.

Strategies:

- Implement a water quality monitoring system.
- Implement a contaminants monitoring regime.
- Periodically, inventory sources of contamination.
- Provide public education with regard to alternative septic systems (i.e. public sewer system).
- Work with state and local agencies to encourage the use of the public sewer system and reduce reliance on septic systems in the Banks Lake watershed.

II.B. Water Quantity

Wildlife and Habitat Management Objective II.B: During the life of the plan, develop water budget model sufficient to manage lake to meet public health and safety and refuge wildlife and habitat objectives.

Discussion: Although much of the water in Banks Lake flows northeast and drains via the water control structure located near the boat ramp, much of hydrological characteristics of the refuge are poorly understood. In order to improve the efficiency and effectiveness of future lake drawdowns, more information regarding the lake's water budget is needed. In addition, for public safety and refuge resources, the refuge needs to assess the risks of extreme rainfall events on the lake's dam.

Strategies:

- Develop a contract for water budget study.
- Install water level/flow monitoring stations.

II.C. Water Flow Easements

Wildlife and Habitat Management Objective II.C: Work collaboratively with downstream landowners to maintain flowage water rights to the Alapaha River.

Discussion: As described in the Hydrology section of Chapter III, Banks Lake drains via a water control structure into Mill Creek and, eventually, into the Alapaha River. The refuge has established water flowage rights in order to effectively manage lake levels. Maintaining and strengthening these agreements will help ensure the successful future management of Banks Lake NWR according to the purposes for which it was established.

Strategies:

- Correct problems with downstream dam structures.
- Prevent introduction of invasive species downstream (i.e. screens, etc.).
- Establish formal cooperative flowage agreements with property owners in the downstream watershed.

Climate Change

WILDLIFE AND HABITAT MANAGEMENT GOAL III: Understand the impacts of climate change on refuge resources to plan for and adapt management as necessary to protect the native wildlife, habitats, and water resources of the refuge.

Wildlife and Habitat Management Objective III: Within 10 years of plan approval, work with the research partners to assess the changes to refuge resources associated with climate change and evaluate the potential changes in habitat or species diversity that may be irreversible; potential refuge management activities that could mitigate or minimize the impact to refuge purposes; as well as strategies that can be implemented to assist key species in adapting to climate changes.

Discussion: Impacts to the refuge due to climate change could include changes in precipitation patterns, warmer temperatures, and possibly, an increase in the frequency of tropical cyclones, and distributional shifts of species, with more tropical species moving into the area and with the local extirpation of species with temperate origins (Emanuel 1987; McCarty 2001; Parmesan and Yohe 2003; Root et al. 2003; Emanuel 2005; Hannah et al. 2005; Webster et al. 2005; Mann and Emanuel 2006; Parmesan 2006; International Panel on Climate Change 2007; NOAA 2008). Water levels in Banks Lake are closely tied to precipitation patterns. The projected decreased rainfall and the increased evapotranspiration rates associated with higher temperatures could lower the water levels in Banks Lake, affecting natural resources and impacting recreational activities. An increase in the projected intensity and/or frequency of tropical systems could increasingly impact the refuge with wind damage and flooding. In addition, the reduction in the number of frost days associated with warmer winters will decrease the opportunities for controlling submerged aquatic vegetation. Drawdowns are conducted in the winter to expose the submerged nuisance plants to frost. Furthermore, the growing season for water hyacinth will lengthen, necessitating an increase in control efforts for these floating weeds. Nonnative species of subtropical and tropical origins may begin to colonize the refuge as winters become warmer, possibly incurring additional costs and efforts by the Service to eradicate or manage these exotic plants and animals. The range of native subtropical species is also likely to expand north, which would result in additional changes in management priorities and resource allocation. Likewise, the range of some species currently found on the refuge may shift beyond the refuge boundaries, potentially causing major ecological repercussions and altering the historical biotic composition. Because of the uncertainty of the intensity and distribution of impacts caused by a warming world, one of the best management tools the refuge can utilize is the acquisition of information at regular intervals, across the resource spectrum.

RESOURCE PROTECTION

Resource protection goals include the acquisition boundary; encroachment, cooperative land agreements, law enforcement, and archaeological and historical resources.

RESOURCE PROTECTION GOAL I: Determine need to expand refuge lands and contribute to the conservation of Grand Bay-Banks Lake ecosystem lands to help meet habitat management goals.

I.A. Refuge Boundary
Resource Protection Objective I.A: Within three years of the plan's approval, complete a survey of the refuge boundaries and resolve ownership issues.

Discussion: In 1985, the Service acquired several land parcels from The Nature Conservancy for use as the refuge. The ownership of some of the lands along the northern edge of Banks Lake has been at issue, resulting in legal proceedings and subsequent surveys and studies. As a result, to date, only a small portion of the refuge's boundary has been officially established. A complete refuge boundary survey (which would delineate all the lands and waters under Service ownership) is needed, and any remaining ownership issues need to be resolved in order for the Service to fully protect and manage its resources. At the present time, 2,981 acres are documented to be under Service ownership.

Strategy:
- Contract a boundary survey.

I.B. Acquisition Boundary
Resource Protection Objective I.B: Within five years of plan's approval, establish an acquisition boundary.

Discussion: A refuge acquisition boundary is an administrative line delineating areas in which the Service may consider negotiations for inclusion of those areas within the management of the particular national wildlife refuge in question. The Service's policy is to acquire property or interests in property only from willing sellers. Lands within a refuge acquisition boundary do not become part of the refuge unless and until a legal interest is acquired (e.g., through a management agreement, easement, lease, donation, or purchase). Properties within an acquisition boundary are not subject to refuge regulation or jurisdiction unless and until an interest is acquired. A formal acquisition boundary has not been established for the refuge and is needed to help the Service with its planning efforts. Currently, the refuge's known acquisition boundary comprises 3,559 acres as listed in the unpublished "Annual Report of Lands Under the Control of the U.S. Fish and Wildlife Service as of September 30, 2207".

Strategy:
- Establish refuge acquisition boundary following Department and Service guidelines.

I.C. Priority Acquisitions
Resource Protection Objective I.C: Within three years of establishing the acquisition boundary, develop a priority list for acquisitions.

Discussion: One of the most effective conservation tools is protecting land from development and other land uses that are potentially harmful to biological resources and outdoor recreational opportunities.

Strategies:

- Evaluate and rank potential properties for acquisition with respect to resource benefits.
- Identify willing sellers.
- Secure funding to acquire key properties as the opportunity arises.

I.D. Encroachment

Resource Protection Objective I.D: During the life of the plan, build appreciation of the value of the refuge to the community and work collaboratively with city, county and regional development agencies to identify potential threats to refuge mission to minimize negative impacts to the refuge.

Discussion: Development and its associated impacts to the environment are among the primary threats facing natural communities. Although a relatively large area along the northwest and southern perimeter of the refuge are bounded by state and federally managed lands, much or the northeast, east and southeast boundaries are not. The private lands adjacent to the refuge have been largely agricultural and rural in nature, but development is increasing. This encroachment is likely to change the hydrology of the surrounding area, increase the opportunity for contaminated runoff, and exacerbate other issues that could negatively impact refuge resources. One way to minimize these risks is for the refuge to be actively involved in outreach efforts aimed at building an appreciation for the refuge within the regional communities. In addition, the refuge would need to increase its efforts to be involved early in the planning phases of local and regional projects in order to minimize impacts through sustainable development.

Strategies:

- Develop outreach efforts related to the economic and ecological value of the refuge to the community.
- Obtain development plans and projects adjacent to the refuge and work with planning officials and make recommendations to minimize and mitigate potential threats to refuge resources.

I.E. GBBL Ecosystem Partnerships

Resource Protection Objective I.E: During the life of the plan, work collaboratively with partners to coordinate land management to support conservation goals of the GBBL ecosystem.

Discussion: As discussed under Wildlife and Habitat Management Objective I.J., the Grand Bay-Banks Lake Ecosystem Site Conservation Plan was developed to establish a conservation partnership between GADNR, MAFB, TNC and USFWS for the GBBL ecosystem. Under this objective, the refuge would work with these and other partners to review the status of the conservation actions and steps that were outlined in the GBBL Plan and set timetables for completion.

I.F. GADOT Wetland Mitigation Area

Resource Protection Objective I.F: Within 3 years of the plan's approval, negotiate a long-term management agreement with GADOT to manage the wetland mitigation area as part of the refuge.

Discussion: The Georgia Department of Transportation (GADOT) owns a 1,100-acre wetlands mitigation area (mostly cypress-gum swamp) just south of Route 122 along the northwest section of the Banks Lake Carolina bay. This area provides a valuable buffer to the adjacent refuge lands from the increasingly urban interface that is growing along Route 122. The refuge will continue to seek a long-term cooperative management agreement with GADOT to achieve this objective.

RESOURCE PROTECTION GOAL II: Protect refuge lands, waters, and the archaeological and historical resources of the refuge.

II.A. Cultural Resources
Resource Protection Objective II.A: During the 15-year life of the plan, work with the Service's Regional Archaeologist and the State Historic Preservation Office to protect the archaeological and historical resources of the refuge.

Discussion: The refuge lies in an area that has a rich cultural history. However, only a small percentage of the refuge has been surveyed for archaeological and historical resources, primarily in the vicinity of the public access area. Additional cultural resource surveys would help better protect these valuable resources.

Strategies:
- Conduct an archeological survey of the remaining uplands.
- Create GIS database to track archeological sites.

II.B. Law Enforcement
Resource Protection Objective II.B: During the life of the plan, ensure resource protection of the refuge by establishing a law enforcement presence sufficient to enforce refuge regulations and rights.

Discussion: The refuge generally continues to be a safe and enjoyable place to visit during daylight hours. However, an increase in illegal activities during late night and early morning hours has been noted. It is believed that an increased law enforcement presence will help curb these unlawful activities, and will help protect refuge resources and maintain a positive visitor experience.

Strategies:
- Develop memorandum of understanding (MOU) with state, city, and county law enforcement agencies to facilitate cooperation and assistance in law enforcement activities.
- Establish a refuge law enforcement position to meet this need as funding becomes available.

VISITOR SERVICES

VISITOR SERVICES GOAL I: Provide and enhance fully accessible opportunities for hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation when compatible to promote public appreciation, understanding, and action on behalf of the Grand Bay-Banks Lake ecosystem.

I.A. Fee Program
Visitor Services Objective I.A: Within one year of adopting the plan, evaluate the feasibility of an entrance fee program.

Discussion: At Okefenokee NWR, fees help maintain refuge visitor facilities and offset some portion of the operating costs for various programs. Within the first year of CCP approval, the Banks Lake Refuge will determine the feasibility of a fee schedule for various programs. If it is determined to be feasible, the refuge will implement fees for various visitor activities.

Strategy:
- Determine if an entrance fee program is appropriate as recreational facilities are developed at the refuge public access area.

I.B. Visitor Use Information

Visitor Services Objective I.B: During the life of the plan, obtain accurate visitor use information.

Discussion: Accurate visitor use information allows the refuge to plan events and allocate resources where they are most needed. Currently, the refuge lacks adequate information about recreation trends and conditions at Banks Lake NWR.

Strategies:

- Conduct people count monthly with an annual summary.
- Obtain demographic information.

I.C. Visitor Welcome and Orientation

Visitor Services Objective I.C: During the life of the plan, ensure the refuge is welcoming, safe and accessible. Provide visitors with clear information that promotes the refuge, the GBBL ecosystem, and the Service.

Strategies:

- Maintain and update website.
- Develop refuge brochures and maps.
- Partner with state for off-refuge signs.
- Provide signage within refuge.
- Maintain and update kiosk.
- Provide monthly news releases.
- Pave access road and parking lot.
- Maintain boat ramp, American Disabilities Act (ADA) fishing piers, hiking trails, outpost, and restrooms.
- Distribute refuge information to other outreach facilities (ecotourism).
- Comply with ADA standards.
- Develop visitor contact station.
- Replace entrance sign.
- Create refuge video.
- Develop an environmental education activity area at the public access area.

I.D. Hunting

Visitor Services Objective I.D: Within the first three years of the plan, assess the potential of the refuge to provide a quality hunting experience for the public that meets the standards of established service policy.

Discussion: The National Wildlife Refuge System Improvement Act of 1997 states that "compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System." The overarching goal of the Service's wildlife-dependent recreation policy is to enhance wildlife-dependent recreation opportunities, such as hunting, and access to quality visitor experiences on refuges while managing refuges to conserve fish, wildlife, plants, and their habitats. New and ongoing recreational uses should help visitors focus on wildlife and other natural resources. These uses should provide an opportunity to make visitors aware of resource issues, management plans, and how the refuge contributes to the Refuge System and Service mission. Thus, the Service will only allow wildlife-dependent recreation on a refuge after it is first determined to be compatible. Since its establishment, hunting has not been permitted on the refuge. The refuge currently does not have adequate staff or land base to support a hunting program.

Strategy:

- Periodically reevaluate the potential of the refuge to support hunting as additional staff and land is acquired.

I.E. Fishing

Visitor Services Objective I.E: During the life of the plan, maintain the current recreational fishery while emphasizing trophy largemouth bass opportunities.

Discussion: Banks Lake is known primarily for its fishing opportunities. There is an accessible fishing pier with safety screening for children and visitors with disabilities, while a boat ramp offers access to the more remote areas of the lake. Although fishing remains a popular experience, the fishery could be improved, especially for largemouth bass.

Strategies:

- Determine appropriate slot and possession limits.
- Evaluate creel size adjustments.
- Improve foraging and breeding habitat.
- Evaluate seasonal closings.
- Evaluate catch and release program.
- Determine carrying capacity for anglers and tournaments.

I.F. Wildlife Viewing and Photography

Visitor Services Objective I.F: During the course of the plan, work to increase wildlife photography and observation opportunities.

Discussion: The refuge contains only a small amount of uplands, and Carolina bays that are naturally inaccessible because of the dense shrub communities surrounding them. Most of the remainder of the refuge consists of open water, accessible only by boat. However, the refuge has reported an increase in wildlife observation over the past few years. On the refuge, wildlife observation and photography opportunities are limited to a short hiking trail and by boat on Banks Lake. Viewing opportunities of plant communities (wet savannas, shrub bogs, cypress-gum ponds, prairie and black gum-cypress swamps) are similar to those found at Okefenokee NWR. Wildlife photography and viewing opportunities include wading birds, passerines, raptors, waterfowl, otters, raccoons, alligators, and turtles.

Strategies:

- Inventory potential sites for photo-blinds and observation towers.
- Develop refuge bird list.
- Conduct workshops.
- Evaluate the potential for establishing official boat trails and a nonmotorized trail.
- Targets will be set in a step-down visitor services plan.

I.G. Environmental Education and Interpretation

Visitor Services Objective I.G: Over the 15-year plan, continue to expand the environmental education and interpretation program to reach communities within a 25-mile radius of the refuge.

Discussion: Currently, the refuge does not have an environmental education and interpretation program. Environmental education and interpretation is aimed at creating public awareness of the biosphere, the impacts of humans, and ways in which to minimize the effects of humans through

sustainable practices. A well-developed environmental education and interpretation program is expected to benefit the refuge through increased public awareness and appreciation of its resources.

Strategies:

- Coordinate with GBBL.
- Contact and work with local schools.
- Update website with environmental education and interpretation and provide links to partner websites.
- Convert current trail to interpretative trail with possible connection to Lakeland providing pedestrian/bicycle access to nearby school(s).
- Evaluate potential for interpretative canoe trail.

I.H. Other Recreational Opportunities

Visitor Services Objective I.H: Over the 15-year plan, work with local, county and state agencies to develop uses adjacent to the refuge that the public would like to have on the refuge but are deemed incompatible or inappropriate.

Discussion: Since its establishment, various public uses have been proposed for the refuge, including camping, large group facilities, picnic shelters, airboating, personal watercraft, sailboats, and water skiing. These uses generally do not fall under the six wildlife-dependent public uses (fishing, hunting, wildlife photography and observation, and environmental education and interpretation) as defined by the National Wildlife Refuge Improvement Act of 1997.

Strategy:

- Appropriate use and compatibility determinations would be performed for the proposed uses. For those activities that are deemed inappropriate or incompatible, the refuge would work with partners to develop those opportunities on adjacent or nearby lands, where possible.

I.I. Commercial Visitor Services

Visitor Services Objective I.I: Over the 15-year plan, provide opportunities for commercial visitor services.

Discussion: On the refuge, the focal area for the public consists of a boat ramp, piers, and concession area. Currently, the Banks Lake Outpost (operated under a concession contract) occupies the concession building next to the boat ramp. It offers canoe rentals, bait and tackle supplies, and snacks. The concession staff is a reliable source of information to the visiting public regarding daily conditions on the refuge.

Strategy:

- Continue to authorize this use.

I.J. Outreach

Visitor Services Objective I.J: During the life of the plan, increase recognition of the refuge and associated management activities within a 25-mile radius by 25%.

Discussion: Effective outreach depends on open and continuing communication between the refuge staff and the public. This communication involves determining and understanding the issues, identifying audiences, crafting messages, selecting the most effective delivery techniques, and evaluating effectiveness. Currently, outreach for specific issues and events is handled on a case by case basis as needs arise. A comprehensive outreach program will help foster a continued rapport with the local community, should assist in the resolution of any potential issues, and ultimately benefit all parties involved.

Strategies:

- Expand outreach programs via the media, website, and conservation groups.
- Continue to maintain a positive working relationship with local newspapers.
- Create sampling protocols and data sheets.
- Work with Friends Group and volunteers to assist in sampling efforts.
- Conduct surveys.

I.K. Refuge Friends Group

Visitor Services Objective I.K: Over the 15-year life of the plan, the refuge will continue to maintain a close working relationship with the Okefenokee Wildlife League (OWL) while establishing a "Friends of Banks Lake NWR" group.

Discussion: The Service recognizes the important role that refuge friends organizations play in building critical community support for individual refuges as well as the larger National Wildlife Refuge System. A refuge friends group has not been established for this refuge. However, the OWL currently supports Banks Lake NWR and is responsible for the recruitment, coordination, supervision and supplies for volunteer positions.

Strategies:

- Actively recruit additional members for the OWL friends group for Banks Lake NWR.
- Nurture the friends group through meetings and refuge support of friends programs.

I.L. Volunteers

Visitor Services Objective I.L: During the life of the plan, maintain the refuge's current volunteer program and expand as needed.

Discussion: The refuge attempts to keep a refuge volunteer onsite 365 days per year, but this is not always possible. Volunteers are responsible for grounds maintenance, trash pickup both on the uplands and along the lake edge, dock maintenance, as well as checks of restrooms and recording of hourly visitation for specified dates. Volunteers have worked an average of 200 to 250 staff-days annually for the last three years. In addition, volunteers help with trash clean ups and other maintenance functions at reduced water levels during refuge-coordinated lake drawdowns.

Strategies:

- Improve recreational vehicle (RV) hookup sites with cement pads.
- Actively recruit resident volunteers, and interns.
- Develop a volunteer program that consists of resident and local volunteers and interns.

I.M. Control of Trash and Litter

Visitor Services Objective I.M: During the 15-year plan, decrease litter on the refuge through public awareness.

Discussion: Litter, especially improperly discarded monofilament fishing line, can be hazardous to fish and wildlife. Furthermore, excessive amounts of litter will likely cause visitors to unfavorably rate their refuge experience.

Strategies:

- Increase the number of clean-ups through coordination with area service groups and schools.
- Ensure that refuge is included in area clean-up projects.
- Increase public awareness of problems associated with trash and monofilament fishing lines.
- Increase law enforcement surveillance.
- Encourage use of recycling bins including monofilament fishing line bins.

REFUGE ADMINISTRATION

Refuge administration includes infrastructure, staffing, and intergovernmental coordination.

REFUGE ADMINISTRATION GOAL I: Provide sufficient refuge infrastructure and staff, and collaborate with intergovernmental partners to implement a comprehensive refuge management program to protect and manage the natural and cultural values of the refuge's wildlife and habitats.

I.A. Staff

Refuge Administration Objective I.A: During the life of the plan, add the following staff: a permanent full-time (PFT) Refuge Operations Specialist (ROS) (GS 0485 9/11); a PFT Wildlife Biologist (GS 0486 9/11); PFT Park Ranger (EE) (GS 0025 05/07/09); PFT Maintenance worker (WG 2805-06); and Shared Fisheries Biologist (GS 0482-09/11).

Discussion: The PFT Refuge Operations Specialist (ROS) or assistant manager would report to the Refuge Manager at Okefenokee NWR. Reporting to the ROS would be the following PFT staff positions assigned to Banks Lake NWR: Wildlife Biologist, Park Ranger (law enforcement), and Maintenance Worker. The Fisheries Biologist would occupy a shared position between the refuge and the Panama City Ecological Services and Fisheries Resources Office.

I.B. Administrative Facilities, Utilities, Equipment, and Signs

Refuge Administration Objective I.B: During the life of the plan, seek funding to provide facilities and equipment for the full staff authorized for the station.

I.C. Intergovernmental Coordination

Refuge Administration Objective I.C: During the life of the plan, continue to maintain and improve coordination and cooperation with local, county, state and federal governmental organizations.

I.D. Public Park Adjacent to the Refuge

Refuge Administration Objective I.D: Within the first five years of the plan, explore the potential to establish a public park adjacent to the refuge that would provide visitors with a full complement of uses, including camping and RV hookup sites the public has requested.

Discussion: As previously discussed under Visitor Services Objective I.H, the public has requested several types of recreational activities that, following appropriate use and compatibility determinations, may not be permitted within the refuge. The refuge would work with partners to establish public land adjacent to the refuge where these opportunities could be realized. This arrangement would benefit the public by increasing the range of recreational opportunities in the vicinity, and the area could also function as a buffer between the refuge and developed lands.

I.E. Cooperative Management with State and Local Agencies

Refuge Administration Objective I.E: Within the first 5 years of the plan, explore with local, county, and state agencies the potential for them to assume the administration of the present refuge public access area and visitor services.

Discussion: Partnerships with state and local agencies would increase the recreational opportunities available on the refuge. In addition, it would allow the refuge to dedicate more of its resources to wildlife and habitat management. Such a partnership would benefit the visitors as well as the refuges' resources.

I.F. Partnerships

Refuge Administration Objective I.F: During the life of the plan, continue to maintain current relationships with partners and develop coordination and cooperation through new partnerships.

Discussion: Government is required to reinvent itself based on the economic conditions, shifting of national priorities, national defense, and hurricane and other disaster recovery. The public has an expectation that more of the Service's goals can be accomplished through partnerships and that government must become more efficient. The Director of the Service has stated that the Service must emphasize working cooperatively with others; develop a more integrated approach to problem solving and share resources to get the job done; and make choices and find efficiencies in both resource and business management practices. This focus reinvigorates the refuge's current intergovernmental coordination efforts. Numerous federal, state, and local agencies could be considered partners of the refuge. However, more could be done to inform and educate the partners of the value of the refuge and the refuge's goals. In the same vein, the Service is willing to help other agencies with issues, such as fire management, nuisance wildlife, exotic plant control, and specific wildlife conservation issues. Much of this coordination could be accomplished through regular meetings and by developing personal relationships with individuals within other agencies.

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 wildlife-dependent recreational uses. Priority projects emphasize the protection and enhancement of fish and wildlife species first and foremost, but considerable emphasis is placed on balancing the needs and demands for wildlife-dependent recreation and environmental education.

To accomplish the purpose, vision, goals, and objectives contained in this plan for Banks Lake National Wildlife Refuge, this chapter identifies the projects, funding and personnel needs, volunteers, partnership opportunities, step-down management plans, a monitoring and adaptive management plan, and plan review and revision.

PROPOSED PROJECTS

Listed below are summaries of the proposed projects and their associated costs for fish and wildlife population management, habitat management, resource protection, visitor services, and refuge administration over the next 15 years. This proposed project list reflects the priority needs identified by the public, the 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.

WILDLIFE AND HABITAT MANAGEMENT

Project 1. Standardize Surveys and Monitoring Program
Standardize surveys and monitoring of wood stork, round-tailed muskrat, migratory birds (including waterfowl, shorebirds, wading birds, marshbirds, raptors and neotropical migrants), mammals, fish, herpetofauna, nonnative species, and plants (particularly listed species). Systematic surveys based on standardized protocols would be conducted to determine presence and distribution of priority wildlife species and to provide baseline data to assist managers in habitat management practices. Included in these efforts would be the development of partnerships to conduct monitoring efforts to determine the potential impacts of climate change on the refuge. A full-time wildlife biologist would be employed to assist in implementing the monitoring program. Information to be collected is the foundation for implementing the CCP, formulating habitat management, and developing adaptive management strategies for species of conservation concern.
Wildlife and Habitat Management Objectives: IA, IB, IE, IF, IG, IH, II1, II2, II3, IJ, III
Refuge Administration Objective: IA

Project 2. Develop Geographic Information System (GIS)
Build and maintain databases containing biological resources, habitat management activities, and spatial relationships for the refuge and surrounding environments.

A fully implemented geographic information system is not in use at Banks Lake NWR. This project would develop an up-to-date data management, storage, and retrieval system; obtain spatial information from appropriate sources; develop geographic layers for refuge management programs;

and facilitate spatial analysis and creation of maps by the refuge staff.
Wildlife and Habitat Management Objectives: IA, IB, IC, IJ, IIA, IIB, IIC
Resource Protection Objectives: IA, IB, IC, ID, IF, IIA
Visitor Services Objective: IC
Refuge Administration Objective: I

Project 3. Address Nonnative and Nuisance Species
Identify, locate, and control (eliminate where possible) nonnative and nuisance species.

Currently the primary problematic nonnative species is water hyacinth, which is periodically controlled via herbicidal applications. Nuisance aquatic plants are managed through periodic lake drawdowns, and benchmarks for initiating the partial draining of Banks Lake need to be identified to achieve optimal results. Regionally, a number of exotic species are increasingly threatening natural communities. However, the status and distribution of terrestrial nonnative species are currently unknown. A concerted program to identify, locate and control nonnative and nuisance species is needed to effectively protect the resources on the refuge.
Wildlife and Habitat Management Objectives: II, II1, II2, II3
Resource Protection Objective: IE
Visitor Services Objectives: IG, IL
Refuge Administration Objective: I

Project 4. Address Water Quality and Quantity Issues

The water quality and sources of contaminants are poorly understood on the refuge. In addition, more information on the hydrology of the area is needed. This project would establish a permanent water quality monitoring system (pH, DO, conductivity) and contaminants monitoring regime (septic, nonpoint pollution, urban/agricultural runoff). It would also establish water budget, fill drain curves, and other hydrological parameters that would allow more efficient management of the lake.
Wildlife and Habitat Management Objectives: IIA, IIB, IIC
Resource Protection Objectives: ID, IE, IG, IM
Refuge Administration Objectives: IA, IB, IC, IF

RESOURCE PROTECTION

Project 5. Refuge Boundary and Land Acquisition

The refuge is in need of a Land Protection/Acquisition plan, a comprehensive title search to fully understand and then defend the Service's ownership of submerged lands and water rights, and a management boundary survey. Information obtained through this project will help protect the refuge from encroachment. In addition, this project will develop a land acquisition plan to identify and, where possible, acquire additional lands that will help further the refuge's mission.
Resource Protection Objectives: IA, IB, IC, ID, IE, IF
Refuge Administration Objectives: IA, IC, ID, IF

Project 6. Easements and Land Management Agreements

The refuge currently enjoys a water right that allows it to send water down Big Creek to Lake Irma, Lakeland and beyond to the Alapaha River. Several structures have been built in the drainage creek, impeding the flow. This project would establish formal cooperative agreements with adjacent landowners to maintain this flowage easement.

The GADOT has established a 1,100 acre permanent wetland mitigation area adjacent to the northwest corner of the refuge. Under this project, the refuge would negotiate a long-term management agreement with GADOT to manage the wetland mitigation area as part of the refuge.
Wildlife and Habitat Management Objective: IIC
Resource Protection Objectives: IE, IF
Refuge Administration Objectives: IA, IC, IF

Project 7. Conduct Cultural Resource Survey and Develop Protection

Banks Lake NWR has colorful cultural history; however, only a few sites are known to exist and law enforcement protection is not adequate. This project would provide for the completion of an archaeological and historical resources survey and the development of a protection plan for the resources identified by the survey.
Resource Protection Objectives: ID, IIA, IIB
Refuge Administration Objectives: IA, IE

Project 8. Protect Refuge Resources and Visitors

Banks Lake NWR hosts more than 83,000 visitors annually. In recent years, encroachment activities, unauthorized water use, littering, and other inappropriate or illegal activities have increased due to the remoteness of certain areas of the refuge and the lack of regular law enforcement patrols. The increased law enforcement presence would result in improved visitor safety and services. Regular law enforcement patrols would deter vandalism, trespass, loitering, and other activities that disturb wildlife, and address law enforcement situations when they occur.
Wildlife and Habitat Management Objectives: IC, ID
Resource Protection Objectives: ID, IIA, IIB
Visitor Services Objectives: IE, IM
Refuge Administration Objectives: IA, IE, IF

VISITOR SERVICES

Project 9. Improve Visitor Welcome and Orientation

The refuge currently does not have a brochure. Under this project, the refuge would develop a brochure with map. In addition, the presence of staff/volunteers would be increased at the refuge. Outreach efforts would also be expanded. This project would also evaluate the potential for an entrance fee program.
Visitor Services' Objectives: IA, IB, IC, IK, IL, IM
Refuge Administration Objectives: IA, IB, IE, IF

Project 10. Enhance Fishing Opportunities and Evaluate Hunting

Currently, fishing is an important recreational activity on the refuge. This project would have the refuge working cooperatively with the GADNR's Fisheries Division to develop a trophy largemouth bass fishery on Banks Lake through the use of habitat improvements, selective stocking, and possibly slot and harvest limits.

Hunting is not permitted on the refuge. This project would evaluate the potential for a hunt program to be established on the refuge based on adequate opportunities and funding.
Wildlife and Habitat Management Objectives: II1, II2, II3, IIA, IIB
Resource Protection Objective: IIB

Visitor Services Objectives: ID, IE
Refuge Administration Objectives: IA, IB, IE, IF

Project 11. Environmental Education and Interpretation Programs

This project would enhance efforts to reach additional residents, tourists, and school children to explain the refuge's role in the GBBL ecosystem, as well as ecological threats to the refuge and its resources. It would also improve partnership opportunities (e.g., with the Grand Bay Environmental Center) and expand educational and interpretive programs by working with the friends group, volunteers, and other organizations and individuals. Refuge resources would be appropriately interpreted and communicated to outside audiences via news releases and web media and special events would be coordinated. One full-time park ranger (environmental education, interpretation, and outreach) would be hired to develop education, interpretation, and outreach programs and to train staff and volunteers to run the programs.
Visitor Services Objectives: IG, IJ, IK
Refuge Administration Objectives: IA, IB, ID, IE, IF

Project 12. Expand Wildlife Observation and Photography Opportunities

This project would enable the refuge to expand various wildlife-dependent recreational opportunities, such as wildlife observation and photography. The addition of a new canoeing trail would be evaluated.
Visitor Services Objective: IF
Refuge Administration Objectives: IA, IB

Project 13. Develop a Refuge Friends Group

Banks Lake NWR currently does not have a friends group dedicated to the refuge, and volunteer activities have been provided by the Okefenokee Wildlife League. This project would help establish a friends group to help further the mission of the refuge.
Visitor Services Objective: IK
Refuge Administration Objective: IA, IE, IF

REFUGE ADMINISTRATION

Project 14. Maintain Facilities and Infrastructure

This project would provide a maintenance worker to improve refuge operations and facilities maintenance, including trails, parking lots, kiosks, signs, docks, and water control structures. This position would assist with maintenance of refuge buildings, infrastructure, and facilities.
Visitor Services' Objective: IM
Refuge Administration Objectives: IA, IE, IF

FUNDING AND PERSONNEL

Implementation of this plan will require increased funding and personnel support that will come from a variety of internal and external sources. New projects and maintenance needs for existing facilities and projects are identified through the Service Asset Maintenance Management System (SAMMS). Figure 11 identifies the proposed Banks Lake NWR organization chart and staffing required to help achieve the goals, objectives, and strategies outlined in Chapter IV of the proposed CCP. Table 11 lists the proposed projects described above, their costs and associated staffing. The plan does not constitute a commitment (from Congress) for staffing increases, operational and maintenance increases, or funding for future land acquisition, but represents wildlife resource needs based on sound biological science and input from the public.

Figure 11. Proposed organizational chart for Banks Lake National Wildlife Refuge.

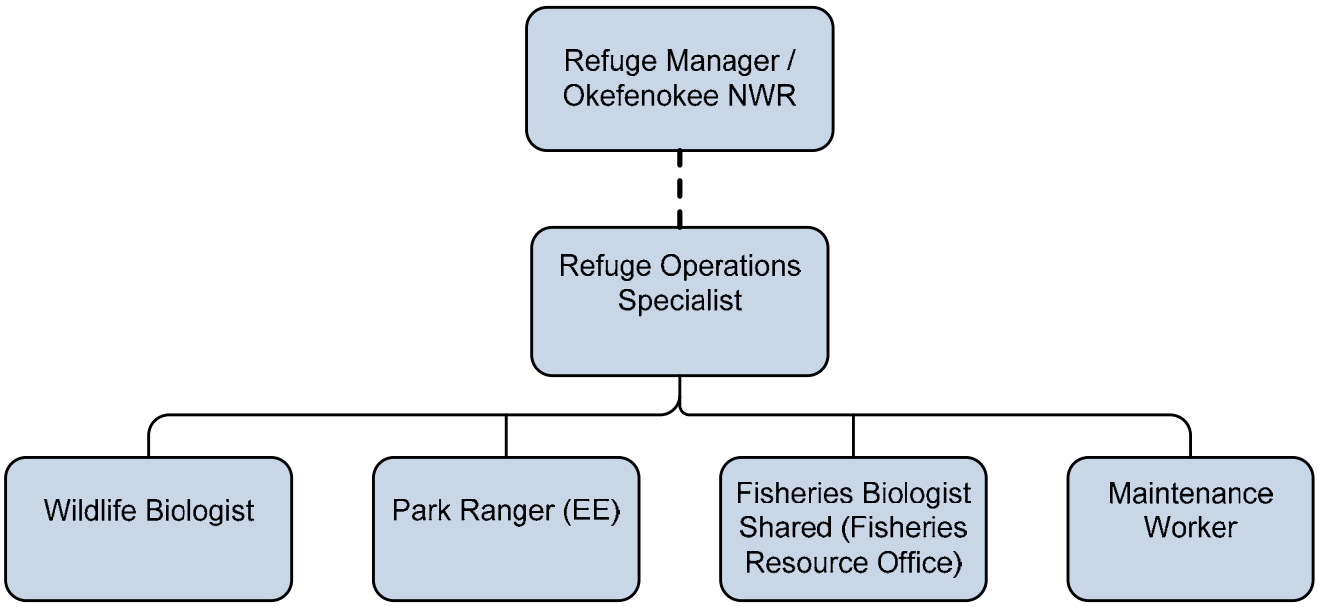


Table 11. Summary of projects.

PROJECT NUMBER	PROJECT TITLE	FIRST YEAR COST	RECURRING ANNUAL COST	STAFF (FTE'S)
1	Surveying & Monitoring Program	95,000	85,000	1.00
2	GIS	15,000	3,000	0.05
3	Nonnative & Nuisance Species	25,000	8,000	0.05
4	Water Quality & Quantity	45,000	2,500	0.10
5	Refuge Boundary & Land Acquisition	300,000	3,000	0.10
6	Easements & Land Management Agreements	30,000	6,000	0.10
7	Cultural Resources	55,000	1,000	0.01
8	Law Enforcement	37,000	37,000	0.34
9	Visitor Welcome & Orientation	83,000	76,000	1.00
10	Fishing & Hunting	70,000	65,000	0.50
11	Environmental Education & Interpretation	125,000	100,000	1.00
12	Wildlife Observation & Photography	8,000	2,000	0.10
13	Friends Group	7,500	4,500	0.10
14	Maintenance & Operations	110,000	100,000	1.00

PARTNERSHIP AND VOLUNTEER OPPORTUNITIES

A key element 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 Audubon and other organizations. At regional and state levels, partnerships may be established or enhanced with other agencies such as the Georgia Department of Transportation and the U.S. Geological Survey.

STEP-DOWN MANAGEMENT PLANS

A comprehensive conservation plan is a strategic plan that guides the future direction of the refuge. A step-down management plan provides specific guidance on activities, such as habitat, fire, and

visitor services management. These plans (Table 12) are also 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.

Table 12. Banks Lake National Wildlife Refuge step-down management plans.

Step-down Plan	Completion Date
Habitat Management Plan	2014
Integrated Exotic Plant Management Plan	2012
Wildlife Inventory Plan	2012
Endangered Species Monitoring Plan	2012
Law Enforcement Plan	2012
Visitor Services Plan	2014

MONITORING AND ADAPTIVE MANAGEMENT

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

To apply adaptive management, specific 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 nontarget 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 in development of the refuge's annual work plans and budget. It will also be reviewed to determine the need for revision. A revision will occur if and when conditions change or significant information becomes available, such as a change in ecological conditions or a major refuge expansion. 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 B. ENVIRONMENTAL ASSESSMENT

I. Background

INTRODUCTION

This Environmental Assessment (EA) for Banks Lake National Wildlife Refuge has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA). It discusses the purpose and need for the Comprehensive Conservation Plan (CCP) for the refuge, which is located in Lanier County, Georgia, and provides an analysis of the environmental impacts that could be expected from each of the management alternatives described in the plan. This analysis assists the U.S. Fish and Wildlife Service in determining if it will need to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) for the refuge's proposed CCP.

The U.S. Fish and Wildlife Service (Service) is the Nation's primary conservation agency concerned with the protection and long-term management of wildlife resources. The Service administers the National Wildlife Refuge System, a system of at least 548 national wildlife refuges and 37 wetland management districts totaling over 95 million acres, much of which is primarily managed for the enhancement of migratory bird populations and federally listed threatened and endangered fish, wildlife, and plants.

PURPOSE AND NEED FOR ACTION

The purpose of the CCP and EA is to establish and implement management direction for Banks Lake NWR for the next 15 years.

The EA is needed to set forth and evaluate a range of reasonable management alternatives for the refuge. Each alternative was generated with the potential to be fully developed into a final CCP and to describe the predicted biological, physical, social, and economic impacts of implementing each alternative. The Service will select an alternative to be fully developed for this refuge.

The Service has identified a number of issues, concerns, and needs through discussions with the public, agency managers, conservation partners, and others. In particular, the Service's planning team has identified a range of alternatives, evaluated the possible consequences of implementing each, and selected Alternative B, Expanded Management by the Service as the proposed management action. In the opinion of the Service and the planning team, Alternative B is the best approach to guide the refuge's future direction.

There is no current plan that identifies priorities and ensures consistent and integrated management of the refuge, thus necessitating the need for this plan. The National Wildlife Refuge System Improvement Act of 1997 requires that all national wildlife refuges established before that year have a CCP in place by 2012.

DECISION FRAMEWORK

Based on the assessment described in this document, the Service will select an alternative to implement the CCP for Banks Lake NWR. The finalized CCP will include a Finding of No Significant Impact (FONSI), which is a statement that explains why the selected alternative will not have a significant effect on the quality of the human environment. This determination is based on an evaluation of the mission of

the Service and the Refuge System, the purpose(s) for which the refuge was established, and other legal mandates. Assuming that no significant impact is found, implementation of the plan will begin and the plan will be monitored annually and revised when necessary.

PLANNING STUDY AREA

Banks Lake National Wildlife Refuge is located in southcentral Georgia near the town of Lakeland. Its known area encompasses approximately 3,559 acres (1,440 ha) of open water, freshwater marshes, scrub-shrub, bottomland hardwoods and upland pines. Historically a Carolina bay, Banks Lake was developed to function as a mill pond over 100 years ago following the construction of a dam. The refuge is part of a large wetlands complex, also known as the Grand Bay–Banks Lake (GBBL) ecosystem. To the south of the refuge is Moody Air Force Base, which includes several large natural areas and is part of the GBBL ecosystem. The rest of the refuge borders agricultural and suburban lands.

This environmental assessment will identify management on refuge lands, as well as those lands proposed for acquisition by the Service.

AUTHORITY, LEGAL COMPLIANCE, AND COMPATIBILITY

The Service has developed this plan 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. The refuge staff has achieved compliance with this Act through the involvement of the public and the incorporation of an environmental assessment in this document, with a description of the alternatives considered and an analysis of the environmental consequences of the alternatives (Chapters III and IV in this section). When fully implemented, the plan will strive to achieve the vision and purposes of Banks Lake NWR.

The plan's overriding consideration is to carry out the purposes for which the refuge was established. The laws that established the refuge and provided the funds for acquisition state the purposes. Fish and wildlife management is the first priority in refuge management, and the Service allows and encourages public use (wildlife-dependent recreation) as long as it is compatible with, or does not detract from, the refuge's mission and purposes.

COMPATIBILITY

The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, states that national wildlife refuges must be protected from incompatible or harmful human activities to ensure that Americans can enjoy Refuge System lands and waters. Before activities or uses are allowed on a national wildlife refuge, the uses must be found to be compatible. A compatible use "... will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge." In addition, "wildlife-dependent recreational uses may be authorized on a refuge when they are compatible and not inconsistent with public safety."

An interim compatibility determination is a document that assesses the compatibility of an activity during the period of time the Service first acquires a parcel of land to the time a formal, long-term management plan for that parcel is prepared and adopted. The Service has completed an interim compatibility determination for the six priority general public uses of the system, as listed in the National Wildlife Refuge System Improvement Act of 1997. These uses are hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation.

PUBLIC INVOLVEMENT AND THE PLANNING PROCESS

In accordance with Service guidelines and National Environmental Policy Act recommendations, public involvement has been a crucial factor throughout the development of the Draft Comprehensive Conservation Plan for Banks Lake National Wildlife Refuge. The plan has been written with input and assistance from interested citizens, conservation organizations, and employees of local and state agencies. The participation of these stakeholders and their ideas has been of great value in setting the management direction for the refuge. The Service, as a whole, and the refuge staff, in particular are grateful to all those who have contributed time, expertise, and ideas to the planning process. The staff remains impressed by the passion and commitment of so many individuals for the lands and waters administered by the refuge.

Preplanning activities began in 2007. A visitor services review was conducted in September of 2007. This was later followed in November 2007 by a wildlife and habitat management review. Preplanning continued with information gathering and the identification of data gaps. A Notice of Intent (NOI) to prepare a comprehensive conservation plan for the refuge was published in the *Federal Register* on December 6, 2007.

On January 24, 2008, an intergovernmental scoping meeting was held at the Lanier County Courthouse in Lakeland, Georgia, to identify the key issues facing the refuge. Representatives from Moody Air Force Base, the Georgia Department of Natural Resources' Wildlife Resources Division, and Lanier County generated a list of priority issues to be considered in the development of the 15-year management plan for the refuge. Priority issues were identified later the same day by Service staff in collaboration with Georgia Wildlife Resources Division representatives.

A public scoping meeting was then held on the evening of January 24, 2008, at the Lanier County Courthouse in Lakeland, Georgia. Nineteen citizens attended the meeting, along with eight Service personnel and one contracted consultant from the Dynamac Corporation. After the Service staff provided presentations about the refuge and the comprehensive planning process, the public was given the opportunity to submit comments and concerns regarding future management of the refuge at several thematic information booths (e.g., visitor services, biological resources, etc.) that were stationed around the facility, each manned by Service personnel.

A wide range of issues, concerns, and opportunities were identified and addressed during the planning process. All public and advisory team comments were considered; however, some issues that are important to the public are beyond the scope of the Service's authority and cannot be addressed within this planning process. The planning team did consider all issues that were raised throughout the planning process, and has developed a plan that attempts to balance the competing opinions regarding important issues.

A complete summary of the issues and concerns is provided in Appendix D, Public Involvement.

II. Affected Environment

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

III. Description of Alternatives

FORMULATION OF ALTERNATIVES

Alternatives are different approaches or combinations of management objectives and strategies designed to achieve the refuge's purpose and vision; the goals identified in the CCP; the goals of the Refuge System; and the mission on the Fish and Wildlife Service. Alternatives are formulated to address the significant issues, concerns, and problems identified by the Service and the public during the public scoping process.

The three alternatives identified and evaluated represent different approaches to provide permanent protection, restoration, and management of the refuge's fish, wildlife, plants, habitats, and other resources, as well as compatible wildlife-dependent recreation. The refuge staff has assessed the biological conditions and analyzed external relationships affecting the refuge. This information has contributed to the development of refuge's goals and, in turn, helped to formulate the alternatives. As a result, each alternative presents different sets of objectives for reaching the refuge's goals. Each alternative was evaluated based on how much progress it would make and how it would address the issues identified with respect to fish and wildlife populations, habitat management, resource protection and conservation, visitor services, and refuge administration.

DESCRIPTION OF ALTERNATIVES

Serving as a basis for each alternative, a number of goals and sets of objectives were developed to help achieve the refuge's purpose and the mission of the Refuge System. Objectives are desired conditions or outcomes that are grouped into sets and, for this planning effort, consolidated into three alternatives. These alternatives represent different management approaches for managing the refuge over a 15-year timeframe while still meeting the refuge's purposes and goals. The three alternatives are summarized below.

ALTERNATIVE A: CURRENT MANAGEMENT (NO ACTION)

This is the "status quo" alternative. Under this alternative, no new actions would be taken. The refuge would continue its management activities and programs at levels similar to recent management activities and levels.

Wildlife and Habitat Management
Regarding federally and state-listed species, incidental sightings of wood stork and round-tailed muskrats would continue to be recorded. All listed species would be protected. The refuge would respond to nuisance alligators, and bald eagle nests would be protected.

Management for migratory birds would remain minimal, with incidental sightings recorded.

With regard to nonnative and nuisance species, the refuge would continue to control water hyacinth through herbicidal applications while submerged aquatic vegetation would be managed via periodic lake drawdowns. For aquatic wildlife, the refuge would organize apple snail surveys. Nonnative species would be managed as they are encountered.

Under Alternative A, habitat management would be limited to conducting periodic lake drawdowns to control submerged aquatic vegetation. Apart from aerial mapping conducted as part of the 2003 GBBL ecosystem plan, there would be no habitat management for the refuge's marshes, scrub-shrub, Carolina bays, or pine flatwoods. Management of native fishes would include surveys every other year per the fisheries management plan and periodic mercury and lead surveys conducted by the Georgia Department of Natural Resources (GADNR). Management for reptiles and amphibians would be minimal, consisting of incidental sightings reporting and occasional frog malformation surveys.

Management of water resources includes continued monitoring of water levels. Water quality monitoring (pH, dissolved oxygen, conductivity, hardness) is conducted during fish surveys. The refuge would also continue to work with county governments and landowners to connect private systems to the city's sewage utility to minimize water quality degradation. Periodic lake drawdowns would be conducted to control nuisance plants. The refuge would continue collaborative efforts with the City of Lakeland to facilitate running drawdown waters through Lake Irma, Lakeland. In addition, the refuge would protect, as necessary, its water rights from unauthorized private diversions.

Within this alternative, the refuge would not collect data to monitor the potential effects of climate change on its resources.

Resource Protection

Under Alternative A, management of the refuge boundary would not expand substantially. Approximately one-third of the boundary (north and portion of the east side) has been surveyed and signed. The lack of information regarding the refuge boundary has prevented any land acquisition efforts to be conducted. The refuge would manage potential encroachment issues by working with adjacent landowners to remove any unauthorized structures or water diversion equipment. The refuge has a flowage easement to drain water via a creek through Lake Irma to Alapaha River. The Georgia Department of Transportation (GADOT) has a 1,100-acre wetland mitigation area that lies adjacent to the refuge. Under this alternative, no cooperative management agreement would be developed for that land. Archaeological and historical resources management would be minimal under the current alternative, with surveys having been conducted at the old mill and dam sites. Law enforcement would consist of an intermittent presence of refuge staff as well as county and city officers.

Visitor Services

The refuge currently does not collect an entrance fee. Visitor welcome and orientation information is provided by an on-site kiosk, while the concession operation also provides information to visitors. In addition, visitors can obtain information via the refuge website, phone number (Okefenokee NWR) or via email (Okefenokee NWR staff). GADOT directional signs are in place. The refuge has onsite volunteers the majority of the year. Outreach efforts consist of periodic articles submitted to the local media and public notices issued for proposed actions.

Because the landbase for huntable species is limited, hunting is currently not permitted on the refuge, and under this alternative this activity would not be evaluated for potential authorization. The refuge is open year-round (and night) to fishing. There is an access area and well established fishing pier at the entrance area. In addition, an annual Kids Fishing Day is held in collaboration with partners. Furthermore, periodic drawdowns are conducted to enhance fisheries. Under this alternative, fishing opportunities would likely remain unchanged.

Wildlife photography and observation opportunities are relatively limited and would not increase appreciably under this alternative. The concession offers canoe and kayak rentals, while a boat ramp allows the launching of private water craft. The fishing pier offers viewing and photography opportunities of a small section of the lake. The refuge does not offer any other recreational opportunities, and camping is not permitted.

Currently, the refuge does not have a friends group, and the Okefenokee Wildlife League provides assistance at Banks Lake NWR. Generally, a volunteer is stationed at the refuge year-round, and travel, trailer and hook-up are provided. Friends group and volunteer activities would likely not change under this alternative.

Refuge Administration
No staff is permanently assigned to the refuge, and volunteers and refuge staff provide the majority of the management at the refuge. Some duties are also contracted out to the concessionaire. Staffing is not expected to change under this alternative. Refuge infrastructure (concession, access area, water control structure, restrooms, sewage system, city water, piers, walkways, boat ramp, hiking trail, volunteer housing and recreational vehicle (RV) pad, parking lot, boat storage area, entrance sign, etc.) will be repaired as needed under this alternative, but otherwise not significantly improved or expanded. With regard to intergovernmental coordination, the refuge will continue to meet periodically with a number of federal, state, and local entities to update them on refuge programs and planned activities.

ALTERNATIVE B: EXPANDED MANAGEMENT BY THE SERVICE (PROPOSED ALTERNATIVE)

Under this alternative, management for wildlife and habitats, resource protection, visitor services, and refuge administration would be increased.

Wildlife and Habitat Management
Management would include monitoring efforts to determine trends (relative numbers and use patterns) for wood storks and round-tailed muskrats. Management for bald eagles would remain at current levels. For alligators, the refuge would continue to ban alligator hunting until population data are available. It would increase public awareness of the dangers of feeding alligators. In addition, the refuge would work with the GADNR to respond appropriately to nuisance alligator complaints and monitor alligator populations. The refuge would coordinate surveys for listed plant species.

For migratory birds, the refuge would determine trends in relative numbers and use patterns through monitoring of waterfowl, wading birds, marshbirds, and raptors. The refuge would conduct breeding bird surveys for neotropical migratory birds (i.e., passerines). With regard to bird-aircraft collision minimization efforts carried out by Moody Air Force Base (MAFB), the refuge would increase surveys and data-sharing with MAFB wildlife services.

Management of nonnative and nuisance species would increase. The refuge would establish boat and trailer cleaning stations. An annual weed control program would be developed with a goal of keeping area coverage of water hyacinth to less than 20 percent. It would expand survey efforts for nonnative aquatic wildlife species of regional concern and increase public awareness to promote early detection. The refuge would survey lands for nonnative species on a three year cycle, and work with partners to identify, locate, control, and eliminate (where possible) exotic species.

Under Alternative B, habitat management would be expanded. For Banks Lake, the refuge would identify benchmarks for initiating drawdowns. In addition, the refuge would map and classify vegetation communities sufficient to manage habitat to achieve refuge mission and GBBL habitat site conservation goals.

For native fishes, the refuge would expand Alternative A with a creel survey. It would also work with GADNR Fisheries to develop a trophy largemouth bass sport fishery. With respect to reptiles and amphibians, the refuge would obtain baseline information and determine trends (relative numbers and use patterns) through increased monitoring.

Management of the refuge's water resources would increase under this alternative. The refuge would establish a permanent water quality monitoring system (pH, dissolved oxygen, conductivity). In addition, a contaminants monitoring regime for septic, non-point pollution and urban/agricultural run off would be established. Water quantity would be managed the same as Alternative A. Furthermore, refuge would establish water budgets, fill drain curves, and enhance other important hydrological parameters for Banks Lake. It would also collaborate with downstream landowners to maximize drawdown capabilities.

The refuge would institute management activities to address the impacts of climate change on refuge resources. The refuge would coordinate with researchers and partners to identify climate change research needs for the refuge, investigating the impacts of climate change on fish and wildlife, listed species, vegetative communities, water quality and quantity, and other important resources.

Resource Protection

Under Alternative B, management of the refuge would focus on the lands and waters where the Service is confident that it has jurisdiction. Additional title work, a complete survey of the boundary, and possible additional litigations would be required to settle any issue with location of refuge boundary. The refuge would establish an acquisition boundary and purchase land from willing sellers as funding becomes available. It would identify potential threats early in the planning process and work cooperatively with local planning departments and elected officials to protect the refuge from the impacts of urbanization. The refuge would establish formal cooperative agreements with adjacent landowners to maintain the Banks Lake flowage easement. It would also negotiate a long-term management agreement with the GADOT to manage the wetland mitigation area as part of the refuge. The refuge would conduct a cultural resource survey of the remaining uplands. Law enforcement presence on the refuge would be increased as the public use program is expanded.

Visitor Services

Under this alternative, the refuge would evaluate the potential for an entrance fee program. The refuge would create a refuge brochure with map. Regular information would be provided to the public to update them on refuge activities and wildlife recreational opportunities.

Hunting would be evaluated and addressed in a public use step-down plan under this alternative to determine if adequate opportunities and funding are available. The refuge would also develop trophy warm water fishing opportunities through the use of slot and bag limits.

For wildlife viewing and photography opportunities, the refuge would develop a bird list and provide programs that help develop public wildlife viewing and photography skills (workshops and special programs). In addition, marked boat trail(s) would be established in the deeper water channels of the lake to provide access to fishing and wildlife viewing areas. The refuge would also evaluate a new canoe trail.

To expand environmental education and interpretation, the refuge would establish a formal program with local schools and the Grand Bay Environmental Center to facilitate these programs on the refuge. The refuge would also add infrastructure to assist in these efforts.

Other recreational opportunities would be the same as under Alternative A, and camping would not be permitted. In addition to Alternative A, the refuge would encourage commercial visitor services appropriate with the Big 6 (5).

The refuge would also develop a refuge Friends group. It would expand alternative A by developing an active local volunteer group.

Refuge Administration
Under Alternative B, the following permanent, full-time staff would be assigned to the refuge: Refuge Operations Specialist (GS 0485 9/11); Wildlife Biologist (GS 0486 9/11); Maintenance worker (WG 2805-06); and Park Ranger (EE) (GS 0025 05/07/09). In addition, a Shared Fisheries Biologist (GS 0482-09/11) would work part-time on the refuge. With regard to infrastructure, the refuge would add office and workspace in the visitor contact area to accommodate any staff permanently assigned to the refuge. It would work with state and local authorities to place refuge information signs on Interstate 75. Intergovernmental coordination and partnerships would remain the same as those under Alternative A.

ALTERNATIVE C: COOPERATIVE ADMINISTRATION WITH STATE NATURAL RESOURCE AGENCIES

This alternative would emphasize cooperative administration of the refuge with the State of Georgia's natural resource agencies.

Wildlife and Habitat Management
Under this alternative, management of wood storks and bald eagles would include obtaining population trend data. Additionally, nesting platforms would be constructed to increase breeding opportunities on the refuge, with the added benefit of increasing photography and observation opportunities if these efforts were successful. Management of round-tailed muskrats and state-listed plants would be the same as under Alternative B. For alligators, the refuge would work with the state to determine population trends. In addition, educational programs would be developed to help minimize alligator-human conflicts. Management of migratory birds would be similar to that under Alternative B, with the exception that photo blinds would be constructed to provide more birding opportunities. Management of native fishes would be increased by working with the state to develop a stocking program, as warranted. For herpetological and nonnative species, habitats, water resources and climate change, management would be the same as under Alternative B.

Resource Protection
Management of the refuge boundary and cultural resources would be the same as under Alternative B. For land acquisition, the refuge would support the development of new public state lands adjacent to the refuge. It would also develop a long-term management agreement with state natural resource agencies to manage current refuge access and the concession area. Under this alternative, these state entities would provide additional law enforcement on refuge, and the state lands would provide additional access points to the public. Law enforcement would be shared between the state and the Service.

Visitor Services
Under Alternative C, the refuge would coordinate the potential for an entrance fee program with the state. The state would also be the primary information provider to the public.

Under this alternative, the refuge would develop a hunting program when future land conservation partnerships funding are adequate to sustain a quality recreational experience for the public. Fishing opportunities would be that same as those under Alternative B.

The state would be responsible for developing wildlife viewing and photography opportunities on the refuge, including adding new trails (land or boat). The state would also be responsible for all environmental education and interpretation opportunities on the refuge.

The state entities would develop nearby camping and other recreational opportunities on their land. Meanwhile, the refuge would continue to issue special use permits for commercial visitor services on refuge lands and waters.

The refuge would also develop a refuge Friends group. It would expand Alternative A by developing an active local volunteer group.

The state entities and refuge would seek to establish a Friends group and volunteer program to support both units.

Refuge Administration
Under this alternative, the refuge would establish the following permanent, full-time positions: Refuge Operations Specialist (GS 0485 9/11) and Wildlife Biologist (GS 0486 9/11). A Shared Fisheries Biologist (GS 0482-09/11) would work part-time on the refuge. Any other positions would be provided by the State of Georgia (ranger, law enforcement, etc.). The operation and maintenance of the refuge's current facilities would become the responsibility of the state entities. In addition to the intergovernmental coordination required under Alternative A, a long-term management agreement with the state's natural resource agencies would be needed for them to administer the current recreation area and facility. Partnerships would remain the same as those under Alternative A.

FEATURES COMMON TO ALL ALTERNATIVES

Although the alternatives differ in many ways, there are similarities among them as well. These common features are listed below to reduce the length and redundancy of the individual alternative descriptions.

All management activities that could impact natural resources, including subsurface mineral reservations, utility lines and easements, soil, water, air, contaminants, and archaeological and historical resources would be managed to comply with all applicable laws, regulations, and policies. All alternatives are subject to all applicable future permit requirements. Individual projects may require additional consultation with the Service's Regional Archaeologist and the State of Georgia Historic Preservation Office. Additional consultation, surveys, and clearance may be required where project development would be conducted on the refuge or when activities would affect properties eligible for the National Historic Register.

Hunting would be evaluated under this alternative to determine if adequate opportunities and funding are available. Unfortunately at this time, there are insufficient funds, staff, and inadequate levels of populations of game species to justify opening the refuge to hunting.

COMPARISON OF ALTERNATIVES

Table 13 compares each of the three alternatives by the management issues identified for Banks Lake National Wildlife Refuge.

Table 13. Comparison of alternatives by management issues for Banks Lake National Wildlife Refuge.

Key Topics	Alternative A: Current Management (No Action)	Alternative B: Expanded Management by the Service (Proposed Alternative)	Alternative C: Cooperative Administration with State Natural Resource Agencies
WILDLIFE AND HABITAT MANAGEMENT			
Rare, Threatened, and Endangered Species			
Wood Stork	Incidental sightings recorded.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring.	Expand Alternative A. Evaluate the need to build nesting platforms. Determine trends (relative numbers and use patterns) through increased monitoring.
Bald Eagle	Annual DNR survey. Bald eagle nest posted when active.	Same as Alternative A	Expand Alternative A. Evaluate the need to build nesting platforms. Determine trends (relative numbers and use patterns) through increased monitoring.
Round-tailed Muskrat	Incidental sightings recorded.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring.	Same as Alternative B.

Key Topics	Alternative A: Current Management (No Action)	Alternative B: Expanded Management by the Service (Proposed Alternative)	Alternative C: Cooperative Administration with State Natural Resource Agencies
Alligator	Respond to nuisance alligator issues, no hunting.	Expand Alternative A. Continue to ban alligator hunting until population data are available. Increase public awareness of the dangers of feeding alligators. Work with GADNR to respond appropriately to nuisance alligator complaints. Monitor alligator populations in association with GADNR.	Expand Alternative A. Work with the state to survey alligators and determine refuge carrying capacity, and to implement a "Living With Alligators" public awareness program.
State-listed Plants	No current management.	Expand Alternative A. Survey	Same as Alternative B
Migratory Birds			
Waterfowl	Notified of incidental sightings.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring. Work with the state and other partners to build photography blinds.
Shorebirds	Notified of incidental sightings.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring. Work with the state and other partners to build photography blinds.
Wading Birds	Notified of incidental sightings.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring. Work with the state and other partners to build photography blinds.

Key Topics	Alternative A: Current Management (No Action)	Alternative B: Expanded Management by the Service (Proposed Alternative)	Alternative C: Cooperative Administration with State Natural Resource Agencies
Marshbirds	Notified of incidental sightings.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring.	Same as Alternative B
Raptors	Notified of incidental sightings.	Expand Alternative A. Determine trends (relative numbers and use patterns) through increased monitoring.	Same as Alternative B
Neotropical Birds	Notified of incidental sightings	Expand Alternative A. Conduct Breeding Bird survey.	Expand Alternative A. Conduct Breeding Bird survey. Manage uplands to improve conditions for these species.
Bird – Aircraft Collisions	Aerial Survey	Expand Alternative A. Increase surveys and data sharing with MAFB.	Same as Alternative B
Native Fishes	With few exceptions, surveyed every year per the current fisheries management plan, periodic surveys by GADNR fisheries division for mercury and lead levels.	Expand Alternative A with creel survey. Work with GADNR Fisheries to develop a trophy largemouth bass sports fishery.	Expand Alternative A. Conduct creel survey. Work with GADNR Fisheries to develop a trophy largemouth bass sports fishery. Develop a stocking program, if warranted.
Herpetological Species (e.g. frogs, toads, snakes, and lizards)	Incidental sightings. Periodic sampling for malformation in frogs.	Expand Alternative A. Obtain baseline information and determine trends (relative numbers and use patterns) through increased monitoring.	Same as Alternative B.

Key Topics	Alternative A: Current Management (No Action)	Alternative B: Expanded Management by the Service (Proposed Alternative)	Alternative C: Cooperative Administration with State Natural Resource Agencies
Exotic, Invasive, and Nuisance Species			
Control of Exotic Aquatic Plants	Water hyacinth control: drawdowns, herbicide spraying.	Expand Alternative A. Establish boat and trailer cleaning stations. Establish annual control program with goal of keeping area coverage less than 20%.	Same as Alternative B.
Non native aquatic wildlife	Conduct surveys for apple snails.	Expand Alternative A. Expand survey effort for invasive species of regional concern.	Same as Alternative B.
Invasive Terrestrial Species	No current management.	Expand Alternative A. Increase public awareness to promote early detection. Survey lands for invasive species at least once a year. Continue to work with partners to identify, locate, control, and eliminate where possible invasive species.	Same as Alternative B.
Wildlife and Habitat Diversity			
Open Water	Periodic drawdowns for submerged aquatic vegetation.	Expand Alternative A. Identify benchmarks for initiating drawdowns. Map and classify vegetation communities sufficient to manage habitat to achieve refuge mission and GBBL habitat site conservation goals.	Same as Alternative B.

Key Topics	Alternative A: Current Management (No Action)	Alternative B: Expanded Management by the Service (Proposed Alternative)	Alternative C: Cooperative Administration with State Natural Resource Agencies
Marshes	Habitat mapping from aerial surveys. GBBL site conservation plan 2003.	Expand Alternative A. Map and classify vegetation communities sufficient to manage habitat to achieve refuge mission and GBBL habitat site conservation goals.	Same as Alternative B.
Scrub-Shrub	Habitat mapping from aerial surveys. GBBL site conservation plan 2003.	Expand Alternative A. Map and classify vegetation communities sufficient to manage habitat to achieve refuge mission and GBBL habitat site conservation goals.	Same as Alternative B
Carolina Bays	Habitat mapping from aerial surveys. GBBL site conservation plan 2003.	Expand Alternative A. Map and classify vegetation communities sufficient to manage habitat to achieve refuge mission and GBBL habitat site conservation goals.	Same as Alternative B.
Pine Flatwoods	Habitat mapping from aerial surveys. GBBL site conservation plan 2003.	Expand Alternative A. Map and classify vegetation communities sufficient to manage habitat to achieve refuge mission and GBBL habitat site conservation goals.	Same as Alternative B.

Water Quantity and Water Quantity			
Water Quality	Water monitored during fish surveys (pH, dissolved oxygen, conductivity, hardness)	Expand Alternative A. Establish a permanent water quality monitoring system (pH, dissolved oxygen, conductivity), Establish contaminants monitoring regime (septic, non point pollution, urban/agricultural run off).	Same as Alternative B
Water Quality-Private lakeside Septic Systems	Refuge is working with county government and landowners to connect private systems to city sewage utility.	Same as Alternative A	Same as Alternative A
Water Quantity	Periodic drawdowns. Water level staff gauge in place (past water monitoring station). Collaborative efforts with the City of Lakeland to facilitate running drawdown waters through Lake Irma. As necessary, protect refuge water rights from unauthorized private diversions.	Expand Alternative A. Establish water budget, fill drain curves, etc. Work collaboratively with hospital to rehab low water dam down stream to maximize drawdown capabilities.	Same as Alternative B

Climate Change			
Impacts of Climate Change	No current management.	Expand Alternative A. Coordinate with researchers and partners to identify climate change research needs for the refuge, investigating the impacts of climate change on fish and wildlife, listed species, vegetative communities, water quality and quantity, and other important resources.	Same as Alternative B
RESOURCE PROTECTION			
Acquisition Boundary			
Refuge Boundary	North and portion of east boundary surveyed and signed (one third surveyed and established).	Expand Alternative A. Management of the refuge will focus on the lands and waters where the Service is confident that it has jurisdiction. Additional title work, a complete survey of the boundary, and possible additional litigations will be required to settle any issue with location of refuge boundary.	Same as Alternative B.
Land Acquisition	No current management due to lack of established Acquisition Boundary.	Expand Alternative A. Establish an Acquisition Boundary and purchase land from willing sellers as funding becomes available (step down plan).	Expand Alternative A. Support the development of public state land adjacent to Banks Lake NWR.

Encroachment			
Local development	The refuge survey est. boundary and works with adjacent landowner to remove any unauthorized structure or water diversion equipment.	Expand Alternative A. Identify potential threats early in local and county planning process and work cooperatively with planning departments and elected official to protect refuge from impacts of urbanization.	Expand Alternative A. Work with partners to maintain conservation values on adjacent lands that are important to the ecological health of the refuge and needed to buffer the refuge from the negative impacts of development.
Lease/Management Agreements			
Drainage easement	Refuge has flowage easement to drain water through "unnamed" creek through Lake Irma to Alapaha River.	Expand Alternative A. Establish formal cooperative agreement with adjacent landowners to maintain this flowage easement.	Expand Alternative A. Establish formal cooperative agreement with adjacent landowners to maintain this flowage easement. Work with local partners to increase riparian buffer zones and trail system along drainage easement.
Land Management Agreement	No current management (GADOT has established an 1,100-acre permanent wetland mitigation area adjacent to the northwest corner of the refuge)	Expand Alternative A. Negotiate a long term management agreement with GADOT to manage the wetland mitigation area as part of the refuge.	Expand Alternative A. Develop a long-term management agreement with state natural resource agencies to manage current refuge access and concession area.
Archaeological and Historical Resources	Archaeological and historical surveys performed at old mill and dam sites.	Expand Alternative A. Conduct archaeological / historical survey of remaining uplands.	Same as Alternative B

Law Enforcement			
Investigations/Surveillance	Periodic Law enforcement provided be Okefenokee NWR staff, county and city officers.	Expand Alternative A. Increase law enforcement presence as public use program increase.	Expand Alternative A. State agencies provide additional law enforcement on refuge.
VISITOR SERVICES			
Visitor Welcome and Orientation			
Access	One public use access area with boat ramp, parking and fishing pier	Expand Alternative A. Pave access road and boat parking lot.	Expand Alternative A. Public state land will provide additional access point to the public.
Entrance Fee Program	No current management (free access).	Expand Alternative A. Evaluate potential for entrance fee program.	Expand Alternative A. Coordinate fee program with state natural resource agencies.
Providing Information to the Public	On-site kiosks in place, concession operation provides information to visitors. Primarily website, phone calls, email, GADOT directional signs in place. Onsite volunteers majority of the year.	Expand Alternative A. Create refuge brochure with map. Increase presence staff/volunteers. Increase outreach efforts.	Change Alternative A. State natural resource agencies will be the primary information providers to the public.
Hunting Opportunities	No hunting permitted on refuge due to the limited landbase for huntable species.	Expand Alternative A. Evaluate hunting as part of a public use step-down plan to determine if the refuge can support the activity in accordance with Service standards.	Expand Alternative A. Develop a hunting program when future land conservation partnerships funding are adequate to sustain a quality recreational experience for the public.

Fishing Opportunities	Refuge is open year round (and at night) to fishing, access area, well established fishing pier at entrance area and annual kids fishing day in collaboration with partners. Periodic drawdowns are conducted to enhance fisheries.	Expand Alternative A. Develop trophy warm water fishing opportunities (i.e. slot limits, bag limits).	Same as Alternative B
Wildlife Observation and Photography			
Wildlife Viewing and Photography Opportunities	Concession offers canoe & kayak rentals. Boat ramp provides launching for private watercraft. Fishing pier offers viewing/photo points.	Expand Alternative A. Develop a bird list. Provide programs that help public develop wildlife viewing and photography skills (workshops and special programs).	Expand Alternative A. New public state land will provide addition wildlife and viewing opportunities on site. Build observation towers, elevated boardwalks and expand trails on refuge.
Boat Trails	Refuge removes unauthorized boat trail markers.	Expand Alternative A. Establish marked boat trail(s) in the deeper water channels of the lake to provide access to fishing and wildlife viewing areas. Evaluate a new canoe trail.	Expand Alternative A. Additional trails from new public state land may need to be developed.
Environmental Education Opportunities and Interpretive Programs	Completed an environmental education web page (October 2007).	Expand Alternative A. Establish formal program with local schools and Grand Bay Environmental Center to facilitate environmental education programs on refuge. Add infrastructure.	Expand Alternative A. State natural resource agencies would operate the expanded environmental education program described in alternative B.

Other Recreational Opportunities	Currently camping is not permitted, as are various forms of personal watercraft and airboats.	Same as Alternative A	Expand Alternative A. State natural resource agencies would develop nearby camping and other recreational opportunities on their land.
Commercial Visitor Services	Contracted concession operator at Banks Lake NWR (5 year renewal).	In addition to Alternative A encourage commercial visitor service providers appropriate with the Big 6 (5).	Expand Alternative A. The refuge would continue to issue special use permits for commercial visitor services on refuge lands and waters.
Outreach	Periodic articles are submitted to the local media. Public notices issued for proposed actions.	Expand Alternative A. Regular information would be provided to the public to update them on refuge activities and wildlife rec. opportunities.	Expand Alternative A. The refuge would supplement, as appropriate, outreach efforts of the cooperating state's natural resource agencies.
Friends Group	Currently Okefenokee Wildlife League (OWL) also covers Banks Lake NWR.	Expand Alternative A. Develop a refuge Friends Group.	Expand Alternative A. State natural resource agencies and refuge would seek to establish a friends group to support both units.
Volunteers	Refuge provides trailer and hook-up, one volunteer usually on-site year-round.	Expand Alternative A by developing an active local volunteer group.	Expand Alternative A. State natural resource agencies and refuge would seek to establish a volunteer program to support both units.
Control of Trash and Litter	Banks Lake NWR Outpost maintains trash receptacles and staff and volunteers provide regular litter patrols (uplands and lake area).	Same as Alternative A	Change Alternative A. State natural resource agencies would control trash and litter on the unit.

Monofilament Fishing Line	Recycling station provided at Banks Lake Outpost.	Expand Alternative A to encourage use.	Expand Alternative A. The Service would assist cooperating state natural resource agencies in expanding this program.
REFUGE ADMINISTRATION			
Refuge Management			
Staff	Refuge volunteers, refuge staff from Okefenokee NWR perform majority of management. Banks Lake NWR Outpost staff assists on contract basis.	Expand Alternative A. Add the following staff: PFT: Refuge Operations Specialist (GS 0485 9/11) PFT: Wildlife Biologist (GS 0486 9/11) PFT: Maintenance Worker (WG 2805-06), PFT: Park Ranger (EE) (GS 0025 05/07), Shared Fisheries Biologist (GS 0482-09/11).	Expand Alternative A. Add the following staff: PFT: Refuge Operations Specialist (GS 0485 9/11), PFT: Wildlife Biologist (GS 0486 9/11), Shared Fisheries Biologist (GS 0482-09/11).
Administrative Facilities, Utilities, Equipment, and Signs	Concession, access area, water control structure, restrooms, sewage system, city water, piers, walkways, boat ramp, hiking trail, volunteer housing and RV pad, parking lot, boat storage area, entrance sign.	Expand Alternative A. Add office, workspace, and visitor contact area to accommodate any staff permanently assigned to the refuge. Work with state and local authorities to place refuge information signs on Interstate 75.	Change Alternative A. The operation and maintenance of the current facilities will become the responsibility of the cooperating state natural resource agencies.

Intergovernmental Coordination/Partnerships			
Intergovernmental Coordination	Refuge meets periodically with the following government agencies to update them on refuge programs and planned activities: Lakeland City, Lanier County Commissioner, GADOT (signs), GADNR (fisheries), MAFB, RDC, Panama City Fisheries Office.	Same as alternative A	Expand Alternative A. A long-term management agreement with state natural resource agencies would be needed for them to administer the current recreation area and facility in addition to Alternative A.
Partnerships	The refuge continues to seek partnership opportunities with TNC, Grand Bay-Banks Lake Ecosystem Council, Lakeland-Lanier Chamber of Commerce, B.A.S.S National, Valdosta Bassmasters, Southern Bass Busters.	Same as Alternative A	Same as Alternative A

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

The alternative development process under the National Environmental Policy Act of 1969 (NEPA) and the National Wildlife Refuge System Improvement Act of 1997 is designed to allow consideration of the widest possible range of issues and potential management approaches. During the alternative development process for Banks Lake NWR, many different solutions were considered. The following possible alternatives were considered, but were not selected for detailed study in this Draft CCP/EA due to the reasons described.

Restoration of Historic Wetlands – Although the natural historic conditions of the landscape is emphasized in the CCP process, Banks Lake has been in existence for over 150 years with the current human communities developing around it. Moody Air Force Base also manages a portion of the other Carolina bays and has developed dikes and water control structures. Because of these manmade alterations, it would be unfeasible to consider restoration of historic conditions.

Transfer Management of Banks Lake NWR to the State of Georgia's DNR – This alternative has been suggested in the past; however, the Service does not sell refuges. In addition, the Georgia Department of Natural Resources has indicated that it is not in a position at this time to acquire or manage at full scale Banks Lake NWR.

IV. Environmental Consequences

OVERVIEW

This chapter analyzes and discusses the potential environmental effects or consequences that can be reasonably expected by the implementation of each of the three alternatives described in Chapter III of this environmental assessment. For each alternative, the expected outcomes are portrayed through the 15-year life of the CCP.

EFFECTS COMMON TO ALL ALTERNATIVES

A few potential effects will be the same under each alternative and are summarized under seven categories: environmental justice, climate change, management, land acquisition, cultural resources, refuge revenue-sharing, and other effects.

ENVIRONMENTAL JUSTICE

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed by President Bill Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations, with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income communities with access to public information and opportunities for participation in matters relating to human health or the environment.

None of the management alternatives described in this environmental assessment will disproportionately place any adverse environmental, economic, social, or health impacts on minority and low-income populations. Implementation of any action alternative that includes public use and environmental education is anticipated to provide a benefit to the residents residing in the surrounding communities.

CLIMATE CHANGE

The U.S. Department of the Interior issued an order in January 2001 requiring federal agencies with land management responsibilities under its direction to consider the potential impacts of climate change as part of their long-range planning endeavors.

The increase of carbon within the earth's atmosphere has been linked to the gradual rise in surface temperatures commonly referred to as global warning. In relation to comprehensive planning for national wildlife refuges, carbon sequestration constitutes the primary climate-related impact to be considered in planning. The U.S. Department of Energy's *Carbon Sequestration Research and Development* (U.S. Department of Energy 1999) defines carbon sequestration as "... the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere."

The land is a tremendous force in carbon sequestration. Terrestrial biomes of all sorts—grasslands, forests, wetlands, tundra, perpetual ice, and desert—are effective both in preventing carbon emissions and in acting as a biological "scrubber" of atmospheric carbon monoxide. The conclusions of the Department of Energy's report noted that ecosystem protection is important to carbon sequestration and may reduce or prevent the loss of carbon currently stored in the terrestrial biosphere.

Preserving natural habitat for wildlife is at the heart of any long-range plan for national wildlife refuges. The actions proposed in this comprehensive conservation plan would preserve or restore land and water, and would thus enhance carbon sequestration. This, in turn, contributes positively to efforts to mitigate human-induced global climate changes. In addition, the goals, objectives, and strategies proposed in the Draft CCP for Banks Lake NWR are an important first step in understanding and monitoring the potential threats related to climate change. The information obtained will help the Service modify and adapt its cache of management tools to protect refuge resources over the 15-year proposed plan.

OTHER MANAGEMENT

All management activities that could affect the refuge's natural resources, including subsurface mineral reservations; utility lines and easements; soils; water and air; and historical and archaeological resources would be managed to comply with all laws and regulations. In particular, any existing and future oil and gas exploration, extraction, and transport operations on the refuge would be managed identically under each of the alternatives. Thus, the impacts would be the same.

LAND ACQUISITION

Funding for land acquisition from willing sellers within the approved acquisition boundary of Banks Lake NWR would come from the Land and Water Conservation Fund; the Migratory Bird Conservation Fund; Corps of Engineers mitigation programs; other funding sources; or donations from conservation and private organizations. Conservation easements and leases can be used to obtain the minimum interests necessary to satisfy refuge objectives if the refuge staff can adequately manage uses of the areas for the benefit of wildlife. The Service can negotiate management agreements with local, state and federal agencies, and accept conservation easements. Some tracts within the refuge acquisition boundary may be owned by other public or private conservation organizations. The Service would work with interested organizations to identify additional areas needing protection and provide technical assistance if needed. The acquisition of private lands is entirely contingent on the landowners and their willingness to participate. Land acquisitions are deemed one of the most important conservation tools available, because they protect areas from development and fragmentation. Urbanization and associated activities are currently one of the greatest threats to ecosystems and the species that depend on them (McDonald 2008). Potential future land acquisitions around Banks Lake NWR will expand the protected area available to species currently utilizing the refuge. It would potentially allow improvement of the watershed, helping to maintain the water quality of the lake. In addition, there would likely be more areas available for wildlife-dependent recreation, to the benefit of local communities.

CULTURAL RESOURCES

All alternatives afford additional land protection and low levels of development, thereby producing little negative effect on the refuge's cultural and historic resources. Potentially negative effects could include construction of new trails or facilities. In most cases, these management actions would require review by

the Service's Regional Archaeologist in consultation with the State of Georgia's Historic Preservation Office, as mandated by Section 106 of the National Historic Preservation Act. Therefore, the determination of whether a particular action within an alternative has the potential to affect cultural resources is an on-going process that would occur during the planning stages of every project.

Service acquisition of land with known or potential archaeological or historical sites provides two major types of protection for these resources: protection from damage by federal activity and protection from vandalism or theft. The National Historic Preservation Act requires that any actions by a Federal agency which may affect archaeological or historical resources be reviewed by the State Historic Preservation Office, and that the identified effects must be avoided or mitigated. The Service's policy is to preserve these cultural, historic, and archaeological resources in the public trust, and avoid any adverse effects wherever possible.

Land acquisition, within the current acquisition boundary, by the Service would provide some degree of protection to significant cultural and historic resources. If acquisition of private lands does not occur and these lands remain under private ownership, the landowner would be responsible for protecting and preserving cultural resources. Development of off-refuge lands has the potential to destroy archaeological artifacts and other historical resources, thereby decreasing opportunities for cultural resource interpretation and research.

REFUGE REVENUE-SHARING

Annual refuge revenue-sharing payments to Lanier County would continue at similar rates under each alternative. If lands are acquired and added to the refuge, the payments would increase accordingly.

OTHER EFFECTS

Each of the alternatives would have similar effects or minimal to negligible effects on the soils; water quality and quantity; noise; transportation; human health and safety; children; hazardous materials; waste management; aesthetics and visual resources; and utilities.

SUMMARY OF EFFECTS BY ALTERNATIVE

The following section describes the environmental consequences of implementing each refuge management alternative. Table 14 summarizes and addresses the likely outcomes for the specific issues and is organized by broad issue categories.

Each of the alternatives is anticipated to result in net positive environmental benefits. Impacts anticipated under the implementation of each alternative are summarized for soils; air quality; hydrology and water quality; biological resources; and public opportunities.

ALTERNATIVE A: CURRENT MANAGEMENT (NO ACTION)

Implementation of Alternative A is anticipated to result in net positive environmental benefits.

The management activities outlined under Alternative A are anticipated to have net neutral to positive impacts on soils.

The management activities outlined under Alternative A would not have any significant effects on air quality. Currently, the refuge does not use controlled burning as a management tool on the refuge.

Water resources are not expected to improve significantly, and may decline under Alternative A. Information is inadequate to determine water quality status. There have been improvements with private septic systems adjacent to the lake, but the effect of these actions has not been quantified. The lack of information on fill and drain curves for the lake poses a potential issue to dam safety. Refuge and downstream water management structures are inadequate to efficiently draw down the lake.

The management activities outlined under Alternative A are anticipated to have net neutral impacts to biological resources. Currently, the refuge is maintaining habitat for wood storks, round-tailed muskrats, bald eagles and state-listed plants. The refuge adequately addresses alligator conservation and its public safety responsibility associated with this species. Any information the refuge collects regarding migratory birds would contribute to identifying future research or management needs. However, the refuge cannot contribute adequately to bird-aircraft mitigation efforts on neighboring MAFB due to lack of data. With regard to exotic and nuisance species, the refuge has reduced nonnative aquatic plants at levels to improve the fisheries and foraging of a variety of birds. The refuge takes action on other exotic life when it is brought to their attention. With regard to refuge habitats, management concentrates on manipulating water levels. The GBBL Ecosystem Plan addresses the desirable conditions but implementation is limited due to the lack of approved methods by all parties within the ecosystem. With regard to native fishes, game species have been managed at sustainable levels, but information is inadequate to access status of non sport fish populations. For reptiles and amphibians, the refuge has insufficient data to assess change or their population status.

Within this alternative, the effects of climate change on the refuge would not be adequately addressed. The consequences of increased temperatures, changes in precipitation, and the effects of these on biological resources would not be understood sufficiently. The refuge would not be able to adapt management in a proactive manner to deal with the impacts of climate change on its resources.

Under this alternative, resource protection is minimal. With less than one tenth of the refuge boundary surveyed and established, the refuge is unable to adequately protect refuge resources and resolve issues with adjacent landowners. Furthermore, the refuge is unable to acquire and protect adjacent lands that would contribute to accomplishing its mission due to a lack of an approved acquisition boundary. Additionally, urbanization is occurring at a rapid rate adjacent to the refuge with potential to negatively impact refuge resources, but the refuge does not have sufficient information to determine the exact types or levels of current or future threats facing the refuge. With regard to the drainage easement, continued development and understanding of refuge water rights affects the ability to drawdown the lake for management purposes. The potential of the GADOT wetland mitigation area to contribute to the refuge and the GBBL ecosystem has not been realized under this alternative. Cultural resource responsibilities have been adequately met in the public access area, but archaeological and historical data for the remainder of refuge is unknown. Under this alternative, law enforcement is unlikely to remain adequate in the future. The refuge provides a generally safe experience to the visiting public during daylight hours, however there has been a documented increase in illegal activities during early morning and evening hours.

Alternative A is minimal with regard to visitor services. The refuge provides some information and outreach to the public. Due to the limited landbase present on the refuge for huntable species, hunting is currently prohibited. There is a wide range of fishing opportunities available to the public including accessible fishing pier. Wildlife photography and viewing are available and enhanced via boating. However, unmarked submerged stumps and logs pose a safety issue for boaters. The lack

of boat trails facilitates dispersed small boating recreation. Environmental education and interpretive programs have been initiated but their potential remains largely unfulfilled. Other recreational opportunities such as camping, large group facilities, picnic shelters, airboating, personal watercraft, sailboats, and water skiing are currently not authorized. The refuge provides opportunities for commercial visitor services and the current concessionaire provides the public with a variety of public services and information. The lack of a Friends group specifically for Banks Lake NWR means more responsibility has been placed on OWL. The resident volunteer program has provided basic services (litter patrol, landscape maintenance, visitor contacts) that has benefited the refuge. OWL volunteers have provided needed support during special events.

All aspects of refuge administration are likely to benefit minimally under this alternative. There is inadequate presence and management capability to achieve refuge mission. Response to issues is generally on a reactive, not proactive, basis. With respect to infrastructure, the refuge provides the minimum necessary for its present public use program. Maintaining these facilities is negatively impacting the Okefenokee mission, as Banks Lake NWR does not have its own budget. Good communication and interaction with government entities and other partners positively impacts refuge planning and programs.

ALTERNATIVE B: EXPANDED MANAGEMENT BY THE SERVICE (PROPOSED ALTERNATIVE)

Implementation of Alternative B is anticipated to result in net positive environmental benefits.

The management activities outlined under Alternative B are anticipated to have net neutral impacts on soils, as no projects or programs are planned under this alternative that would affect this resource.

Likewise, the management activities outlined under Alternative B would not significantly affect air quality. The increase in engine exhaust from more cars and boats would be expected to have a minimal impact on this resource.

The management activities outlined under Alternative B are anticipated to have net positive impacts to water quality and hydrology. Implementation of this alternative would result in a better understanding of the water quality dynamics of Banks Lake and sources of contamination would be identified. In addition, the refuge would be better able to influence the regulatory process of local and state agencies to protect water quality which benefits wildlife and public health. The effects of lake-side septic systems would be reduced through the provision of municipal sewage treatment (county would have to implement). With regard to refuge hydrology, this action would lead to more efficient operation of the Banks Lake water control structure and more effective periodic water drawdowns.

The management activities outlined under Alternative B are anticipated to have net positive impacts to biological resources. For wood storks, round-tailed muskrats, and state-listed plants, the additional information gathered would facilitate better management to support recovery efforts. Management of bald eagles and alligators would remain the same as under Alternative A. In addition, the information gathered would facilitate better management to support migratory bird species populations within the GBBL site conservation plan, 2003. The identification of high bird concentration areas would assist MFAB in their efforts to avoid collisions with aircraft. This alternative would reduce the spread of nonnative and nuisance aquatic species. It would facilitate navigation of the waters and improve fish populations and fishing opportunities. Alternative B would also improve the refuge's ability to respond quickly to threats from nonnative aquatic and terrestrial wildlife and minimize the spread of these exotics. Periodic drawdowns have been beneficial in reducing submerged aquatic vegetation to less than 30 percent of the refuge's open water with a positive response on fish growth and production. Identification of benchmarks would allow for more timely planning and effective execution. The

additional information obtained under this alternative would allow the refuge to assess environmental changes and increase longleaf pine habitat (where appropriate), increase marsh, decrease scrub-shrub, and maintain Carolina bay habitat. The consequences of this alternative on native fishes is expected to be the same as Alternative A, although they are expected to result in better knowledge of the actual catch to improve the number and size of game fish. For reptiles and amphibians, information gathered will facilitate better management to support the species populations within the GBBL site conservation plan, 2003.

Under this alternative, the refuge would better understand the array of potential threats related to climate change. It would be in a better position to alter and adapt its management actions early, to minimize the impact of increasing temperatures and changes in precipitation on refuge habitats and wildlife species.

Resource protection is expected to benefit under this alternative. The refuge would settle the refuge boundary issue and proceed with management, conservation, and protection of all refuge lands. When the refuge acquisition boundary is established, the service and its partners would have a clear vision of land base needed to accomplish the refuge's purposes and vision. Land use plans and zoning ordinances would protect the refuge from the negative impacts of urbanization. Implementation of Alternative B would maintain the ability to drain Banks Lake when needed. An additional 1,100 acres (445 ha) of permanent wetlands would be managed to advance the refuge and GBBL ecosystem conservation site plan. Furthermore, additional information obtained through this alternative would assist the refuge in meeting its cultural resource responsibilities. A safer environment would be provided to the public during evening and night hours.

This alternative is anticipated to result in improved visitor services. If an entrance fee program is established, there would be increased funds for the refuge visitor services program, but an associated consequence would be the possibility that the fee may have the effect of reducing visitation. The refuge would provide for a better-informed and potentially more supportive public. This alternative may have a potential for hunting opportunities and should result in improved trophy fishing opportunities. It may also increase use and appreciation of wildlife viewing and photography on refuge. This alternative is likely to result in safer boat travel through refuge waters, but additional regulation may be required (speed limits, operational zones). Crowding and conflict may occur, and there could be an increase in maintenance and law enforcement. Establishment of a small canoe trail will provide additional opportunities for nonmechanized wildlife-dependent recreation. Under this alternative, there is expected to be an increase in environmental education and interpretation which could increase support of the refuge's vision and Service mission. Other recreational opportunities would not be authorized under this alternative. There would be a larger support group resulting from the establishment of a refuge friends group and an increase in volunteers.

This alternative is expected to result in positive consequences to refuge administration. An increase in staff and additional facilities would allow the refuge to achieve the goals and objectives of this plan. Intergovernmental coordination and refuge partnerships would remain the same as Alternative A.

ALTERNATIVE C: COOPERATIVE ADMINISTRATION WITH STATE NATURAL RESOURCE AGENCIES

Implementation of Alternative C is anticipated to result in net positive environmental benefits.

The management activities outlined under Alternative C are anticipated to have net neutral impacts on soils and soil formation processes.

The management activities outlined under Alternative C would not significantly affect air quality. The increase in engine exhaust from more cars and boats would be expected to have a minimal impact on this resource.

The management activities outlined under Alternative C are anticipated to have net positive impacts to hydrology and water quality, with similar consequences as Alternative B.

The management activities outlined under Alternative C are anticipated to have net positive impacts to biological resources. The consequences to listed terrestrial species, migratory birds, nonnative and nuisance species, native fishes, herpetological species, and habitats would be the same as under Alternative B. Listed birds (wood storks and bald eagles), could benefit through the use of artificial nesting structures that are proposed under this alternative. For alligators, more information would become available to manage this species, and conflicts with humans would be further minimized.

The management activities and consequences outlined under this alternative in response to the potential threats of climate change would be similar to those for Alternative B.

Resource protection would benefit much in the same way as Alternative B, including the refuge boundary, minimizing the effects of encroachment, the drainage easement, and cultural resources. However, land acquisition would change, with additional acres being secured for wildlife conservation and public recreation. Concerning the GADOT wetland mitigation area, wildlife dependent public use would increase on the refuge, the public would gain an additional access area, and recreational opportunities and refuge operational costs would be less than Alternative B. Under this alternative, the cost of refuge law enforcement programs would be less than Alternative B.

Alternative C would potentially have the greatest positive consequences on visitor services of the three alternatives. Although the consequences to the fee program, fishing, environmental education and wildlife observation and photography would remain the same as Alternative B, several of the other visitor services would increase substantially. The possibility to establish a potential hunting program would be greater under this alternative than under A or B. There would be a reduced cost to refuge, but at the same time there may be a potential loss of refuge identity to visiting public as they would interact less with the Service and more with a state entity. Boat trails would be the same as under Alternative B but may help with dispersion of the public. In addition, these new waterways could further increase maintenance and law enforcement needs. The state public land would have the potential to provide camping, large group facilities, and picnic shelters on nearby off-refuge lands, increasing the diversity of recreational opportunities available to the public. Under this alternative, a Friends group and volunteer cadre would receive a broader spectrum of support than under Alternative B.

Refuge administration would be affected in much the same manner as under Alternative B. However, with less Service staff required, there would be a cost saving to the refuge compared to Alternative B. One other important difference would be the consequences to intergovernmental coordination. There would be increased communication, interaction, and coordination responsibilities required in order to establish and maintain cooperative management agreements with state natural resource agencies.

COMPARISON OF EFFECTS FROM IMPLEMENTING ALTERNATIVES

While the three alternatives share similarities, their differences result in varying types and levels of impacts. None of the proposed management activities would lead to a violation of federal, state, or local laws imposed for the protection of the environment. Alternative A does not propose any change in the present management direction. As such, Alternative A serves as the baseline for comparing the other alternatives. Without funding and staffing to support needed programs and to provide protection for the

resources, Alternative A provides the least support for long-term productivity and sustainability of the refuge. Alternative C would provide the most benefits in terms of recreational opportunities on the refuge. Hence, this alternative would not provide for the most comprehensive improvements for the refuge. Ultimately, Alternative B would provide the most benefits to the refuge, the natural resources supported by the refuge, and the local community, supporting long-term productivity and sustainability of the refuge. Therefore, Alternative B was selected as the proposed action based on the analysis in the EA and its ability to best serve the purposes, vision, and goals of the refuge.

Adaptive management is a key component of each alternative. As such, the actions outlined would not establish a precedent for future actions with significant effects, nor represent a decision in principle about future considerations. Refuge management activities are constantly adapted as new research, data, and information become available.

Table 14 summarizes and compares the environmental effects for each of the three alternatives under four categories: wildlife and habitat management, resource protection, visitor services, and refuge administration.

Table 14. Summary of environmental effects by alternative, Banks Lake National Wildlife Refuge.

Key Topics	Alternative A: Current Management (No Action)	Alternative B: Expanded Management by the Service (Proposed Action)	Alternative C: Cooperative Administration with State Natural Resource Agencies
WILDLIFE AND HABITAT MANAGEMENT			
Rare, Threatened, and Endangered Species			
Wood Stork	Habitat for foraging wood storks would be maintained.	Information gathered would facilitate better management to support the species recovery plan	Nesting opportunities could increase.
Bald Eagle	Adequate information and protection to manage the species at current levels. Minimizing nest disturbance	Same as Alternative A	Nesting opportunities could increase.
Round-tailed Muskrat	Maintaining habitat that is appropriate for round-tailed muskrat	Increase information gathered would contribute to identifying future research or management needs.	Same as Alternative B.
Alligator	Adequately addressing conservation and public safety responsibility.	Increase information gathered would contribute to identifying future research or management needs. Increased public awareness to aid in minimizing alligator-human conflicts.	Increase information gathered would contribute to identifying future research or management needs. Increased public awareness to aid in minimizing alligator-human conflicts.
State-listed plants	Maintaining habitat to promote native plant communities.	Increased information gathered would contribute to identifying future research or management needs.	Same as Alternative B.

Migratory Birds			
Waterfowl	Increased information gathered would contribute to identifying future research or management needs	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003.	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003. Increased wildlife observation and photography opportunities.
Shorebirds	Increased information gathered would contribute to identifying future research or management needs	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003.	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003. Increased wildlife observation and photography opportunities.
Wading Birds	Increased information gathered would contribute to identifying future research or management needs	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003.	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003. Increased wildlife observation and photography opportunities.
Marshbirds	Increased information gathered would contribute to identifying future research or management needs.	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003.	Same as Alternative B

Raptors	Increased information gathered would contribute to identifying future research or management needs.	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003.	Same as Alternative B
Neotropical Birds	Increased information gathered would contribute to identifying future research or management needs.	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003.	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003. Increased populations utilizing the refuge.
Bird – Aircraft Collisions	Unable to identify concentration areas due to lack of data.	Identification of high concentration area to assist MFAB in their efforts to avoid collision.	Same as Alternative B
Native Fishes	Game species have been managed at sustainable levels. Information inadequate to access status of non sport fish populations.	Same as Alternative A with increased knowledge of actual catch to improve number and size of game fish.	Increased knowledge of actual catch to improve number and size of game fish, especially largemouth bass.
Herpetological Species (e.g. frogs, toads, snakes, and lizards)	Information inadequate to assess change of population status.	Information gathered would facilitate better management to support the species populations within the GBBL site conservation plan, 2003.	Same as Alternative B.
Exotic, Invasive, and Nuisance Species			
Control of Exotic Aquatic Plants	Refuge has been able to keep species (hyacinth) 20% or less on average. Addresses control of other exotics as they are noticed. Need facilities to clean boats and trailers leaving area. Current water control structure does not screen out exotic aquatic plants during high water events.	Reduced spread of exotics. Facilitate navigation of the waters and improve fish populations and fishing opportunities.	Same as Alternative B.

Non native aquatic wildlife	Addresses control of other exotics as they are noticed. Need facilities to clean boats and trailers leaving area. Current water control structure may not screen out exotic aquatic animals during high water events.	Improved ability to respond quickly to threats. Minimize spread of exotics.	Alternative same as B.
Any invasive terrestrial species?	Refuge takes action when an invasive is noticed.	Improved ability to respond quickly to threats. Minimize spread of exotics.	Same as Alternative B.
Wildlife and Habitat Diversity			
Open Water	Periodic drawdowns have been beneficial in reducing SAV to less than 30%. Positive response on fish growth and production.	Periodic drawdowns have been beneficial in reducing SAV to less than 30%. Would result in positive responses on fish growth and production. Identification of benchmarks would allow for more timely planning and effective execution.	Same as Alternative B.
Marshes	Desirable conditions addressed in the GBBL Ecosystem Plan. Avenues for implementing plan need to be covered by partner agreements.	Additional information would allow refuge to assess environmental change and increase marsh.	Same as Alternative B.
Scrub-Shrub	Desirable conditions addressed in the GBBL Ecosystem Plan. Avenues for implementing plan need to be covered by partner agreements.	Additional information will allow refuge to assess environmental change and decrease scrub/shrub	Same as Alternative B.
Carolina Bays	Desirable conditions addressed in the GBBL Ecosystem Plan. Avenues for implementing plan need to be covered by partner agreements.	Additional information would allow refuge to assess environmental change and maintain Carolina bays	Same as Alternative B.

Pine Flatwoods	Desirable conditions addressed in the GBBL Ecosystem Plan. Avenues for implementing plan need to be covered by partner agreements.	Additional information would allow refuge to assess environmental change and increase longleaf pine where appropriate.	Same as Alternative B.
Water Quantity and Water Quantity			
Water Quality	Water quality data is sporadic.	Better understanding of water quality dynamics of banks lake. Sources of contamination would be identified. Refuge would be better able to influence regulatory process of local and state agencies to protect water quality which protects wildlife and public health.	Same as Alternative B.
Water Quality-Private lakeside Septic Systems	There have been improvements with private septic systems adjacent to the lake. Effects of these improvements is not quantified	Would lead to a provision of municipal sewage treatment (county would have to implement).	Same as Alternative B.
Water quantity	Lack of info on fill and drain curves poses a potential dam safety issue. Refuge and downstream water control structures are inadequate to efficiently drawdown lake.	Would result in safer more efficient operation of the Banks Lake water control structure and periodic water drawdowns.	Same as Alternative B.
Climate Change			
Impacts of Climate Change	Information inadequate to assess the effects of climate change on the refuge and inability to effectively adjust management to mitigate those impacts.	Refuge would have a better understanding of the extent of impacts that climate change will have on its resources, enabling it to adjust management to mitigate, where possible, those negative consequences.	Refuge would have a better understanding of the extent of impacts that climate change will have on its resources, enabling it to adjust management to mitigate, where possible, those negative consequences.

RESOURCE PROTECTION			
Acquisition Boundary			
Refuge Boundary	With less than 1/3 of boundary surveyed and established, unable to adequately protect refuge resources and resolve issues with adjacent landowners.	Refuge would settle the refuge boundary issue and proceed with management, conservation, and protection of all refuge lands.	Same as Alternative B.
Land Acquisition	Refuge unable to acquire and protect adjacent lands that would contribute to accomplishing mission due to a lack of approved acquisition boundary.	The final size of the refuge would be adequate to accomplish the refuge mission.	Additional acres would be secured for public recreation.
Encroachment			
Local development	Urbanization is occurring at a rapid rate adjacent to the refuge with potential to negatively impact refuge resources.	Land use plans and zoning ordinances would help protect refuge from negative impacts of urbanization.	Additional lands outside the refuge that would come under state ownership could serve as watershed buffers and wildlife corridors, helping protect refuge resources.
Lease/Management Agreements			
Drainage easement	Continued development and lack of understanding of refuge water rights affects the ability to drawdown the lake for management purposes.	Would maintain the ability to drain Banks Lake when needed.	Would maintain the ability to drain Banks Lake when needed. Increased protection of riparian areas along the drainage.
Land Management Agreement	The potential of the GADOT wetland mitigation area to contribute to the refuge and the GBBL ecosystem has not been realized.	An additional 1,100 acres (445 ha) of permanent wetlands would be managed to advance the refuge and GBBL ecosystem conservation site plan.	Wildlife dependent public use would increase on the refuge; the public would gain an additional access area and recreational opportunities; and refuge operational costs would be less than under Alternative B.

Archaeological and Historical Resources	Cultural resource responsibilities have been adequately met in public access area. Archaeological and historical data for remainder of refuge is unknown.	Additional information obtained would assist the refuge in meeting its cultural resource responsibilities.	Same as Alternative B.
Law Enforcement	The refuge provides a generally safe experience to the visiting public during daylight hours. Documented increasing illegal activities during early morning and evening hours.	Safer environment would be provided to the public during evening and night hours.	The cost of refuge law enforcement program would be less than under Alternative B.
VISITOR SERVICES			
Visitor Welcome and Orientation			
Access	Adequate for current use	Improve access for the public	Would improve and expand access for the public
Entrance Fee Program	The refuge is not collecting entrance fee money	Fee money would increase funds for refuge visitor services program. Possibility of reducing visitation.	Could reduce visitation.
Providing Information to the Public	Refuge website and info provided at public access site provides minimal information to recognize that it is a refuge and follow refuge special regulations.	Would result in a better informed and supportive public.	Would reduce cost to refuge. Potential loss of refuge identity to visiting public could be unintended consequence.
Hunting Opportunities	No hunting opportunities for public.	Could have a potential for hunting opportunities.	Would have a greater potential to have hunting authorized than Alternatives A and B.

Fishing Opportunities	Wide range of fishing opportunities available to the public including accessible fishing pier	Could result in improved trophy fishing opportunities.	Same as Alternative B.
Wildlife Observation and Photography			
Wildlife Viewing and Photography Opportunities	Adequate and enhanced by boating opportunities.	Would likely increase use and appreciation of wildlife viewing and photography on refuge.	Would reduce cost to the Service, and could increase wildlife photography and observation opportunities to the public.
Boat Trails	Unmarked submerged stumps and logs pose a safety issue for boaters. Facilitates dispersed small boating recreation.	Would result in safer boat travel through refuge but additional regulation required (speed limits, operational zones). Crowding and conflict might occur. Other consequences would include increased maintenance and law enforcement. Establishment of a small canoe trail would provide additional opportunities for non mechanized wildlife dependent recreation.	Same as Alternative B but might help with dispersion of public. Could further increase maintenance and law enforcement needs.
Environmental Education Opportunities and Interpretation	Environmental education and interpretive programs initiated but potential remains largely unfulfilled.	Increased environmental education and interpretation. Increased support of the refuge mission.	Less cost to refuge than Alternative B.
Other Recreational Opportunities	Not authorized	Same as Alternative A.	State public lands would have the potential to provide camping, large group facilities, picnic shelters on lands outside the refuge.

Commercial Visitor Services	The refuge provides opportunities for commercial visitor services and Current concessionaire provides the public with a variety of public services and information.	Additional opportunities would be offered to commercial visitor service providers.	Less cost to refuge than Alternative B.
Outreach	Public adequately informed of refuge public use opportunities and proposed actions.	Better informed and supportive public	Refuge identity could be diminished.
Friends Group	More responsibility on OWL.	Establishing refuge friends group would result in a larger support group.	Would result in a broader spectrum of support from Alternative B.
Volunteers	Resident volunteer program has provided basic services (litter patrol, landscape maintenance, visitor contacts) that has benefited the refuge. OWL volunteers have provided needed support in special events.	Would result in a larger support group to maintain the refuge and assist in biological and visitor service programs.	Would result in a broader spectrum of support from Alternative B.
Control of Trash and Litter			
Control of Trash and Litter	Currently not an issue, adequate.	Same as Alternative A.	Reduced cost to refuge.
Monofilament Fishing Line	Recycling station is not being fully utilized.	Increased public understanding and support of program.	Same as Alternative B.
REFUGE ADMINISTRATION			
Refuge Management			
Staff	Inadequate presence and management capability to achieve refuge mission. Response to issues generally on a reactive not proactive basis.	Increased staff would allow us to achieve the goals and objectives of this plan.	Similar to Alternative B but less cost to Service.

Administrative Facilities, Utilities, Equipment, and Signs	Providing the minimum necessary for present public use program. Maintaining these facilities is negatively impacting the Okefenokee mission.	Additional facilities would allow us to achieve the goals and objectives of this plan.	Similar to Alternative B but less cost to Service.
Intergovernmental Coordination/Partnerships			
Intergovernmental Coordination	Good communication and interaction positively impacts refuge planning and programs	Same as Alternative A	Greater communication, interaction, and coordination responsibilities. To establish and maintain cooperative management agreements with state natural resource agencies.
Partnerships	Good communication and interaction positively impacts refuge planning and programs	Same as Alternative A	Same as Alternative A

UNAVOIDABLE IMPACTS AND MITIGATION MEASURES

Under Alternative A—the no action alternative—there are numerous unavoidable impacts, including law enforcement that would not be adequate for protecting any significant visitor use; a biological data set that would not be able to characterize the status of the plant and animal populations, and minimal services offered to the public. Furthermore, water quality would likely degrade due to urban and agricultural runoff, as well as leachates from lakeside septic systems. Over time, if these issues are not addressed, they will continue to impact refuge resources.

Alternative C, which was not chosen, had some unavoidable impacts. These impacts were expected to be minor and/or short-term in duration. Steps would be taken to minimize the impacts of these activities. On land, there would be disturbance to vegetation and soils due to the construction of additional trails and observation towers. Best management practices would be used to reduce construction-related runoff that could locally affect the lake's water quality.

Alternative B, the proposed alternative, also has some unavoidable impacts. These impacts are expected to be minor and/or short-term in duration. However, the refuge would attempt to minimize these impacts whenever possible. The following sections describe the measures the refuge would employ to mitigate and minimize the potential impacts that would result from implementation of the proposed alternative.

WATER QUALITY FROM SOIL DISTURBANCE AND USE OF HERBICIDES

Soil disturbance and siltation due to road maintenance; the construction of observation towers, and possible additional boat ramps are expected to be minor and of short duration. To further reduce potential impacts, the refuge would use best management practices to minimize the erosion of soils into water bodies.

Foot traffic on new or extended foot trails would be expected to have a negligible impact on soil erosion and compaction. To minimize the impacts from public use, the refuge would include informational signs that request trail users to remain on the trails, in order to avoid causing potential erosion problems.

Long-term herbicide use for exotic plant control could result in a slight decrease in water quality in areas prone to exotic plant infestation. Through the proper application of herbicides, however, this is expected to have a minor impact on the environment, with the benefit of reducing or eliminating exotic plant infestations.

WILDLIFE DISTURBANCE

Disturbance to wildlife is an unavoidable consequence of any public use program, regardless of the activity involved. While some activities such as wildlife observation could be less disturbing than others, all of the public use activities proposed under the proposed alternative would be planned to avoid unacceptable levels of impact.

The known and anticipated levels of disturbance from the proposed alternative are not considered to be significant. Nevertheless, the refuge would manage public use activities to reduce impacts. Providing access for fishing opportunities allows the use of a renewable natural resource without adversely impacting other resources. Hunting is currently not permitted on the refuge, but has been proposed in this plan to be evaluated as a potential future recreational opportunity. An analysis of the potential impacts of hunting on other resources and possible mitigation measures would be part of

that evaluation. General wildlife observation could result in minimal disturbance to wildlife. If the refuge determined that impacts from the expected additional visitor uses were above the levels that are anticipated, those uses would be discontinued, restricted, or rerouted to other less sensitive areas.

VEGETATION DISTURBANCE

Negative impacts could result from the creation, extension, and maintenance of trails that require the clearing of vegetation along their length. This is expected to be a minor short-term impact.

Increased visitor use could increase the potential for the introduction of new exotic species into areas when visitors do not comply with boating regulations at the boat ramps and other access points, or with requests to stay on trails. The refuge would minimize this impact by enforcing the regulations for access to the refuge's water bodies, and by installing informational signs that request users to stay on the trails.

USER GROUP CONFLICTS

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

EFFECTS ON ADJACENT LANDOWNERS

Implementation of the proposed alternative is not expected to negatively affect the owners of private lands adjacent to the refuge. Positive impacts that would be expected include higher property values, less intrusion of invasive exotic plants, and increased opportunities for viewing more diverse wildlife.

However, some negative impacts that may occur include a higher frequency of trespass onto adjacent private lands, and noise associated with increased traffic. To minimize these potential impacts, the refuge would provide informational signs that clearly mark refuge boundaries; maintain the refuge's existing parking facilities; use law enforcement; and provide increased educational efforts.

LAND OWNERSHIP AND SITE DEVELOPMENT

Land acquisition efforts by the Service could lead to changes in land use and recreational use patterns. However, most of the non-Service-owned lands within the refuge's approved acquisition boundary are currently undeveloped. If these lands were acquired as additions to the refuge, they would be maintained in a natural state, managed for native wildlife populations, and opened to wildlife-compatible public uses, where feasible.

Potential development of the refuge's buildings, trails, and other improvements could lead to minor short-term negative impacts on plants, soils, and some wildlife species. When building the observation towers, efforts would be made to use recycled products and environmentally-sensitive treated lumber. All construction activities would comply with the requirements of Section 404 of the Clean Water Act; the National Historic Preservation Act; Executive Order 11988, Floodplain Management; and other applicable regulatory requirements.

CUMULATIVE IMPACTS

A cumulative impact is defined as an impact on the natural or human environment, which results from the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or nonfederal) or person undertakes such other actions (40 Code of Federal Regulations, 1508.7).

Cumulative impacts are the overall, net effects on a resource that arise from multiple actions. Impacts can “accumulate” spatially, when different actions affect different areas of the same resource. They can also accumulate over the course of time, from actions in the past, the present and the future. Occasionally, different actions counterbalance one another, partially canceling out each other’s effect on a resource. But more typically, multiple effects add up, with each additional action contributing an incremental impact on the resource. In addition, sometimes the overall effect is greater than merely the sum of the individual effects, such as when one more reduction in a population crosses a threshold of reproductive sustainability, and threatens to extinguish the population.

A thorough analysis of impacts always considers their cumulative aspects, because actions do not take place in a vacuum: there are virtually always some other actions that have affected that resource in some way in the past, or are affecting it in the present, or will affect it in the reasonably foreseeable future. So any assessment of a specific action’s effects must in fact be made with consideration of what else has happened to that resource, what else is happening, or what else will likely happen to it.

The refuge is not aware of any past, present or future planned actions that would result in a significant cumulative impact when added to the refuge’s proposed actions, as outlined in the proposed alternative. Fishing, increased visitation, herbicidal spraying, and lake drawdowns would have negligible cumulative impacts.

- Hunting would be evaluated under both action alternatives according to Service criteria. As part of that process, the safety of neighboring residents would be considered. In addition, potential game species would be selected based on their known population levels to ensure that the activity would be sustainable.

- Fishing would not cause any cumulative effects. State catch limits and periodic stocking would ensure that fish stocks on the refuge would not be depleted. Fishing would be limited to certain areas to minimize any associated wildlife disturbance effects.

- The cumulative impacts of increased visitation would be minimal. Although nonconsumptive users can impact wildlife through disturbance, the seasonal closure of vulnerable areas (e.g. where wildlife are foraging or nesting) and use of natural "screens" (vegetation barriers) would minimize these adverse effects.

- Herbicides have been an effective tool in controlling water hyacinth on Banks Lake. Contact herbicides act quickly and kill all plants cells. Rodeo is currently being used on water hyacinth. The killing of large amounts of vegetation within the water column may cause water quality issues as the vegetation decomposes and reduces the dissolved oxygen. Glyphosate, the active ingredient in Rodeo, has been determined to not be toxic to most aquatic species tested (Siemering et al. 2008; Linz et al. 1999; Siemenstad et al. 1996). In addition, glyphosate has no significant potential to accumulate in animal tissue (Malik et al. 1989), so

there is not expected to be any substantial risk to the consumption of fish taken from areas recently sprayed. However, the refuge could temporarily halt fishing in the affected areas as a precaution. In water, glyphosate is strongly adsorbed to suspended organic and mineral matter and is broken down primarily by microorganisms. Its half-life in pond water ranges from 12 days to 10 weeks, so long-term residues or an accumulation in the environment are not an issue. In conclusion, the use of glyphosate-based herbicides to control water hyacinth on Banks Lake is not expected to have any cumulative effects.

- Lake drawdowns are periodically conducted to control submerged aquatic vegetation in Banks Lake as they can hinder boat traffic and inhibit fish populations, especially game species. Previous drawdowns have resulted in improved fish habitat, improved fish size structure and relative condition, and increased fishing opportunities for 2-3 years following the drawdown. Water quality during the drawdown may be characterized by lower levels of oxygen as fish become more concentrated in the remaining pools of water and has the potential to cause a fish kill. As water returns, more nutrients are expected within the water column from the dead plant material that will be covered with water. Under these conditions, low oxygen levels could exist if algal blooms occur during the re-flooding process. Each drawdown may result in a reduction in diversity and abundance of benthic invertebrates which may affect fish and wading bird populations temporarily. It is expected that populations of benthic invertebrates will rebound rapidly with the release of nutrients within the system. Therefore, a drawdown creates a reduced density of submerged plants facilitating movement of fish, greater opportunities to catch prey by fish and birds, and improves the food resources for a number of wildlife species. Over a longer period, these improvements will increase growth rates, the relative condition of the fish, and shift population size-structure. Along with the reduction of submerged vegetation that fowls motors and makes movement by the public difficult, the fisheries will be improved, increasing the catch rate. A more satisfying visit to the refuge will encourage return trips. The increase in visitors directly affects the concessionaire and local businesses. However, during the drawdown, the lake can not be utilized by the public, resulting in the loss of recreational opportunities and associated revenue for a period lasting four to six weeks. Overall, the lake drawdowns are not expected to have significant cumulative effects.

DIRECT AND INDIRECT EFFECTS OR IMPACTS

Direct effects are caused by an action and occur at the same time as the action. Indirect effects are caused by an action but are manifested later in time or further removed in distance, but still reasonably foreseeable.

The actions proposed for implementation under the proposed alternative include facility development; wildlife and population management; resource protection; public use; and administrative programs. These actions would result in both direct and indirect effects. Facility development, for example, would most likely lead to increased public use, a direct effect; and it, in turn, would lead to indirect effects such as increased littering, noise, and vehicular traffic.

Other indirect effects that may result from implementing the proposed alternative include minor impacts from siltation due to the disturbance of soils and vegetation while expanding or creating new foot trails; construction of the observation tower; and providing greater visitor access through the construction of new boat ramp(s).

SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

The habitat protection and management actions proposed under the proposed alternative are dedicated to maintaining the long-term productivity of refuge habitats. The benefits of this plan for long-term productivity far outweigh any impacts from short-term actions, such as the construction of observation towers or creation of new trails. While these activities would cause short-term negative impacts, the educational values and associated public support gained from the improved visitor experience would produce long-term benefits for the refuge's entire ecosystem.

The key to protecting and ensuring the refuge's long-term productivity is to find the threshold where public uses do not degrade or interfere with the refuge's natural resources. The plans proposed under the proposed alternative have been carefully conceived to achieve that threshold. Therefore, implementing the proposed alternative would lead to long-term benefits for wildlife protection and land conservation that far outweigh any short-term impacts.

V. Consultation and Coordination

INTRODUCTION

The comprehensive planning process for Banks Lake National Wildlife Refuge involved a wide variety of participants, including those from federal, state, and local governments; universities and other researchers; private nonprofit groups; and the Okefenokee Wildlife League, as well as a wide variety of local residents, local businesses, concerned citizens from all over the country, universities, and state and national organizations. Outreach efforts by the refuge and news coverage by the media have spread across the country. The list of participants, beyond those individuals and organizations providing comments during the public scoping process, includes the CCP Planning Team, the Wildlife and Habitat Management Review Team, the Visitor Services Review Team, the Wilderness Review Team, the Intergovernmental Coordination Planning Team, and other parties.

CCP PLANNING TEAM

The CCP Planning Team included representatives from the Service (i.e., from the refuge) and the Georgia Wildlife Resources Division, as well as a Service-contracted consultant from the Dynamac Corporation. The team met as a whole to review the all the issues, determine the priority issues, and identify potential solutions or approaches. A subset of the planning team, consisting of the refuge staff and the Service contractor, developed the Draft CCP/EA based on the information and direction provided by the CCP Planning Team.

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- Robert Brooks, Biologist
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Georgia Department of Natural Resources, Wildlife Resources Division

- Bert Deener, Regional Fisheries Supervisor
- Greg Nelms, Game Management Biologist

Dynamac Corporation (Consultant)

- Oliver van den Ende, Environmental Scientist/Ecologist

WILDLIFE AND HABITAT MANAGEMENT REVIEW TEAM

The Wildlife and Habitat Management Review Team included a core group of Service staff with invited participants and was organized by staff at the refuge and the Service's Southeast Regional Office. The invited participants included local and regional experts, researchers, and individuals with intimate knowledge of and experience regarding the resources of the refuge. These participants included

representatives from the Georgia Wildlife Resources Division, Moody Air Force Base, Jones Ecological Research Center, and The Nature Conservancy. The wildlife and habitat management review was conducted in November 2007.

U.S. Fish and Wildlife Service

- Sara Aicher, Supervisory Biologist, Okefenokee NWR
- Dean Easton, Biologist, Okefenokee NWR
- Vince Carver, Fire Management Officer, Pocosin Lakes NWR
- Dean Demarest, Biologist, Division of Migratory Birds (Atlanta)
- Frank Parauka, Fisheries Biologist, Division of Fisheries and Habitat Conservation (Panama City)
- Laura Housh, Regional Planner, National Wildlife Refuge System (Folkston)

Georgia Wildlife Resources Division

- Don Harrison, Fisheries Biologist
- Greg Nelms, Game Management Biologist

Moody Air Force Base

- Greg Lee, Environmental Flight Supervisory Biologist

Other Invited Experts

- Woody Hicks, Hydrologist, Jones Ecological Research Center
- Alison McGee, Conservation Biologist, The Nature Conservancy (Darien)

VISITOR SERVICES REVIEW TEAM

The Visitor Services Review Team consisted of Service staff from the Okefenokee NWR, Southeast Regional Office, and other refuges. The review team met with the Refuge Manager, George Constantino and Refuge Rangers Jim Burkhart, Shawn Gillette, and Gracie Gooch. The public use review for the refuge was conducted in September 2007.

- Deborah Jerome, Visitor Services and Outreach, R4-RO
- Amy Ochoa, Savannah Coastal Refuge Complex
- Pam Darty, Lower Suwannee National Wildlife Refuge

WILDERNESS REVIEW TEAM

The Wilderness Review Team consisted of staff from Okefenokee NWR and the regional lanner. The wilderness review was completed in February 2008.

- George Constantino, Refuge Manger, Okefenokee NWR
- Maury Bedford, Deputy Refuge Manager, Okefenokee NWR
- Jim Burkhart, Supervisory Ranger, Okefenokee NWR
- Sara Aicher, Supervisory Biologist, Okefenokee NWR
- Mike Housh, Fire Management Officer, Okefenokee NWR
- Laura Housh, Regional Planner, National Wildlife Refuge System (Folkston)

INTERGOVERNMENTAL COORDINATION PLANNING TEAM

The participants on the Intergovernmental Coordination Planning Team included local, state, and federal governmental field staff representatives involved with the resources at the local and regional levels, including representatives from U.S. Fish and Wildlife Service. An intergovernmental scoping meeting was held in January 2008.

U.S. Fish and Wildlife Service

- George Constantino, Refuge Manger, Okefenokee NWR
- Maury Bedford, Deputy Refuge Manager, Okefenokee NWR
- Jim Shelton, Refuge Officer, Okefenokee NWR
- Jim Burkhart, Supervisory Ranger, Okefenokee NWR
- Sara Aicher, Supervisory Biologist, Okefenokee NWR
- Mike Housh, Fire Management Officer, Okefenokee NWR
- Laura Housh, Regional Planner, National Wildlife Refuge System (Folkston, Georgia)
- Oliver van den Ende, Environmental Scientist, Dynamac Corporation (Service contractor), Cape Canaveral, Florida

Georgia Wildlife Resources Division

- Bert Deener, Regional Fisheries Supervisor
- Greg Nelms, Game Management Biologist

Moody Air Force Base

- Greg Lee, Environmental Flight Supervisory Biologist

Lanier County

- Albert Studstill, Lanier County, County Manager
- Harold Simpson, Lanier County, County Commissioner
- Nick Norton, Lanier County, Sheriff

City of Lakeland

- Robbie Grantham, City of Lakeland, Chief of Police

In addition, a variety of other governmental representatives were kept informed throughout the process, as listed in the following table.

Title	Location	Contact
U.S. Senator The Honorable Saxby Chambliss	North Georgia Office 100 Galleria Parkway Suite 1340 Atlanta, GA 30339 Main: 770-763-9090 Fax: 770-226-8633	
U.S. Senator The Honorable Johnny Isakson	One Overton Park, Suite 970 3625 Cumberland Blvd Atlanta, GA 30339 Tel: (770) 661-0999 Fax: (770) 661-0768	
U.S. Congressman The Honorable Jack Kingston	P.O. Box 5264 Valdosta, GA 31603-5264 Phone: (229) 247-9188 Fax: (229) 247-9189	
Governor of Georgia The Honorable Sonny Perdue	Office of the Governor, Georgia State Capitol, Atlanta, GA 30334 Phone: 404-656-1776	
Director, Georgia Wildlife Resources Division	Georgia Wildlife Resources Division, Department of Natural Resources 2070 U.S. Highway 278, SE Social Circle, Georgia 30025	Dan Forster
Georgia State Clearinghouse (state agency reviews)	Georgia State Clearinghouse 270 Washington Street, S.W., 8th Floor Atlanta, Georgia 30334 (404) 656-3855	Barbara Jackson
Region Supervisor , South Central Region VI Georgia Dept of Natural Resources, Wildlife Resources Division	P. O. Box 2089, 108 Darling Ave. Waycross, GA 31501 Phone (912) 285-6094 Fax (912) 285-6115	Bert Deener

Title	Location	Contact
Wildlife Biologist, Georgia Dept of Natural Resources, Wildlife Resources Division	108 Darling Ave. Waycross, GA 31501 Phone:912-285-6094 FAX: 912-285-6115 don_harrison@mail.dnr.state.ga.us	Don Harrison
Lanier County Sheriff's Office	100 Main Street Lakeland, GA 31635 Phone: 229 482 3545	Sheriff Nick Norton
Valdosta-Lowndes County Chamber of Commerce President	416 North Ashley Street P.O. Box 790 Valdosta, GA 31602 Phone (229) 247-8100 Fax (229) 245-0071 Email: mballard@valdostachamber.com	Myrna Ballard
Moody AFB Asset Management Flight Natural Resources Management Element	23 CES/CEVA 3485 Georgia Street Moody AFB, GA 31699-1707 gregory.lee@moody.af.mil 229-257-5881	Gregory W. Lee
Grand Bay Wetland Education Center	4661 Knights Academy Road P.O. Box 3834 Valdosta, GA 31604 229-333-0052 nedahon@earthlink.net	Neda Hon
Director, Lanier County Chamber of Commerce	PO Box 215 Lakeland, GA 31635 llcoc@windstream.net	Jerome Tucker
Georgia Natural Heritage Program – Wildlife & Natural Heritage Section Georgia Department of Natural Resources	2065 US Hwy. 278 SE Social Circle , 30025 Phone: 706-557-3032 Fax: 706-557-3033 Email: matt_elliott@dnr.state.ga.us	Matt Elliott

Title	Location	Contact
Georgia Bass Federation Southern Division Director	2207 Park Lane Valdosta, Ga. 31602 (H) (229) 247-4553 (cell) (229) 561-1499 (fax) (229) 247-4841 jerrylmckinney@bellsouth.net	Jerry McKinney
The Nature Conservancy	US Highway 17 South, Butler Island PO Box 484 Darien, GA 31305-0484 Phone: 912 437 2161 Ext 221 Fax: 912 437 5368 Email: jspratt@tnc.org	Jeff Spratt
The Nature Conservancy	US Highway 17 South, Butler Island PO Box 484 Darien, GA 31305-0484 amcgee@TNC.ORG	Alison McGee
Georgia District 7 Senator Greg Goggans	303-A CLOB Atlanta, GA 30334 Phone: (404) 463-5263 Fax: (404) 656-6484 greg.goggans@senate.ga.gov	Betty Conner, Legislative Assistant
Georgia District 1 Representative Jay Neal	PO Box 645 LaFayette, GA 30728 423.298.6217 - Office 706.866.2237 - Fax dralston1@etcmail.com	
Historic Preservation Officer Seminole Nation of Oklahoma	P.O. Box 1498 Wewoka, OK 74884 1-405-257-7292 Office 1-405-257-7209 FAX www.seminolenation.com	Pare Bowlegs
Lanier County County Administrator	100 Main Street Lakeland, GA 31635 Phone: (229) 482-3895 / 4822088 albertstudstill@yahoo.com	Albert Studstill

Title	Location	Contact
GADNR Historic Preservation Division Division Director & Deputy State Historic Preservation Officer	34 Peachtree Street, NW Suite 1600 Atlanta, GA 30303 phone 404-651-5061 fax 404-657-1046 Email: ray.luce@dnr.state.ga.us	Ray Luce
GADOT Office Environment/Location	3993 Aviation Circle Atlanta, GA 30336 Phone: 404-699-4433 Lisa.westberry@dot.state.ga.us	Lisa Westberry
USDA-Natural Resources Conservation Service Waycross Area Office Resource Conservationist	Federal Building, Rm. 214 601 Tebeau Street P. O. Box 797 Waycross, Georgia 31501-0797 phone: (912) 283-5598 Email: david.walden@ga.usda.gov	David Walden
USFWS Brunswick ES	4270 Norwich St. Brunswick, GA 31520-2523 phone: 912-265-9336 (x25) FAX: 912-265-1061 email:Robert_Brooks@fws.gov	Robert Brooks
USFWS Panama City ES & Fisheries Resources Project Leader	1601 Balboa Avenue Panama City, FL 32405 Phone: 850/769 0552 Fax: 850/763 2177 email: gail_carmody@fws.gov	Gail Carmody

Appendix A. Glossary

Acquisition Boundary: A refuge acquisition boundary is an administrative line delineating areas in which the Service may consider negotiations for inclusion of those areas within the management of the particular national wildlife refuge in question. The Service's policy is to acquire property or interests in property only from willing sellers. Rarely, friendly condemnation has been used, working with willing sellers, to address specific issues, such as title defects. Lands within a refuge acquisition boundary do not become part of the refuge unless and until a legal interest is acquired (e.g., through a management agreement, easement, lease, donation, or purchase). Properties within an acquisition boundary are not subject to any refuge regulations or jurisdiction unless and until an interest is acquired.

Adaptive Management: Refers to a process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in management plan. Analysis of results help managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

Alluvial: Sediment transported and deposited in a delta or riverbed by flowing water.

Alternative: 1. A reasonable way to fix the identified problem or satisfy the stated need (40 CFR 1500.2). 2. Alternatives are different sets of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the Refuge System mission, and resolving issues (Service Manual 602 FW 1.6B).

Anadromous: Migratory fishes that spend most of their lives in the sea and migrate to fresh water to breed.

Biological Diversity: The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (USFWS Manual 052 FW 1. 12B). The System’s focus is on indigenous species, biotic communities, and ecological processes. Also referred to as Biodiversity.

Carolina Bay Elliptical depressions concentrated along the Atlantic seaboard within coastal Delaware, Maryland, New Jersey, North Carolina, South Carolina, Virginia, Georgia, and northcentral Florida

Carrying Capacity: The maximum population of a species able to be supported by a habitat or area.

Categorical Exclusion (CE,CX, CATEX, CATX):	A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4).
CFR:	Code of Federal Regulations.
Compatible Use:	A proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose(s) of the national wildlife refuge (50 CFR 25.12 (a)). A compatibility determination supports the selection of compatible uses and identifies stipulations or limits necessary to ensure compatibility.
Comprehensive Conservation Plan (CCP):	A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates (Service Manual 602 FW 1.6 E).
Concern:	See Issue
Cover Type:	The present vegetation of an area.
Cultural Resource Inventory:	A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined geographic area. Inventories may involve various levels, including background literature search, comprehensive field examination to identify all exposed physical manifestations of cultural resources, or sample inventory to project site distribution and density over a larger area. Evaluation of identified cultural resources to determine eligibility for the National Register follows the criteria found in 36 CFR 60.4 (Service Manual 614 FW 1.7).
Cultural Resource Overview:	A comprehensive document prepared for a field office that discusses, among other things, it's prehistory and cultural history, the nature and extent of known cultural resources, previous research, management objectives, resource management conflicts or issues, and a general statement on how program objectives should be met and conflicts resolved. An overview should reference or incorporate information from a field offices background or literature search described in Section VIII of the Cultural Resource Management Handbook (Service Manual 614 FW 1.7).
Cultural Resources:	The remains of sites, structures, or objects used by people in the past.

Designated Wilderness Area:	An area designated by the United States Congress to be managed as part of the National Wilderness Preservation System (Draft Service Manual 610 FW 1.5).
Disturbance:	Significant alteration of habitat structure or composition. May be natural (e.g., fire) or human-caused events (e.g., aircraft overflight).
Ecosystem:	A dynamic and interrelating complex of plant and animal communities and their associated nonliving environment.
Ecosystem Management:	Management of natural resources using system-wide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and basic ecosystem processes are perpetuated indefinitely.
Endangered Species (Federal):	A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.
Endangered Species (State):	A plant or animal species in danger of becoming extinct or extirpated in the state within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.
Environmental Assessment (EA):	A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).
Environmental Impact Statement (EIS):	A detailed written statement required by section 102(2)(C) of the National Environmental Policy Act, analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).
Finding of No Significant Impact (FONSI):	A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a Federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared (40 CFR 1508.13).
Goal:	Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (Service Manual 620 FW 1.6J).

Habitat:	Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.
Habitat Restoration:	Management emphasis designed to move ecosystems to desired conditions and processes, and/or to healthy ecosystems.
Habitat Type:	See Vegetation Type.
Improvement Act.:	The National Wildlife Refuge System Improvement Act of 1997.
Informed Consent:	The grudging willingness of opponents to “to along” with a course of action that they actually oppose (Bleiker).
Issue:	Any unsettled matter that requires a management decision, e.g., an initiative, opportunity, resource management problem, threat to the resources of the unit, conflict in uses, public concern, or other presence of an undesirable resource condition (Service Manual 602 FW 1.6K).
Management Alternative:	See Alternative
Management Concern:	See Issue
Management Opportunity:	See Issue
Migration:	The seasonal movement from one area to another and back.
Mission Statement:	Succinct statement of the unit’s purpose and reason for being.
Monitoring:	The process of collecting information to track changes of selected parameters over time.
National Environmental Policy Act of 1969 (NEPA):	Requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (40 CFR 1500).
National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57):	Under the Refuge Improvement Act, the U.S. Fish and Wildlife Service is required to develop 15-year Comprehensive Conservation Plans for all National Wildlife Refuges outside Alaska. The Act also describes the six public uses given priority status within the NWRS (i.e., hunting, fishing, wildlife observation, photography, environmental education, and interpretation).

National Wildlife Refuge System Mission:	The mission is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.
National Wildlife Refuge System:	Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction; all lands, waters, and interests therein administered by the Secretary as wildlife refuges; areas for the protection and conservation of fish and wildlife that are threatened with extinction; wildlife ranges; games ranges; wildlife management areas; or waterfowl production areas.
National Wildlife Refuge:	A designated area of land, water, or an interest in land or water within the System.
Native Species:	Species that normally live and thrive in a particular ecosystem.
Notice of Intent (NOI):	A notice that an environmental impact statement will be prepared and considered (40 CFR 1508.22). Published in the Federal Register.
Noxious Weed:	A plant species designated by federal or state law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insect or disease; or nonnative, new, or not common to the United States, according to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or had adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the Untied States and to the public health.
Objective:	A concise statement of what we want to achieve, how much we want to achieve, when and where we want to achieve it, and who is responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring refuge accomplishments, and evaluating the success of strategies. Making objectives attainable, time-specific, and measurable (Service Manual 602 FW 1.6N).
Plant Association:	A classification of plant communities based on the similarity in dominants of all layers of vascular species in a climax community.
Plant Community:	An assemblage of plant species unique in its composition; occurs in particular locations under particular influences; a reflection or integration of the environmental influences on the site such as soils, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community.

Preferred Alternative: This is the alternative determined [by the decision maker] to best achieve the Refuge purpose, vision, and goals; contributes to the Refuge System mission, addresses the significant issues; and is consistent with principles of sound fish and wildlife management.

Prescribed Fire: The application of fire to wildland fuels to achieve identified land use objectives (Service Manual 621 FW 1.7). May be from natural ignition or intentional ignition.

Priority Species: Fish and wildlife species that the Washington Department of Fish and Wildlife believe require protective measures and/or management guidelines to ensure their perpetuation. Priority species include the following: (1) state-listed and candidate species; (2) species or groups of animals susceptible to significant population declines within a specific area or statewide by virtue of their inclination to aggregate (e.g., seabird colonies); and (3) species of recreation, commercial, and/or tribal importance.

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

Public Involvement: A process that offers impacted and interested individuals and organizations an opportunity to become informed about, and to express their opinions on Service actions and policies. In the process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.

Public: Individuals, organizations, and groups; officials of federal, state, and local government agencies; Indian tribes; and foreign nations. It may include anyone outside the core planning team. It includes those who may or may not have indicated an interest in service issues and those who do or do not realize that Service decisions may affect them.

Purposes of the Refuge: "The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge sub-unit." For refuges that encompass Congressionally designated wilderness, the purposes of the Wilderness Act are additional purposes of the refuge (Service Manual 602 FW 106 S).

Recommended Wilderness: Areas studied and found suitable for wilderness designation by both the Director and Secretary, and recommended for designation by the President to Congress. These areas await only legislative action by congress in order to become part of the Wilderness System. Such areas are also referred to as "pending in Congress" (Draft Service Manual 610 FW 1.5).

Record of Decision (ROD):	A concise public record of decision prepared by the Federal agency, pursuant to NEPA, that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).
Refuge Goal:	See Goal.
Refuge Purposes:	See Purposes of the Refuge
Songbirds: (Also Passerines)	A category of birds that are medium to small, perching landbirds. Most are territorial singers and migratory.
Specific Conductance	A measure of how well water can conduct an electrical current. Conductivity increases with increasing amount and mobility of ions. It is an indirect measure of the presence of dissolved solids such as chloride, nitrate, sulfate, phosphate, sodium, magnesium, calcium, and iron, and can be used as an indicator of water pollution.
Step-down Management Plan:	A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, safety) or groups of related subjects. It describes strategies and implementation schedules for meeting CCP goals and objectives (Service Manual 602 FW 1.6 U).
Strategy:	A specific action, tool, technique, or combination of actions, tools, and techniques used to meet unit objectives (Service Manual 602 FW 1.6 U).
Study Area:	The area reviewed in detail for wildlife, habitat, and public use potential. For purposes of this CCP/EIS the study area includes the lands within the currently approved Refuge boundary and potential Refuge expansion areas.
Threatened Species (Federal):	Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
Threatened Species (State):	A plant or animal species likely to become endangered in the state within the near future if factors contributing to population decline or habitat degradation or loss continue.
U.S. Fish and Wildlife Service Mission:	The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.

Vegetation Type, Habitat Type, Forest Cover Type: A land classification system based upon the concept of distinct plant associations.

Vision Statement: A concise statement of what the planning unit should be, or what we hope to do, based primarily upon the Refuge System Mission and specific refuge purposes, and other mandates. We will tie the vision statement for the refuge to the mission of the Refuge System; the purpose(s) of the refuge; the maintenance or restoration of the ecological integrity of each refuge and the Refuge System; and other mandates (Service Manual 602 FW 1.6 Z).

Wilderness Study Areas: Lands and waters identified through inventory as meeting the definition of wilderness and undergoing evaluation for recommendation for inclusion in the Wilderness System. A study area must meet the following criteria:

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

Wilderness: See Designated Wilderness

Wildfire: A free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands (Service Manual 621 FW 1.7).

ACRONYMS AND ABBREVIATIONS

BCC Birds of Conservation Concern
BRT Biological Review Team
CCP Comprehensive Conservation Plan
CFR Code of Federal Regulations
CFS cubic feet per second
DOI Department of the Interior
DU Ducks Unlimited
EA Environmental Assessment
EE environmental education
EIS Environmental Impact Statement
EPA U.S. Environmental Protection Agency
ESA Endangered Species Act
FR Federal Register
FTE full-time equivalent
FY Fiscal Year
GIS Global Information System
KPH kilometers per hour
NEPA National Environmental Policy Act
NRHP National Register of Historic Places
NWR National Wildlife Refuge
NWRS National Wildlife Refuge System
PFT permanent full time
PUNA Public Use Natural Area
RM Refuge Manual
RNA Research Natural Area
ROD Record of Decision
RONS Refuge Operating Needs System
RRP Refuge Roads Program
Service U.S. Fish and Wildlife Service (also, FWS)
TFT temporary full time
USC United States Code
USFWS U.S. Fish and Wildlife Service

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Appendix C. Relevant Legal Mandates and Executive Orders

STATUE	DESCRIPTION
Administrative Procedures Act (1946)	Outlines administrative procedures to be followed by Federal agencies with respect to identification of information to be made public; publication of material in the Federal Register; maintenance of records; attendance and notification requirements for specific meetings and hearings; issuance of licenses; and review of agency actions.
American Antiquities Act of 1906	Provides penalties for unauthorized collection, excavation, or destruction of historic or prehistoric ruins, monuments or objects of antiquity on lands owned or controlled by the United States. The Act authorizes the President to designate as national monuments objects or areas of historic or scientific interest on lands owned or controlled by the Unites States.
American Indian Religious Freedom Act of 1978	Protects the inherent right of Native Americans to believe, express, and exercise their traditional religions, including access to important sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.
Americans With Disabilities Act of 1990	Intended to prevent discrimination of and make American Society more accessible to people with disabilities. The Act requires reasonable accommodations to be made in employment, public services, public accommodations, and telecommunications for persons with disabilities.
Anadromous Fish Conservation Act of 1965, as amended	Authorizes the Secretary of the Interior and Commerce to enter into cooperative agreements with states and other non-federal interest for conservation, development, and enhancement of anadromous fish and contribute up to 50 percent as the federal share of the cost of carrying out such agreements. Reclamation construction programs for water resource projects needed solely for such fish are also authorized.
Archaeological Resources Protection Act of 1979, as amended.	This act strengthens and expands the protective provisions of the Antiquities Act of 1906 regarding archaeological resources. It also revised the permitting process for archaeological research.
Architectural Barriers Act of 1968	Requires that buildings and facilities designed, constructed, or altered with Federal funds, or leased by a Federal agency, must comply with standards for physical accessibility.
Bald and Golden Eagle Protection Act of 1940, as amended	Prohibits the possession, sale or transport of any bald or golden eagle, alive or dead, or part, nest, or egg except as permitted by the Secretary of the Interior for scientific or exhibition purposes, or for the religious purposes of Indians.

STATUE	DESCRIPTION
Clean Air Act of 1970	Regulates air emissions from area, stationary, and mobile sources. This Act and its amendments charge Federal land managers with direct responsibility to protect the “sir quality and related values” of land under their control. These values include fish, wildlife, and their habitats.
Clean Water Act of 1974, as amended	This Act and its amendments have as its objective the restoration and maintenance of the chemical, physical, and biological integrity of the Nation’s waters. Section 401 of the Act requires that Federally permitted activities comply with the Clean Water Act standards, state water quality laws, and any other appropriate state laws. Section 404 charges the U.S. Army Corps of Engineers with regulating discharge of dredge or fill materials into waters of the United States, including wetlands.
Emergency Wetlands Resources Act of 1986	This Act authorized the purchase of wetlands from Land and Water Conservation Fund moneys, removing a prior prohibition on such acquisitions. The Act requires the Secretary to establish a National Wetlands Priority Conservation Plan, required the States to include wetlands in their Comprehensive Outdoor Recreation Plans, and transfers to the Migratory Bird Conservation Fund amounts equal to import duties on arms and ammunition. It also established entrance fees at National Wildlife Refuges.
Endangered Species Act of 1973, as amended	Provides for the conservation of threatened and endangered species of fish, wildlife, and plants by Federal action and by encouraging the establishment of state programs. It provides for the determination and listing of endangered and threatened species and the designation of critical habitats. Section 7 requires refuge managers to perform internal consultation before initiating projects that affect or may affect endangered species.
Environmental Education Act of 1990	This act established the Office of Environmental Education within the Environmental Protection Agency to develop and administer a Federal environmental education program in consultation with other Federal natural resource management agencies, including the Fish and Wildlife Service.
Farmland Protection Policy Act of 1981, as amended	The purpose of this law is to minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. Federal programs include construction projects and the management of federal lands.
Federal Advisory Committee Act (1972), as amended	Governs the establishment of and procedures for committees that provide advice to the federal government. Advisory committees may be established only if they will serve a necessary, nonduplicative function. Committees must be strictly advisory unless otherwise specified and meetings must be open to the public.

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

STATUE	DESCRIPTION
Improvement Act of 1978	This act was passed to improve the administration of fish and wildlife programs and amends several earlier laws, including the Refuge Recreation Act, the National Wildlife Refuge Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out volunteer programs.
Fish and Wildlife Programs Improvement and National Wildlife Refuge System Centennial Act of 2000	Recognizes the vital importance of the Refuge System and the fact that the System will celebrate its centennial anniversary in the year 2003. Established the National Wildlife Refuge System Centennial Commission to prepare a plan to commemorate the 100th anniversary of the System, coordinate activities to celebrate that event, and host a conference on the National Wildlife Refuge System. The commission is also responsible for developing a long-term plan to meet the priority operations; maintenance and construction needs for the System, and improve public use programs and facilities.
Freedom of Information Act, 1966	Requires all Federal agencies to make available to the public for inspection and copying administrative staff manuals and staff instructions, official, published and unpublished policy statements, final orders deciding case adjudication, and other documents. Special exemptions have been reserved for nine categories of privileged material. The Act requires the party seeking the information to pay reasonable search and duplication costs.
Lacey Act of 1900, as amended	Originally designed to help states protect their native game animals and to safeguard U.S. crop production from harmful foreign species. This Act prohibits interstate and international transport and commerce of fish, wildlife or plant taken in violation of domestic or foreign laws. It regulates the introduction to America of foreign species into new locations.
Land and Water Conservation Fund Act of 1948	This act provides funding through receipts from the sale of surplus federal land, appropriations from oil and gas receipts from the outer continental shelf, and other sources for land acquisition under several authorities. Appropriations from the fund may be used for matching grants to states for outdoor recreation projects and for land acquisition by various federal agencies including the Fish and Wildlife Service.
Migratory Bird Conservation Act of 1929	Established a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds. The role of the Commission was expanded by the North American Wetland Conservation Act to include approving wetlands acquisition, restoration, and enhancement proposals recommended by the North American Wetlands Conservation Council.

STATUE	DESCRIPTION
Migratory Bird Hunting and Conservation Stamp Act of 1934	Also commonly referred to as the Duck Stamp Act", requires waterfowl hunters 16 years of age or older to possess a valid Federal hunting stamp. Receipts from the sale of the stamp are deposited into the Migratory Bird Conservation Fund for the acquisition of migratory bird refuges.
Migratory Bird Treaty Act of 1918, as amended	This Act implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Except as allowed by special regulations, this Act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, barter, export or import any migratory bird, part, nest, egg or product.
National and Community Service Act of 1990	Authorizes several programs to engage citizens of the U.S. in full- and/or part-time projects designed to combat illiteracy and poverty, provide job skills, enhance educational skills, and fulfill environmental needs. Among other things, this law establishes the American Conservation and Youth Service Corps to engage young adults in approved human and natural resource projects, which will benefit the public or are carried out on Federal or Indian lands.
National Environmental Policy Act of 1969	Requires analysis, public comment, and reporting for environmental impacts of Federal actions. It stipulates the factors to be considered in environmental impact statements, and requires that Federal agencies employ an interdisciplinary approach in related decision-making and develop means to ensure that unqualified environmental values are given appropriate consideration, along with economic and technical considerations.
National Historic Preservation Act of 1966, as amended	It establishes a National Register of Historic Places and a program of matching grants for preservation of significant historical features. Federal agencies are directed to take into account the effects of their actions on items or sites listed or eligible for listing in the National Register.
National Trails System Act (1968), as amended	Established the National Trails System to protect the recreational, scenic and historic values of some important trails. National Recreation Trails may be established by the Secretaries of Interior or Agriculture on land wholly or partly within their jurisdiction, with the consent of the involved State(s), and other land managing agencies, if any. National Scenic and National Historic Trails may only be designated by an Act of Congress. Several National Trails cross units of the National Wildlife Refuge System.
National Wildlife Refuge System Administration Act of 1966	Prior to 1966, there was no single Federal Law that governed the administration of the various wildlife refuges that had been established. This Act defines the National Wildlife Refuge System and authorizes the Secretary of the Interior to permit any use of an area provided such use is compatible with the major purposes(s) for which the area was established.

STATUE	DESCRIPTION
National Wildlife Refuge System Improvement Act of 1997	This Act amends the National Wildlife Refuge System Administration Act of 1966. This Act defines the mission of the National Wildlife Refuge System, establishes the legitimacy and appropriateness of six priority 'wildlife-dependent' public uses, establishes a formal process for determining 'compatible uses' of System lands, identifies the Secretary of the Interior as responsible for managing and protecting the System, and requires the development of a comprehensive conservation plan for all refuges outside of Alaska.
Native American Graves Protection and Repatriation Act of 1990	Requires Federal agencies and museums to inventory, determine ownership of, and repatriate certain cultural items and human remains under their control or possession. The Act also addresses the repatriation of cultural items inadvertently discovered by construction activities on lands managed by the agency.
Neotropical Migratory Bird Conservation Act of 2000	Establishes a matching grants program to fund projects that promote the conservation of Neotropical migratory birds in the united States, Latin America and the Caribbean.
North American Wetlands Conservation Act of 1989	Provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on wetlands between Canada, U.S. and Mexico. North American Wetlands Conservation Council is created to recommend projects to be funded under the Act to the Migratory Bird Conservation Commission. Available funds may be expended for up to 50 percent of the United States share cost of wetlands conservation projects in Canada, Mexico, or the United States (or 100 percent of the cost of projects on Federal lands).
Refuge Recreation Act of 1962, as amended	This Act authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use, when such uses do not interfere with the area's primary purposes. It authorizes construction and maintenance of recreational facilities and the acquisition of land for incidental fish and wildlife oriented recreational development or protection of natural resources. It also authorizes the charging fees for public uses.
Partnerships for Wildlife Act of 1992	Establishes a Wildlife Conservation and Appreciation Fund, to receive appropriated funds and donations from the National Fish and Wildlife Foundation and other private sources to assist the State fish and game agencies in carrying out their responsibilities for conservation of nongame species. The funding formula is no more that 1/3 federal funds, at least 1/3 Foundation funds, and at least 1/3 state funds.

STATUE	DESCRIPTION
Refuge Revenue Sharing Act of 1935, as amended	Provided for payments to counties in lieu of taxes from areas administered by the Fish and Wildlife Service. Counties are required to pass payments along to other units of local government within the county, which suffer losses in tax revenues due to the establishment of Service areas.
Rehabilitation Act of 1973	Requires nondiscrimination in the employment practices of Federal agencies of the executive branch and contractors. It also requires all federally assisted programs, services, and activities to be available to people with disabilities.
Sikes Act (1960), as amended	Provides for the cooperation by the Department of the Interior and Defense with State agencies in planning, development, and maintenance of fish and wildlife resources and outdoor recreation facilities on military reservations throughout the U.S. It requires the Secretary of each military department to use trained professionals to manage the wildlife and fishery resource under his jurisdiction, and requires Federal and State fish and wildlife agencies be given priority in management of fish and wildlife activities on military reservations.
Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948	This Act provides that upon determination by the Administrator of the General Services Administration, real property no longer needed by a Federal agency can be transferred, without reimbursement, to the Secretary of the Interior if the land has particular value for migratory birds, or to a State agency for other wildlife conservation purposes.
Transportation Equity Act for the 21st Century (1998)	Established the Refuge Roads Program, requires transportation planning that includes public involvement, and provides funding for approved public use roads and trails and associated parking lots, comfort stations and bicycle/pedestrian facilities.
Uniform Relocation and Assistance and Real Property Acquisition Policies Act (1970), as amended	Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the Service. The Act requires that any purchase offer be no less than the fair market value of the property.
Water Resources Planning Act of 1965	Established Water Resources Council to be composed of Cabinet representatives including the Secretary of the Interior. The Council reviews river basin plans with respect to agricultural, urban, energy, industrial, recreational and fish and wildlife needs. The act also established a grant program to assist States in participating in the development of related comprehensive water and land use plans.

STATUE	DESCRIPTION
Wilderness Act of 1964, as amended	The Wilderness Act of 1964 directs the Secretary of the Interior to review every roadless area of 5,000 acres or more and every roadless island regardless of size within the National Wildlife Refuge System and to recommend suitability of each such area. The Act permits certain activities within designated Wilderness Areas that do not alter natural processes. Wilderness values are preserved through a “minimum tool” management approach, which requires refuge managers to use the least intrusive methods, equipment and facilities necessary for administering the areas.
Youth Conservation Corps Act of 1970	Established a permanent Youth Conservation Corps (YCC) programs within the Department of Interior and Agriculture. Within the Service, YCC participants perform many tasks on refuges, fish hatcheries, and research stations.

EXECUTIVE ORDERS	DESCRIPTIONS
EO 11593, Protection and Enhancement of the Cultural Environment (1971)	States that if the Service proposes any development activities that may affect the archaeological or historic sites, the Service will consult with Federal and State Historic Preservation Officers to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.
EO 11644, Use of Off-road Vehicles on Public Land (1972)	Established policies and procedures to ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.
EO 11988, Floodplain Management (1977)	The purpose of this Executive Order is to prevent Federal agencies from contributing to the “adverse impacts associated with occupancy and modification of floodplains” and the “direct or indirect support of floodplain development.” In the course of fulfilling their respective authorities, Federal agencies “shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.
EO 11989 (1977), Amends Section 2 of EO 11644	Directs agencies to close areas negatively impacted by off-road vehicles.
EO 11990, Protection of Wetlands (1977)	Federal agencies are directed to provide leadership and take action to minimize the destruction, loss of degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.
EO 12372, Intergovernmental Review of Federal Programs (1982)	Seeks to foster intergovernmental partnerships by requiring Federal agencies to use the State process to determine and address concerns of State and local elected officials with proposed Federal assistance and development programs.
EO 12898, Environmental Justice (1994)	Requires federal agencies to identify and address disproportionately high and adverse effects of its programs, policies, and activities on minority and low-income populations.

EXECUTIVE ORDERS	DESCRIPTIONS
EO 12906, Coordinating Geographical Data Acquisition and Access (1994), Amended by EO 13286 (2003). Amendment of EO's & other actions in connection w/ transfer of certain functions to Secretary of DHS.	Recommended that the executive branch develop, in cooperation with State, local, and tribal governments, and the private sector, a coordinated National Spatial Data Infrastructure to support public and private sector applications of geospatial data. Of particular importance to CCP planning is the National Vegetation Classification System (NVCS), which is adopted, standard for vegetation mapping. Using NVCT facilitates the compilation of regional and national summaries, which in turn, can provide an ecosystem context for individual refuges.
EO 12962, Recreational Fisheries (1995)	Federal agencies are directed to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities in cooperation with States and Tribes.
EO 13007, Native American Religious Practices (1996)	Provides for access to, and ceremonial use of, Indian sacred sites on federal lands used by Indian religious practitioners and direction to avoid adversely affecting the physical integrity of such sites.
EO 13061, Federal Support of Community Efforts Along American Heritage Rivers (1997)	Established the American Heritage Rivers initiative for the purpose of natural resource and environmental protection, economic revitalization, and historic and cultural preservation. The Act directs Federal agencies to preserve, protect, and restore rivers and their associated resources important to our history, culture, and natural heritage.
EO 13084, Consultation and Coordination With Indian Tribal Governments (2000)	Provides a mechanism for establishing regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications.
EO 13112, Invasive Species (1999)	Federal agencies are directed to prevent the introduction of invasive species, detect and respond rapidly to and control populations of such species in a cost effective and environmentally sound manner, accurately monitor invasive species, provide for restoration of native species and habitat conditions, conduct research to prevent introductions and to control invasive species, and promote public education on invasive species and the means to address them. This EO replaces and rescinds EO 11987, Exotic Organisms (1977).

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

Appendix D. Public Involvement

SUMMARY OF PUBLIC SCOPING COMMENTS

A Notice of Intent (NOI) to prepare a comprehensive conservation plan (CCP) for Banks Lake National Wildlife Refuge was published in the *Federal Register* on December 6, 2007. Following publication of the NOI, the public was informed and their input was solicited through a variety of mechanisms. CCP information was posted on the refuge's website, kiosk, and at Okefenokee NWR. In addition, notices regarding the refuge's CCP were published in the following local and regional newspapers: the *Lanier County News*, *Valdosta Daily Times*, *Berrien Press*, *Clinch County News*, *The Florida Times Union* (Jacksonville, Florida), and *Waycross Journal-Herald*. Flyers containing information about the refuge's CCP and the upcoming public scoping meeting were posted at local libraries, post offices, parks, and bait shops. Invitations to the public scoping meeting were also mailed to interested groups, including Georgia Bass Federation and The Nature Conservancy.

A public scoping meeting was held at the Lanier County Courthouse in Lakeland, Georgia, on January 24, 2008. Nineteen citizens attended the meeting, along with eight Service personnel and one contracted consultant from the Dynamac Corporation. After the Service staff provided presentations about the refuge and the comprehensive planning process, the public was given the opportunity to submit comments and concerns regarding future management of the refuge at several thematic information booths (e.g., visitor services, biological resources, etc.) that were stationed around the facility, each manned by Service personnel.

The issues identified during the scoping process are summarized below.

U.S. Fish and Wildlife Service

Based on internal, intergovernmental, and public scoping, the Service identified the following priority issues that need to be addressed in the CCP:

- The refuge has not established strategic habitat and wildlife conservation goals.
- The refuge does not have basic baseline data on biological, hydrological, or the ecological health of the refuge.
- There is an ongoing need to control invasive species and nuisance aquatic vegetation.
- The refuge has not fully addressed the opportunities for public recreation and use.
- There is significant rapid urban development occurring within the ecosystem impacting the refuge.
- The refuge has never evaluated if it is appropriately sized and staffed to accomplish its established purposes.
- The refuge has a need to broaden and strengthen relationships and partnerships.

Georgia Wildlife Resources Division

As part of the intergovernmental coordination planning team, the Georgia Wildlife Resources Division (GWRD) identified a variety of issues, ideas, and concerns regarding future management of the refuge. The top priorities identified by the GWRD are listed below.

- Need to evaluate prescription burning and alternatives.
- Increased outdoor recreation opportunities/partnerships (e.g. canoe trail, etc.).
- Need for key habitat data (for rare species such as the round-tailed muskrat).
- Increased opportunities for environmental education and interpretation.
- Increased invasive species management.

Tribal Governments

The listed Tribal entities were invited to the public scoping process. Other than requests for additional information, no comments have been received to date.

- Muscogee (Creek) Nation, Okmulgee, Oklahoma
- Thlopthlocco Tribal Town, Okemah, Oklahoma
- Alabama-Quassarte Tribal Town, Wetumka, Oklahoma
- Poarch Band of Creek Indians of Alabama, Atmore, Alabama
- Seminole Nation of Oklahoma, Wewoka, Oklahoma
- Seminole Tribe of Florida, Hollywood, Florida
- Miccosukee Tribe of Indians of Florida, Miami, Florida

Intergovernmental Partners (including Georgia Wildlife Resources Division)

The intergovernmental scoping team identified a range of issues and developed a list of the top priorities, as follows:

- Increase funding/staffing.
- Evaluate impacts of refuge management on adjacent properties (prescribed burning).
- Obtain baseline data needs (biological, hydrological, ecological, etc.).
- Provide environmental education.
- Control of invasive species.
- Increase partnerships.
- Increase public use opportunities (camping, education center, trails).
- Identify impacts of increased development.
- Improve habitat management (prescribed burning and alternatives).

Comments from the Public

The issues, ideas, concerns, and comments raised by the public were diverse and ranged from those addressing biological resources to those involving public use and administration of the refuge. A summary of these comments is provided below, organized by category.

Wildlife and Habitat Management:

- Determine if alligator population is too high.
- Create more wood duck boxes.
- Control aquatic weeds (e.g., longer lake drawdown).
- Use prescribed burning.

Resource Protection:

- Need permanent Service presence at the refuge (e.g., more law enforcement).
- Prevent sewage pollution (from lakeside septic systems).

Visitor Services:

- Increase hunting, fishing and wildlife viewing opportunities.
- Ban hunting.
- Allow camping.
- Do not permit camping.
- Extend hiking trails; mark boating trails,
- Remove submerged stumps (boating hazards).
- Convert concession facility into an educational center.

Refuge Administration:

- Banks Lake NWR needs its own budget.

Appendix E. Appropriate Use Determinations

Banks Lake National Wildlife Refuge Appropriate Use Determinations

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

Except for the uses noted below, the refuge manager must decide if a new or existing use is an appropriate refuge use. If an existing use is not appropriate, the refuge manager will eliminate or modify the use as expeditiously as practicable. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility. Uses that have been administratively determined to be appropriate are:

- Six wildlife-dependent recreational uses - As defined by the National Wildlife Refuge System Improvement Act of 1997, the six wildlife-dependent recreational uses (hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation) are determined to be appropriate. However, the refuge manager must still determine if these uses are compatible.
- Take of fish and wildlife under state regulations - States have regulations concerning take of wildlife that includes hunting, fishing, and trapping. The Service considers take of wildlife under such regulations appropriate. However, the refuge manager must determine if the activity is compatible before allowing it on a refuge.

Statutory Authorities for this policy:

National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. §668dd-668ee. This law provides the authority for establishing policies and regulations governing refuge uses, including the authority to prohibit certain harmful activities. The Act does not authorize any particular use, but rather authorizes the Secretary of the Interior to allow uses only when they are compatible and “under such regulations as he may prescribe.” This law specifically identifies certain public uses that, when compatible, are legitimate and appropriate uses within the Refuge System. The law states “. . . it is the policy of the United States that . . .compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System . . .compatible wildlife-dependent recreational uses are the priority general public uses of the System and shall receive priority consideration in refuge planning and management; and . . . when the Secretary determines that a proposed wildlife-dependent recreational use is a compatible use within a refuge, that activity should be facilitated . . . the Secretary shall . . . ensure that priority general public uses of the System receive enhanced consideration over other general public uses in planning and management within the System . . . .” The law also states “in administering the System, the Secretary is authorized to take the following actions: . . . issue regulations to carry out this Act.” This policy implements the standards set in the Act by providing enhanced consideration of priority general public uses and ensuring other public uses do not interfere with our ability to provide quality, wildlife-dependent recreational uses.

Refuge Recreation Act of 1962, 16 U.S.C. §460k. The Act authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use, when such uses do not interfere with the area's primary purposes. It authorizes construction and maintenance of recreational facilities and the acquisition of land for incidental fish and wildlife oriented recreational development or protection of natural resources. It also authorizes the charging of fees for public uses.

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

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

Definitions:

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

1) The use is a wildlife-dependent recreational use as identified in the Improvement Act.
2) The use contributes to fulfilling the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Improvement Act was signed into law.
3) The use involves the take of fish and wildlife under state regulations.
4) The use has been found to be appropriate as specified in section 1.11.

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

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

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

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

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

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

Appropriate use findings are listed below for the following uses: boating, camping/picknicking, commercial services, off-road vehicles, and swimming/waterskiing.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: ____Banks Lake National Wildlife Refuge_____

Use: ____Boating_____

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

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

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

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

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

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

Not Appropriate_____ **Appropriate___X__**

Refuge Manager:_____ Date:_____

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

Refuge Supervisor:_____ Date:_____

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: ____Banks Lake National Wildlife Refuge_____

Use: _____ Commercial Guided Tours for Wildlife Observation, Photography, and Interpretation_____

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

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

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

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

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

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

Not Appropriate_____ **Appropriate__X___**

Refuge Manager:_____ Date:_____

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

Refuge Supervisor:_____ Date:_____

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: ____Banks Lake National Wildlife Refuge_____

Use: ____Off-road Vehicles_____

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

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

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

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

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

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

Not Appropriate__X__ **Appropriate__ ___**

Refuge Manager:_____ Date:_____

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

Refuge Supervisor:_____ Date:_____

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: ____Banks Lake National Wildlife Refuge_____

Use: ____Sunbathing, Swimming, Waterskiing, and Personal Water Craft_____

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

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

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

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

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

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

Not Appropriate__X___ **Appropriate_____**

Refuge Manager:_____ Date:_____

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

Refuge Supervisor:_____ Date:_____

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: ____Banks Lake National Wildlife Refuge_____

Use: ____Research Studies and Scientific Collection_____

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

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

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

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

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

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

Not Appropriate__ ___ **Appropriate __X__**

Refuge Manager:_____ Date:_____

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

Refuge Supervisor:_____ Date:_____

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: ____Banks Lake National Wildlife Refuge_____

Use: _Special Events that Advance Outdoor Recreation and Conservation_____

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

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

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

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

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

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

Not Appropriate__ _ ___ **Appropriate __X__**

Refuge Manager:_____ Date:_____

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

Refuge Supervisor:_____ Date:_____

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: ____Banks Lake National Wildlife Refuge_____

Use: _____ Sport Fishing Tournaments_____

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

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

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

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

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

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

Not Appropriate__ ___ **Appropriate __X__**

Refuge Manager:_____ Date:_____

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

Refuge Supervisor:_____ Date:_____

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: ____Banks Lake National Wildlife Refuge_____

Use: ____ Vegetation Removal/Control on Refuge Shoreline by Adjacent Landowners_____

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

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

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

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

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

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

Not Appropriate_____ **Appropriate __X__**

Refuge Manager:_____ Date:_____

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

Refuge Supervisor:_____ Date:_____

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

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: ____Banks Lake National Wildlife Refuge_____

Use: ___Camping by Youth and Conservation Groups as a part of Refuge Environmental Programs____

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

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

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

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

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

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

Not Appropriate_____ **Appropriate __X__**

Refuge Manager:_____ Date:_____

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

Refuge Supervisor:_____ Date:_____

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

Appendix F. Compatibility Determinations

USE: COMMERCIAL GUIDED TOURS FOR WILDLIFE OBSERVATION, PHOTOGRAPHY, AND INTERPRETATION

Supporting Uses:
Motorized and nonmotorized boating, use of live bait per state regulations, picnicking, and an onsite visitor service concession operation

Supporting Facilities:
Boat ramp, vehicle parking area, fishing piers, boat trailer cleaning station, information kiosk, concession, storage building and area, restrooms, picnic tables, one volunteer trailer, and a recreational vehicle pad for volunteers, and trash receptacles.

Refuge Name: Banks Lake National Wildlife

Establishing and Acquisition Authority(Ies):
Banks Lake National Wildlife Refuge was established for the protection and conservation of migratory and resident wildlife and its unique Carolina Bay ecosystem. The refuge established under the authorized of the Fish and Wildlife Act of 1956 on February 22, 1985 when approximately 3,560 acres were acquired from The Nature Conservancy with funding from Land and Water Conservation Fund Act of 1995.

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

"... suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. Section 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. Section 460k-2 (Refuge Recreation Act [16 U.S.C. Section 460k-460k-4], as amended).

National Wildlife Refuge System Mission:
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.

Description of Use:
Permittee(s) would be authorized to provide commercial guided tours for wildlife observation, photography, and interpretation at Banks Lake NWR. This would be a new use of the refuge and no limit would be set on the number of permits that would be issued for this use. Initially three year permits would be issued to applicants that can demonstrate they have no record of significant fish or wildlife violations for the past five years and can document that they have successfully provided commercial fishing guiding services for at least the two previous years.

Availability of Resources:
The Okefenokee NWR would provide personnel to review permit applications and prepare a Special Use Permit. The annual cost of administering this use is estimated to be five to 10 staff days to administer the permit program and five staff days of law enforcement to monitor this use and ensure all guides have the necessary permits, as well as, compliance with permit conditions.

Anticipated Impacts of the Use:
Authorizing this use may cause a minor, but insignificant increase in disturbance of wildlife. Guides typically know the best fishing areas and techniques and can be aggressive in providing their clients with a positive experience. This can lead to other users feeling pushed out of their favorite wildlife viewing areas and be more aggressively in the use of wildlife "hot spots" to be successful. These kinds of experiences diminish the quality of the wildlife experience the refuge offers the public and cause bird watcher, wildlife photographers, and other wildlife-dependent to not return or avoid using the refuge during peak or popular wildlife viewing seasons or times.

Public Review and Comment:
This draft compatibility determination will available for review and comment during the public review period established for the draft Banks Lake NWR Comprehensive Conservation Plan. All comments will be addressed in the final determination

Determination (Check One Below):
____ Use is not compatible.
__X__ Use is compatible with the following stipulations.

Stipulations Necessary To Ensure Compatibility:

- Applicants must demonstrate they have no record of significant fish or wildlife violations for the past five years and that they have successfully provided commercial guided tours for wildlife observation, photography, and interpretation guiding services for at least the two previous years.

- The permittee and/or all employees working on Okefenokee NWR must attend a refuge-specific training course prior to conduction any guided activity.

- The permittee and/or all employees working on Okefenokee NWR must have current Red Cross certification in first aid and CPR.

- Proof of general liability insurance coverage must be provided within 30 days of issuance of the Special Use Permit.

- The refuge manager, or his designated representative, has the right to accompany as an observer any commercial guided tours for wildlife observation, photography, and interpretation tours of the refuge.

- The permit does not give permittee higher priority than the general visitor. Permittee will be courteous to the general public and answer questions professionally as to his activities.

- The permittee will comply with all Department of the Interior, U.S. Fish and Wildlife Service, and all Federal, State, and local laws in conducting their business.

- Violation of any special conditions of the Special Use Permit, or any Federal, State, local, or Refuge regulations may result in the revocation/cancellation of the permit without written or verbal warning

- The permittee must report all commercial activity conducted on the refuge the end of each fiscal year (September 30). Permittee shall submit a short report detailing the year's activities. Permit may be suspended if this information is not received.

Justification:
Guided commercial guided tours for wildlife observation, photography, and interpretation facilitate the public's enjoyment of the priority wildlife-dependent recreational activities of the National Wildlife Refuge System and the goals and objectives of the Final Banks Lake NWR Comprehensive Conservation Plan.

There are currently sufficient funds to administer the current level of use and maintain its compatibility with refuge purposes and the Mission of the Refuge System. The program developments and improvements planned in the preferred alternative of the draft Banks Lake NWR Comprehensive Conservation Plan would be implement as funding allows and the both the short and long term impacts of commercial guided tours for wildlife observation, photography, and interpretation as described in the preferred alternative are determined to be compatible with refuge purposes and the Mission of the Refuge System.

NEPA Compliance for Refuge Use Description:

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

Mandatory 10-Year Reevaluation Date: _____

Approval of Compatibility Determination for Commercial Guided Tours for Wildlife Observation, Photography, and Interpretation

Refuge Manager: _____
Signature Date

Regional Compatibility Coordinator: _____
Signature Date

Refuge Supervisor: _____
Signature Date

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

USE: ENVIRONMENTAL EDUCATION

Supporting Uses:
Interpretation; wildlife observation and photography; motorized and nonmotorized boating; camping by youth and conservation groups established to teach conservation and nature appreciation; and waking/hiking within areas open to the public. The construction, maintenance, and use at the public access area of a wildlife walking trail, picnic area, parking area, restrooms, boat ramp, fishing pier, and commercial visitor service concession operation located within a refuge building.

Supporting Facilities:
Wildlife walking trail, boat ramp, fishing piers, vehicle parking area, information kiosk, concession operation, storage building, restrooms, picnic tables, one volunteer trailer, and recreational vehicle pad(s) for volunteers, and trash receptacles.

Refuge Name: Banks Lake National Wildlife

Establishing and Acquisition Authority(Ies):
Banks Lake National Wildlife Refuge was established for the protection and conservation of migratory and resident wildlife and its unique Carolina Bay ecosystem. The refuge established under the authorized of the Fish and Wildlife Act of 1956 on February 22, 1985 when approximately 3,560 acres were acquired from The Nature Conservancy with funding from Land and Water Conservation Fund Act of 1995.

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

"... suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. Section 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. Section 460k-2 (Refuge Recreation Act [16 U.S.C. Section 460k-460k-4], as amended).

National Wildlife Refuge System Mission:
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.

Description of Use:
Currently the refuge offers mostly passive environmental education opportunity for visitors in the form of information posted at the public access area informational kiosk and concession area and periodic articles in the local newspapers. The Okefenokee NWR staff has conducted special environmental education programs on the refuge for school, youth, and civic groups. Occasionally, school groups, scouting groups, or conservation organizations conduct outdoor classrooms on the refuge. Primitive camping may be permitted on a case by case basis for youth and conservation groups established to teach conservation and nature appreciation that include instruction and activities that provide a sense of wonder for the natural world, leave no trace outdoor skills, and/or refuge purposes and the Mission of the NWRS.

The Final Banks Lake NWR Comprehensive Conservation Plan calls for the Service to significantly increase environmental education opportunities at the refuge as staff and funding becomes available. With adequate funding the potential of achieving this goal is good given the fact that there are over 10,000 elementary, middle, and high school, and university students going to school within 2 hour drive of the refuge. While the exact nature and extent of future environmental education facilities and programs will not be know until the refuge's Public Use Plan is completed, this determination is based on an assumption that up to five acres of the public access area may be used as a environmental education activity area that includes a 1-2,000 square foot environmental education building and office, covered and screened instruction and activity area, additional restrooms, an additional ¼ mile of environmental education trails, a environmental activities pier into the lake, and a parking area large enough for three buses and six vehicles.

Availability of Resources:
Banks Lake NWR is administered by the Okefenokee NWR. The Okefenokee NWR spent approximately $130,000 and 370 staff days in support of Banks Lake's programs during Fiscal Year 2008. In additional, volunteers work approximately 400 staff days each year at Banks Lake NWR to provide basic visitor informational services and maintain the public access area. Approximately, 75% of the volunteer effort at Banks Lake NWR is by resident volunteers. During 2008 the refuge paid approximately $8,000 for the utilities that supported the resident volunteer program and our share of the concession building operation. Routine maintenance costs averaged about $5,000 per year for the last three years.

Until adequate funding is available to staff Banks Lake NWR, it will continue to be administered by the Okefenokee NWR. Fortunately, the Okefenokee NWR has been able to provide this level of support without significantly compromising the accomplishment of its mission. At the start of 2009 Banks Lake NWR was given its own budget and the funding that Okefenokee NWR spent in 2008 to administer Banks Lake was transferred to the Banks Lake cost codes.
The Banks Lake NWR Environmental Education Activity Area would only be built, operated, and maintained as funding and staff become available.

Anticipated Impacts Of The Use:
Anticipated impacts from this use are minor damage to vegetation, littering, increase maintenance of facilities and trails, potential conflicts with other users, and disturbance to wildlife. No significant long term or cumulative impacts are anticipated.

Public Review and Comment:
This draft compatibility determination will available for review and comment during the public review period established for the draft Banks Lake NWR Comprehensive Conservation Plan. All comments will be addressed in the final determination

Determination (Check One Below):
____ Use is not compatible.
__X__ Use is compatible with the following stipulations.

Stipulations Necessary To Ensure Compatibility:
Environmental education activities will continue to be subject to all general and special refuge regulations, as well as, the state regulations for litter, behavior, and criminal activity. The program enhancements called for in the final Comprehensive Conservation Plan will be phased in as the necessary funding and staff is provided.

Justification:
Environmental education is one of the legislated priority wildlife-dependent uses of the National Wildlife Refuge System. This use and its supporting uses and facilities would have a positive effect in providing the public with quality, wildlife dependent recreation. Likewise, the supporting uses and facilities described in this determination would have only minor and no significant long term or cumulative impacts to resident, migratory, and threatened/endangered specie populations.

There are currently sufficient funds to administer the current level of use and maintain its compatibility with refuge purposes and the Mission of the Refuge System. The program developments and improvements planned in the preferred alternative of the draft Banks Lake NWR Comprehensive Conservation Plan would be implement as funding allows and the both the short- and long-term impacts of developing wildlife photography opportunities as described in the preferred alternative are determined to be compatible with refuge purposes and the Mission of the Refuge System.

NEPA Compliance For Refuge Use Description:

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

Mandatory 15-Year Reevaluation Date: _____

Approval of Compatibility Determination for Environmental Education

Refuge Manager: _____
Signature Date

Regional Compatibility Coordinator: _____
Signature Date

Refuge Supervisor: _____
Signature Date

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

USE: GUIDED SPORT FISHING

Supporting Uses:
Motorized and nonmotorized boating, use of live bait per state regulations, picnicking, and an on-site visitor service concession operation

Supporting Facilities:
Boat ramp, vehicle parking area, fishing piers, boat trailer cleaning station, information kiosk, concession, storage building and area, restrooms, picnic tables, one volunteer trailer, and a recreational vehicle pad for volunteers, and trash receptacles.

Refuge Name: Banks Lake National Wildlife

Establishing and Acquisition Authority(Ies):
Banks Lake National Wildlife Refuge was established for the protection and conservation of migratory and resident wildlife and its unique Carolina Bay ecosystem. The refuge established under the authorized of the Fish and Wildlife Act of 1956 on February 22, 1985 when approximately 3,560 acres were acquired from The Nature Conservancy with funding from Land and Water Conservation Fund Act of 1995.

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

"... suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. Section 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. Section 460k-2 (Refuge Recreation Act [16 U.S.C. Section 460k-460k-4], as amended).

National Wildlife Refuge System Mission:
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.

Description Of Use:
Permittee(s) would be authorized to provide commercial fishing guiding services at Banks Lake NWR. This would be a new use of the refuge and no limit would be set on the number of permits that would be issued for this use. Initially three year permits would be issued to applicants that can demonstrate they have no record of significant fish or wildlife violations for the past five years and can document that they have successfully provided commercial fishing guiding services for at least the two previous years.

Availability Of Resources:
The Okefenokee NWR would provide personnel to review permit applications and prepare a Special Use Permit. The annual cost of administering this use is estimated to be five to 10 staff days to administer the permit program and five staff days of law enforcement to monitor this use and ensure all guides have the necessary permits, as well as, compliance with permit conditions.

Anticipated Impacts Of The Use:
Authorizing this use may cause a minor, but insignificant increase in the harvest of sport fish as guided visitors frequently catch more fish that the average angler and often the client then uses what he or she has learned to their advantage when they are fishing on their own. Guides typically know the best fishing areas and techniques and can be aggressive in providing their clients with a positive fishing experience. This can lead to other users feeling pushed out of their favorite fishing spots or having to fish more aggressively to be successful. These kinds of experiences diminish the quality of sport fishing experience the refuge offers the public and cause anglers to not return or avoid using the refuge during peak or popular fishing times.

Public Review and Comment:
This draft compatibility determination will available for review and comment during the public review period established for the draft Banks Lake NWR Comprehensive Conservation Plan. All comments will be addressed in the final determination

Determination (Check One Below):
____ Use is not compatible.
__X__ Use is compatible with the following stipulations.

Stipulations Necessary To Ensure Compatibility:

- Applicants must demonstrate they have no record of significant fish or wildlife violations for the past five years and that they have successfully provided commercial fishing guiding services for at least the two previous years.

- The permittee and/or all employees working on Okefenokee NWR must attend a refuge-specific training course prior to conduction any guided activity.

- The permittee and/or all employees working on Okefenokee NWR must have current Red Cross certification in first aid and CPR.

- Proof of general liability insurance coverage must be provided within 30 days of issuance of the Special Use Permit.

- The refuge manager, or his designated representative, has the right to accompany as an observer any commercial fishing guiding visit on the refuge.

- The permit does not give permittee higher priority than the general visitor. Permittee will be courteous to the general public and answer questions professionally as to his activities.

- The permittee will comply with all Department of the Interior, U.S. Fish and Wildlife Service, and all Federal, State, and local laws in conducting their business.

- Violation of any special conditions of the Special Use Permit, or any Federal, State, local, or Refuge regulations may result in the revocation/cancellation of the permit without written or verbal warning

- The permittee must report all commercial activity conducted on the refuge the end of each fiscal year (September 30). Permittee shall submit a short report detailing the year's activities. Permit may be suspended if this information is not received.

Justification:
Guided fishing services facilitate one of the wildlife-dependent recreational activities of the National Wildlife Refuge System and the goals and objectives of the Final Banks Lake NWR Comprehensive Conservation Plan. There are currently sufficient funds to administer the current level of use and maintain its compatibility with refuge purposes and the Mission of the Refuge System. The program developments and improvements planned in the preferred alternative of the draft Banks Lake NWR Comprehensive Conservation Plan would be implement as funding allows and the both the short and long term impacts of developing sport fishing as described in the preferred alternative are determined to be compatible with refuge purposes and the Mission of the Refuge System.

NEPA Compliance For Refuge Use Description:

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

Approval of Compatibility Determination for Guided Sport Fishing

Refuge Manager: _____
Signature Date

Regional Compatibility Coordinator: _____
Signature Date

Refuge Supervisor: _____
Signature Date

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

USE: INTERPRETATION

Supporting Uses:
Motorized and nonmotorized boating and waking and hiking within areas open to the public. The construction, maintenance, and use at the public access area of a wildlife walking trail, picnic area, parking area, restrooms, boat ramp, fishing pier, and commercial visitor service concession operation located within a refuge building.

Supporting Facilities:
Wildlife walking trail, boat ramp, fishing piers, vehicle parking area, information kiosk, concession operation, storage building, restrooms, picnic tables, one volunteer trailer, and recreational vehicle pad(s) for volunteers, and trash receptacles.

Refuge Name: Banks Lake National Wildlife

Establishing and Acquisition Authority(Ies):
Banks Lake National Wildlife Refuge was established for the protection and conservation of migratory and resident wildlife and its unique Carolina Bay ecosystem. The refuge established under the authorized of the Fish and Wildlife Act of 1956 on February 22, 1985 when approximately 3,560 acres were acquired from The Nature Conservancy with funding from Land and Water Conservation Fund Act of 1995.

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

"... suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. Section 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. Section 460k-2 (Refuge Recreation Act [16 U.S.C. Section 460k-460k-4], as amended).

National Wildlife Refuge System Mission:
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.

Description Of Use:
Currently the refuge offers mostly passive interpretation opportunity for visitors in the form of information posted at the public access area informational kiosk and concession area and periodic articles in the local newspapers. Given that over 83,000 visitor days were reported for the refuge in 2008 it is likely that at least several thousand visitor have read at least a portion of the information provided at the public access area.

The Final Banks Lake NWR Comprehensive Conservation Plan has calls for the Service to significantly increase interpretative opportunities at the refuge as staff and funding becomes available. The potential of this is good given that fact that public access area is well used and almost any time during the day and evening. And, visitors frequently stop by the access area to look for and photograph wildlife and walk the 1/4 mile wildlife observation trail, as well as, simply enjoy the

natural beauty of the area and the cypress stands in the lake. While the exact nature and extent of the kind of interpretative facilities and programs will be developed in the Public Use Plans that are part of the comprehensive planning process, this determination is based on an assumption that refuge specific public use brochures will be created, additional interpretative signs will be provided at the public access area and wildlife walking trail, and special events will be hosted at Banks Lake NWR during National Wildlife Refuge Week and Earth Day.

Availability of Resources:
Banks Lake refuge is administered by the Okefenokee NWR. The Okefenokee NWR spent approximately $130,000 and 370 staff days in support of Banks Lake's programs during Fiscal Year 2008. In additional, volunteers work approximately 400 staff days each year at Banks Lake to provide basic visitor informational services and maintain the public access area. Approximately, 75% of the volunteer effort at Banks Lake NWR is by resident volunteers. During 2008 the refuge paid approximately $8,000 for the utilities that supported the resident volunteer program and our share of the concession building operation. Routine maintenance costs averaged about $5,000 per year for the last three years.

Until adequate funding is available to staff Banks Lake NWR, it will continue to be administered by the Okefenokee NWR. Fortunately, the Okefenokee NWR has been able to provide this level of support without significantly compromising the accomplishment of its mission. At the start of 2009 Banks Lake NWR was given its own budget and the funding that Okefenokee NWR spent in 2008 to administer Banks Lake NWR was transferred to the Banks Lake NWR cost codes.

Anticipated Impacts of the Use:
Anticipated impacts from this use are minor damage to vegetation, littering, increase maintenance of facilities and trails, potential conflicts with other users, and disturbance to wildlife. No significant long term or cumulative impacts are anticipated.

Public Review and Comment:
This draft compatibility determination will available for review and comment during the public review period established for the draft Banks Lake NWR Comprehensive Conservation Plan. All comments will be addressed in the final determination

Determination (Check One Below):
____ Use is not compatible.
__X__ Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility:
Interpretative activities will continue to be subject to all general and special refuge regulations, as well as, the state regulations for litter, behavior, and criminal activity. The program enhancements called for in the final Comprehensive Conservation Plan will be phased in as the necessary funding and staff is provided.

Justification:
Interpretative activities are one of the legislated priority wildlife-dependent uses of the National Wildlife Refuge System. This use and its supporting uses and facilities would have a positive effect in providing the public with quality, wildlife dependent recreation. Likewise, the supporting uses and facilities described in this determination would have only minor and no significant long term or cumulative impacts to resident, migratory, and threatened/endangered specie populations.

There are currently sufficient funds to administer the current level of use and maintain its compatibility with refuge purposes and the Mission of the Refuge System. The program developments and improvements planned in the preferred alternative of the draft Banks Lake NWR Comprehensive Conservation Plan would be implement as funding allows and the both the short and long term impacts of developing wildlife photography opportunities as described in the preferred alternative are determined to be compatible with refuge purposes and the Mission of the Refuge System.

NEPA Compliance for Refuge Use Description:

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

Mandatory 15-Year Reevaluation Date: _____

Approval of Compatibility Determination - Interpretation

Refuge Manager: _____
Signature Date

Regional Compatibility Coordinator: _____
Signature Date

Refuge Supervisor: _____
Signature Date

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

USE: Research Studies and Scientific Collection

Supporting Uses:
Collection of animals, plants, soil, or water for scientific purposes.

Supporting Facilities:
Public access area, boat ramp, fishing piers, vehicle parking area, storage building, restrooms, picnic tables, volunteer trailer, volunteer trailer/recreational vehicle pad(s)

Refuge Name: Banks Lake National Wildlife Refuge

Establishing and Acquisition Authority(Ies):
Banks Lake National Wildlife Refuge was established for the protection and conservation of migratory and resident wildlife and its unique Carolina Bay ecosystem. The refuge established under the authorized of the Fish and Wildlife Act of 1956 on February 22, 1985 when approximately 3,560 acres were acquired from The Nature Conservancy with funding from Land and Water Conservation Fund Act of 1995.

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

"... suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. Section 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. Section 460k-2 (Refuge Recreation Act [16 U.S.C. Section 460k-460k-4], as amended).

National Wildlife Refuge System Mission:
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.

Description of Use:
Resource research and scientific studies conducted by local, state, or federal agencies; local schools, technical colleges, and universities; nonprofit organizations; and private, for profit research companies conducted on the refuge when the refuge acts solely in an administrative role. The assistance provide by the refuge may range from minimal to substantial depending on the benefits to the Service. This includes data gathering for hypothesis testing, modeling, monitoring, and surveys. This use also includes permitting the collection of animals, fish, plants, soils, and water for monitoring and research purposes. The research and collection activities will vary in scope and duration to satisfy the requirements of the research project or survey. Projects may involve everything from a limited one time sampling or survey to long-term study plots.

Scientific research studies will be accommodated for the purpose of properly administering the refuge, advancing the mission of the National Wildlife Refuge System, and protecting the health, biological integrity, diversity of the Banks Lake–Grand Bay ecosystem, and the health and safety of the public. The objective of authorizing this use is to gain better knowledge of our natural resources and improved methods to manage, monitor, and protect refuge resources and the public.

All animals and fish captured, handled, released, collected, and curated following the best scientific practices and standards established by respected scientific societies, as well as, the Service's policies and guidelines for scientific collecting and research.

All research studies will be evaluated and if deemed beneficial, a special use permit will be issued as an agreement between the researcher and the refuge. The permit will outline the guidelines that the researcher must follow while conducting research on the refuge.

Availability of Resources:
Banks Lake NWR is administered by the Okefenokee NWR. The Okefenokee NWR spent approximately $130,000 and 370 staff days in support of Banks Lake NWR's programs during Fiscal Year 2008. In additional, volunteers work approximately 400 staff days each year at Banks Lake NWR to provide basic visitor informational services and maintain the public access area. Approximately, 75% of the volunteer effort at Banks Lake NWR is by resident volunteers. During 2008 the refuge paid approximately $8,000 for the utilities that supported the resident volunteer program and our share of the concession building operation. Routine maintenance costs averaged about $5,000 per year for the last three years.

Until adequate funding is available to staff Banks Lake NWR, it will continue to be administered by the Okefenokee NWR. Fortunately, the Okefenokee NWR has been able to provide this level of support without significantly compromising the accomplishment of its mission. At the start of 2009 Banks Lake NWR was given its own budget and the funding that Okefenokee NWR spent in 2008 to administer Banks Lake NWR was transferred to the Banks Lake NWR cost codes. The refuge has the staff and funding to administer permits for scientific collecting, studies, and research that require ten or less staff days to administer the project. Request that require more than ten staff days to administer will only be authorized if the refuge has adequate funding to administer the requested project.

Anticipated Impacts of the Use:

Short-term impacts:
There should be no significant adverse impacts from scientific research because each proposal will be reviewed when issued, and annually for multi year projects, for appropriateness and consistency with the Service's policies for conducting research and this compatibility determination before the researcher would be issued a Special Use Permit. Factors such as project purpose, data collection methods, number of researchers, transportation, project duration, and location of access points will determine the extent of effects on the refuge. The knowledge gained from the research activities would provide information towards improving management techniques for trust resource species. Impacts such as trampling vegetation, removal of small numbers of plants and/or animals, and temporary disturbance to wildlife could occur, but should not be significant.

Long-term impacts:
Long-term benefits associated with species' population trends and improved management techniques would outweigh any negative impacts which may occur.

Public Review and Comment:
This draft compatibility determination will available for review and comment during the public review period established for the draft Banks Lake NWR Comprehensive Conservation Plan. All comments will be addressed in the final determination

Determination (Check One Below):
____ Use is not compatible.
__X__ Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility:

Each request for use of the refuge for research would be examined on its individual merits. Questions of who, what, when, where, and why would be asked to determine if the requested proposal contributes to the refuge purposes and could be best conducted on the refuge without significantly affecting the resources. If so, the researcher would be issued a Special Use Permit that would clearly define allowable activities. Progress would be monitored through annual reports. The success and usefulness of the data would be evaluated through final reports, and chronicles in publications derived from the research.

The following stipulations apply to special use permits issued for scientific research. Monitoring authorized research activities would ensure compliance with the permit's general and special conditions.

- The permittee is responsible for ensuring that all employees, party members, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of the permit.
- The permit may be cancelled or revised at any time by the Refuge Manager in case of emergency, unsatisfactory compliance, or determination of incompatibility with the purpose of the refuge.
- In accordance with the Archaeological Resources Protection Act (16 USC 470aa), the removal or disturbance of archaeological or historic artifacts is prohibited. The excavation, disturbance, collection or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- All waste materials and markers must be removed from the refuge upon the permittee's departure.
- Construction of structures is prohibited unless prior approval is obtained.

Justification:
The benefits derived from sound research provide a better understanding of resources on the refuge and surrounding area. This knowledge becomes valuable in managing natural systems, establishing thresholds, identifying threats, and better understanding the species and the environmental communities present on the refuge. Research projects would be designed to minimize impacts and disturbance. All research conducted within the wilderness area will be evaluated through the MRDG process.

NEPA Compliance For Refuge Use Description:

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

Mandatory 15-Year Reevaluation Date: _____

Approval of Compatibility Determination for Interpretation

Refuge Manager: _____
Signature Date

Regional Compatibility Coordinator: _____
Signature Date

Refuge Supervisor: _____
Signature Date

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

USE: WILDLIFE PHOTOGRAPHY

Supporting Uses:
Motorized and nonmotorized boating and waking and hiking within areas open to the public. The construction, maintenance, and use at the public access area of a wildlife walking trail, picnic area, parking area, restrooms, boat ramp, fishing pier, and commercial visitor service concession operation located within a refuge building.

Supporting Facilities:
Wildlife walking trail, boat ramp, fishing piers, vehicle parking area, information kiosk, concession operation, storage building, restrooms, picnic tables, one volunteer trailer, and recreational vehicle pad(s) for volunteers, and trash receptacles.

Refuge Name: Banks Lake National Wildlife

Establishing and Acquisition Authority(Ies):
Banks Lake National Wildlife Refuge was established for the protection and conservation of migratory and resident wildlife and its unique Carolina Bay ecosystem. The refuge established under the authorized of the Fish and Wildlife Act of 1956 on February 22, 1985 when approximately 3,560 acres were acquired from The Nature Conservancy with funding from Land and Water Conservation Fund Act of 1995.

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

"... suitable for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. Section 460k-1 "... the Secretary ... may accept and use ... real ... property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors ..." 16 U.S.C. Section 460k-2 (Refuge Recreation Act [16 U.S.C. Section 460k-460k-4], as amended).

National Wildlife Refuge System Mission:
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.

Description of Use:
The refuge is open year round to wildlife photography. Historically, wildlife photography supported approximately 20,000-25,000 visitor days at Banks Lake NWR. In 2008, traffic counters on entry roads and trails reported over 83,000 visitor use days on the refuge. The refuge estimates that at least 40% of visitors photograph wildlife during their refuge visit and at least 5% of those visitors are exclusively there for photography purposes.
The refuge has only one public access area. It is located approximately 1 mile south of Lakeland, Georgia on State Highway 122. This 17 acre public use access area provides the public with a two lane boat ramp, fully accessible fishing piers facility with a small picnic area, information kiosk, parking for approximately 35 vehicles with boat trailers and 15 single vehicles, restrooms, concession operation, wildlife observation trail, and trash receptacles.

The public access area is well used and almost any time during the day and evening. Visitors frequently stop by the access area to look for and photograph wildlife and walk the 1/4 mile wildlife observation trail, as well as, simply enjoy the natural beauty of the area and the cypress stands in the lake.

Visitors also use canoes, kayaks, and boats with small outboard or electric motors to observe and photograph wildlife. The use of large boats capable of high speeds is limited because they can only be safely operated at trolling speeds due to the large number of submerged snags, stumps, and logs that occur in the lake.

One visitor service concessionaire operates under a five year refuge special use permit to sell books and other items that help the public understand the conservation mission of the refuge and Service, as well as, improve their wildlife photography skills. The concession operation also rents rent canoes, kayaks, and small boats that visitors can use to observe and photograph wildlife and wildlands within the 1,000 acres of the lake. The concessionaire uses a building located at the public access area that was specifically constructed in the 1990s to provide either an on-site refuge contact station or concession operation. The concessionaire pays for a portion of the utility bills for the concession and attached storage building with the remainder paid for by the refuge. This amount the refuge pays is negotiated annually based on past use.

Currently the refuge wildlife photography program follows the recommendations of past Visitor Service Program Reviews. The refuge's plans for wildlife photography will be updated to reflect the preferred alternative of the Final Comprehensive Conservation Plan. We expect wildlife photography to increase at the historic rate of approximately five percent per year. It is our professional judgment that the area currently open to the public and the existing facilities should be able to accommodate this level of growth during the period this determination is valid.

Availability of Resources:
Banks Lake refuge is administered by the Okefenokee NWR. The Okefenokee NWR spent approximately $130,000 and 370 staff days in support of Banks Lake NWR's programs during Fiscal Year 2008. In additional, volunteers work approximately 400 staff days each year at Banks Lake NWR to provide basic visitor informational services and maintain the public access area. Approximately, 75% of the volunteer effort at Banks Lake NWR is by resident volunteers. During 2008 the refuge paid approximately $8,000 for the utilities that supported the resident volunteer program and our share of the concession building operation. Routine maintenance costs averaged about $5,000 per year for the last three years.

Until adequate funding is available to staff Banks Lake NWR, it will continue to be administered by the Okefenokee NWR. Fortunately, the Okefenokee NWR has been able to provide this level of support without significantly compromising the accomplishment of its mission. At the start of 2009 Banks Lake NWR was given its own budget and the funding that Okefenokee NWR spent in 2008 to administer Banks Lake NWR was transferred to the Banks Lake NWR cost codes. This should further guarantee adequate funding and personnel to administer the Banks Lake NWR wildlife photography program.

Anticipated Impacts of the Use:
An estimated 1500 wildlife photography use days occurred on this refuge during 2008. Visitors generally spend a hour or less during each visit unless they launch a boat and then they often spend half a day enjoying the refuge. Regular law enforcement patrols are required to ensure visitors observe the basic refuge regulations for litter, weapons, disturbing others, etc.

The draft Comprehensive Conservation Plan calls for the Service to expand and enhance the current level of wildlife photography use and to establish wildlife photography and observation blind(s) as funding becomes available. This proposal should slightly increase the daily number of visitors. It is our professional judgment that even a three fold increase in the average daily wildlife photography use would not have a significant impact on the quality of the wildlife photographical experience the refuge would offer the public as the public access area, wildlife trail, and lake system provide amble opportunities for the public to enjoy this use.

Public Review and Comment:
This draft compatibility determination will available for review and comment during the public review period established for the draft Banks Lake NWR Comprehensive Conservation Plan. All comments will be addressed in the final determination

Determination (Check One Below):
____ Use is not compatible.
__X__ Use is compatible with the following stipulations.

Stipulations Necessary To Ensure Compatibility:

Wildlife photography will continue to be subject to all general and special refuge regulations, as well as, the state regulations for litter, behavior, and criminal activity. The program enhancements called for in the final Comprehensive Conservation Plan will be phased in as the necessary funding and staff is provided.

Justification:
Wildlife photography and its supporting uses and facilities would have a positive effect in providing the public with quality, wildlife dependent recreation. Likewise, the supporting uses and facilities described in this determination would have only minor and no significant long term or cumulative impacts to resident, migratory, and threatened/endangered specie populations.
There are currently sufficient funds to administer the current level of use and maintain its compatibility with refuge purposes and the Mission of the Refuge System. The program developments and improvements planned in the preferred alternative of the draft Banks Lake NWR Comprehensive Conservation Plan would be implement as funding allows and the both the short- and long-term impacts of developing wildlife photography opportunities as described in the preferred alternative are determined to be compatible with refuge purposes and the Mission of the Refuge System.

NEPA Compliance for Refuge Use Description:

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

Mandatory 15-Year Reevaluation Date: _____

Approval of Compatibility Determination for Wildlife Photography

Refuge Manager: _____
Signature Date

Regional Compatibility Coordinator: _____
Signature Date

Refuge Supervisor: _____
Signature Date

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

Appendix G. Intra-Service Section 7 Biological Evaluation

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: George Constantino
Telephone Number: 912-496-7366
E-Mail: George_constantino@fws.gov
Date: November 2008

PROJECT NAME: Banks Lake 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: Georgia/ U.S. Fish and Wildlife Service

III. Station Name: Banks Lake National Wildlife Refuge

IV. Description of Proposed Action

The purpose of the plan is to develop a proposed action that best achieves the refuge purpose; attains the vision and goals developed for the refuge; contributes to National Wildlife Refuge System mission; addresses key problems, issues and relevant mandates; and is consistent with sound principles of fish and wildlife management over the 15 life of the plan.

Specifically, the plan is needed to:

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

V. Pertinent Species and Habitat:

A. Include species/habitat occurrence map:

B. Complete the following table:

SPECIES/CRITICAL HABITAT	STATUS[1]
Bald Eagle	Threatened (State)
Wood Stork	Endangered
Round Tail Muskrat	Threatened (state)
American Alligator	Threatened (SA)

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

VI. Location (attach map):

A. Ecoregion Number and Name: Peninsular Florida Ecosystem

B. County and State: Lanier County, Georgia

C. Section, township, and range (or latitude and longitude: 299,823.72 3,435,358.93

D. Distance (miles) and direction to nearest town: Banks Lake NWR is located one mile west of Lakeland, GA, along GA Hwy 122.

E. Species/habitat occurrence:

Bald Eagle- Bald eagles are observed year round on the refuge. No active nesting observed since 1996. Based on 2008 State survey data, there are eight occupied nests 30 miles southwest of the refuge.

Wood Stork- Wood storks are periodically seen on the refuge but accurate information on their numbers, distribution, and use patterns are unknown. The closest known rookery is 14 miles southwest of the refuge.

Round-tailed Muskrat- Round-tailed muskrats have not been documented or surveyed on the refuge but have been documented on adjacent Moody Air Force Base.

American Alligator- Observed on the refuge and properties adjacent to the refuge throughout the year.

VII. Determination of Effects:

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

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Bald Eagle	No negative impacts foreseen
Wood Stork	No negative impacts foreseen
Round Tail Muskrat	No negative impacts foreseen
American Alligator	No negative impacts foreseen

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

SPECIES/ CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS
Bald Eagle	Protect any nesting sites that may occur
Wood Stork	Protect habitat and conduct surveys. Understanding the distribution and use pattern would help in protecting them from impacts
Round Tail Muskrat	Conduct surveys
American Alligator	Increase public awareness of the dangers of feeding alligators and continue to ban hunting

VIII. Effect Determination and Response Requested:

SPECIES/CRITICAL HABITAT	DETERMINATION[1]			REQUESTED
	NE	NA	AA	
				Concurrence
				Concurrence
				Concurrence
				Concurrence

[1]DETERMINATION/ RESPONSE REQUESTED:
NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested is optional but a "Concurrence" is recommended for a complete Administrative Record.

NA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response Requested is a" Concurrence".

AA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested for listed species is "Formal Consultation". Response requested for proposed and candidate species is "Conference".

_____ _____

Signature (originating station) **Date**

_____

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):

_____ _____

Signature **Date**

_____ _____

Title **Office**

Appendix H. Wilderness Review

The Wilderness Act of 1964 defines a wilderness area as an area of federal land that retains its primeval character and influence, without permanent improvements or human inhabitation, and is managed so as to preserve its natural conditions and which:

- generally appears to have been influenced primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
- has outstanding opportunities for solitude or primitive and unconfined types of recreation;
- has at least 5,000 contiguous roadless acres or is of sufficient size to make practicable its preservation and use in an unimpeded condition; or is a roadless island, regardless of size;
- does not substantially exhibit the effects of logging, farming, grazing, or other extensive development or alteration of the landscape, or its wilderness character could be restored through appropriate management at the time of review; and
- may contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

The lands within Banks Lake National Wildlife Refuge were reviewed to determine their suitability in meeting the criteria for wilderness, as defined by the Wilderness Act of 1964. None of the federally owned lands within the current management boundary of Banks Lake National Wildlife Refuge were found to be suitable for wilderness designation at this time. The refuge's boundary includes approximately 3,559 acres (1,440 hectares) in Lanier County, Georgia. Human disturbances are evident throughout and around the refuge in the form of adjacent development, allowance of motorized boating, and military air traffic.

Appendix I. Refuge Biota

Birds potentially found on the refuge (source: Moody Air Force Base).

Common Name	Scientific Name
Acadian Flycatcher	*Empidonax virescens*
American Bittern	*Botaurus lentiginosus*
American Coot	*Fulica arnericana*
American Crow	*Corvus brachyrhychos*
American Goldfinch	*Carduelis tristis*
American Kestrel	*Falco sparverius*
American Redstart	*Setophaga ruticilla*
American Robin	*Turdus migratorius*
American Woodcock	*Philohela minor*
Anhinga	*Anhinga anhinga*
Bachman's Sparrow	*Aimophial aestivalis*
Bald Eagle	*Haliaeetus leucocephalus*
Barn Swallow	*Hirundo rustica*
Barred Owl	*Strix varia*
Bay-breasted Warbler	*Dendroica castanea*
Belted Kingfisher	*Megacerlye alcyon*
Black Vulture	*Coragyps atratus*
Black-and-white Warbler	*Mniotilta varia*
Blackburnian Warbler	*Dendroica fusca*
Black-crowned Night Heron	*Nycticorax nycticorax*
Blackpoll Warbler	*Dendroica striata*
Black-throated Blue Warbler	*Dendroica caerulescens*
Black-throated Green Warbler	*Dendroica virens*
Blue Grosbeak	*Guiraca caerulea*
Blue Jay	*Cyanocitta cristata*
Blue-gray Gnatcatcher	*Polioptila caerulea*

Common Name	Scientific Name
Blue-winged Teal	*Anas discors*
Boat-tailed Grackle	*Quiscalus major*
Bobolink	*Dolichonyx oryzivorus*
Brewer's Blackbird	*Euphagus cyanacephalus*
Brown Thrasher	*Toxostoma rufum*
Brown-headed Cowbird	*Molothrus ater*
Brown-headed Nuthatch	*Sitta pusilla*
Canada Goose	*Branta canadensis*
Cape May Warbler	*Dendroica tigrina*
Carolina Chickadee	*Parus carolinensis*
Carolina Wren	*Thryothonis ludovicianus*
Cattle Egret	*Bulbulcus ibis*
Cedar Waxwing	*Bombycilla cedrorum*
Chestnut-sided Warbler	*Dendroica pennsylvanica*
Chimney Swift	*Chaetura pelagica*
Chipping Sparrow	*Spizella passerina*
Chuck-will's Widow	*Caprimulgus carolinensis*
Common Grackle	*Quiscalus quiscula*
Common Ground Dove	*Columbina passerina*
Common Moorhen	*Gallinula chloropus*
Common Nighthawk	*Chordeiles minor*
Common Snipe	*Capella gallinago*
Common Yellowthroat	*Geothlypis trichas*
Cooper's Hawk	*Accipiter cooperii*
Dark-eyed Junco	*Junco hyemalis*
Double-crested Cormorant	*Phalacrocorax auritus*
Downy Woodpecker	*Picoides pubescens*
Eastern Bluebird	*Sialia sialis*
Eastern Kingbird	*Tyrannus tyrannus*
Eastern Meadowlark	*Sturnella magna*

Common Name	Scientific Name
Eastern Phoebe	*Sayornis phoebe*
Eastern Screech Owl	*Otus asio*
Eastern Towhee	*Pipilo erythrophthalmus*
Eastern Wood Pewee	*Contopus virens*
European Starling	*Sturnis vulgaris*
Field Sparrow	*Spizella pusilla*
Fish Crow	*Corvus ossifragus*
Florida Sandhill Crane	*Grus canadensis pratensis*
Fox Sparrow	*Passerella iliaca*
Glossy Ibis	*Plegadis falcinellus*
Golden-crowned Kinglet	*Regulus satrapa*
Gray Catbird	*Dumetella carolinensis*
Great Blue Heron	*Ardea herodius*
Great Egret	*Casmerodius albus*
Great Horned Owl	*Bubo virginianus*
Great-crested Flycatcher	*Myiarchus crinitus*
Greater Sandhill Crane	*Grus canadensis tabida*
Greater Yellowlegs	*Tringa melanoleuca*
Green Heron	*Butorides striatus*
Hermit Thrush	*Catharzis guttatus*
Hooded Merganser	*Lophodytes cucullatus*
Hooded Warbler	*Wilsonia citrina*
House Finch	*Carpodacus purpureus*
House Sparrow	*Passer domesticus*
House Wren	*Troglodytes aedon*
Indigo Bunting	*Passerina cyanea*
Kentucky Warbler	*Oporonis formosus*
Killdeer	*Charadrius vociferus*
King Rail	*Rallus elegans*
Least Bittern	*Ixobrychus exilis*

Common Name	Scientific Name
Least Sandpiper	*Calidris minutilla*
Lesser Yellowlegs	*Tringa flavipes*
Little Blue Heron	*Egretta caerulea*
Loggerhead Shrike	*Lanius ludovicianus*
Magnolia Warbler	*Dendroica magnolia*
Mallard	*Anas platyrhyncos*
Marsh Wren	*Cistothorus palustris*
Mississippi Kite	*Ictinia mississippiensis*
Mourning Dove	*Zenaida macroura*
Nashville Warbler	*Verrnivora ruficapilla*
Northern Bobwhite	*Colinus virginianus*
Northern Cardinal	*Cardinalis cardinalis*
Northern Flicker	*Colaptes aurates*
Northern Harrier	*Circus cyaneus*
Northern Mockingbird	*Mimus polyglottis*
Northern Oriole	*Icterus galbula*
Northern Parula	*Parula arnericana*
Northern Rough-winged Swallow	*Stelgidopteryx ruficollis*
Orange-crowned Warbler	*Vermivora celata*
Orchard Oriole	*Icterus spurius*
Osprey	*Pandion haliaetus*
Ovenbird	*Seiurus aurocapillus*
Palm Warbler	*Dendroica palmarum*
Peregrine Falcon	*Falco peregrinus*
Pied-Billed Grebe	*Podilymbus podiceps*
Pileated Woodpecker	*Dryocopus pileatus*
Pine Siskin	*Carduelis pinus*
Pine Warbler	*Dendroica pinus*
Prairie Warbler	*Dendroica discolor*
Prothonotary Warbler	*Protonotaria citrea*

Common Name	Scientific Name
Purple Finch	*Carpodacus mexicanus*
Purple Gallinule	*Porphyrula martinica*
Purple Martin	*Progne subis*
Red-bellied Woodpecker	*Melanerpes carolinus*
Red-eyed Vireo	*Vireo olivaceus*
Red-headed Woodpecker	*Meanerpes erythrocephalus*
Red-shouldered Hawk	*Buteo lineatus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoeniceus*
Ring-billed Gull	*Larus delawarensis*
Ring-necked Duck	*Aythya collaris*
Rock Dove	*Columba livia*
Rose-breasted Grosbeak	*Pheucticus ludovicianus*
Ruby-crowned Kinglet	*Regulus calendula*
Ruby-throated Hummingbird	*Archilochus colubris*
Savannah Sparrow	*Passerculus sandwichensis*
Scarlet Tanager	*Piranga olivacea*
Sharp-shinned Hawk	*Accipiter striatus*
Short-Billed Dowitcher	*Limnodromus griseus*
Snowy Egret	*Egretta thulla*
Solitary Sandpiper	*Tringa solitaria*
Solitary Vireo	*Vireo solitarius*
Song Sparrow	*Melospiza melodia*
Sora	*Porzana carolina*
Spotted Sandpiper	*Actitis macularia*
Stilt Sandpiper	*Micropalarna hiniantopus*
Summer Tanager	*Piranga rubra*
Swainson's Thrush	*Cathanis ustulatus*
Swamp Sparrow	*Melospiza georgiana*
Tennessee Warbler	*Vermivora peregrina*

Common Name	Scientific Name
Tree Swallow	*Iridoprocne bicolor*
Tricolored Heron	*Egretta tricolor*
Tufted Titmouse	*Parus bicolor*
Turkey Vulture	*Cathartes aura*
Upland Sandpiper	*Bartramia longicauda*
Veery	*Cathanis fuscescens*
Vermillion Flycatcher	*Pyrocephalus rubinus*
Vesper Sparrow	*Pooecetes gramineus*
White Ibis	*Eudocimus albus*
White-breasted Nuthatch	*Sitta carolinensis*
White-eyed Vireo	*Vireo griseus*
White-throated Sparrow	*Zonotrichia albicollis*
Wild Turkey	*Meleagris gallopavo*
Wood Duck	*Aix sponsa*
Wood Stork	*Mycteria arnericana*
Wood Thrush	*Hylocichla mustelina*
Worm-eating Warbler	*Helmitheros vermivorus*
Yellow-bellied Sapsucker	*Sphyrpicus varius*
Yellow-billed Cuckoo	*Coccyzus americanus*
Yellow-crowned Night Heron	*Nyctanassa violacea*
Yellow-rumped Warbler	*Dendroica coronata*
Yellow-throated Vireo	*Vireo flavifrons*
Yellow-throated Warbler	*Dendroica dominica*

Refuge plant, mammal, reptile, amphibian, and fish lists.

Common Name	Scientific Name
PLANTS	
Red Maple	*Acer rubrum*
Slenderleaf False Foxglove	*Agalinis tenuifolia*
Ticklegrass	*Agrostis hyemalis*
Hazel Alder	*Alnus serrulata*
Common Ragweed	*Ambrosia artemisiifolia*
Hog Peanut	*Amphicarpa bracteata*
Bushy Broomsedge	*Andropogon glomeratus*
Broomsedge	*Andropogon virginicus*
Red Chokeberry	*Aronia arbutifolia*
Giant Cane	*Arundinaria gigantea*
St, Andrew's Cross	*Ascyrum hypericoides*
St. Peter's Wort	*Ascyrum stans*
Ebony Spleenwort	*Asplenium platyneuron*
Hairy-veined Aster	*Aster lateriflorus*
Groundsel Tree	*Baccharis halimifolia*
Lemon Bacopa	*Bacopa caroliniana)*
Crossvine	*Bignonia capreolata*
False Nettle	*Boehmeria cylindrica*
Dollar Bonnet	*Brasenia schreberi*
Broadwing Sedge	*Carex alata*
Greenwhite Sedge	*Carex albolutescens*
Broad Looseflower Sedge	*Carex laxiflora*
Blunt Broom Sedge	*Carex tribuloides*
Foxtail Sedge	*Carex vulpinoidea*
Pignut Hickory	*Carya glabra*
Coinwort	*Centella asiatica*
Wild Chervil	*Chaerophyllum tainturieri*
Slender Woodoats	*Chasmanthium laxum*

Common Name	Scientific Name
Longleaf Woodoats	*Chasmanthium sessiliflorum*
Stout Thistle	*Cirsium horridulum*
Swamp Leather Flower	*Clematis crispa*
Coastal Sweetpepperbush	*Clethra alnifolia*
Buckwheat Tree	*Cliftonia monophylla*
Fanwort	*Cabomba caroliniana*
Flowering Dogwood	*Cornus florida*
Titi	*Cyrilla racemiflora*
Small Wild Carrot	*Daucus pusillus*
Common Tick Trefoil	*Desmodium paniculatum*
Hairy Panicum	*Dichanthelium acuminatum*
Panic grass	*Dichanthelium scabriusculum*
Hairy Panicum	*Dichanthelium scoparium*
Ponysfoot	*Dichondra carolinensis*
Persimmon	*Diospyros virginiana*
Spikerush	*Eleocharis baldwinii*
Yellowish Spikerush	*Eleocharis flavescens*
Small Spikerush	*Eleocharis smallii*
Giant Plume Grass	*Erianthus giganteus*
Narrow Plum Grass	*Erianthus strictus*
Daisy Fleabane	*Erigeron philadelphicus*
Oak-leaved Fleabane	*Erigeron quercifolius*
Dogfennel	*Eupatorium capillifolium*
Grass-leaved Goldenrod	*Euthamia tenuifolia*
Yellow Jessamine	*Gelsemium sempervirens*
Carolina Geranium	*Geranium carolinianum*
Rabbit's Tobacco	*Gnaphalium purpureum*
Creeping Bluet	*Houstonia procumbens*
Common Pennywort	*Hydrocotyle umbellata*
Spider Lily	*Hymenocallis crassifolia*

Common Name	Scientific Name
Dwarf St. John's Wort	*Hypericum mutilum*
Yellow Star Grass	*Hypoxis hirsuta*
Sweet Gallberry	*Ilex coriacea*
Gallberry	*Ilex glabra*
American Holly	*Ilex opaca*
Yaupon	*Ilex vomitoria*
Blue Flag	*Iris virginica*
Virginia Willow	*Itea virginica*
Pointed Rush	*Juncus acuminatus*
Small-headed Rush	*Juncus brachycephalus*
Leather Rush	*Juncus coriaceus*
Branched Rush	*Juncus dichotomus*
Soft Rush	*Juncus effusus*
Elliott’s Rush	*Juncus elliottii*
Flat-leaved Rush	*Juncus marginatus*
Many-headed Rush	*Juncus polycephalus*
Path Rush	*Juncus tenuis*
Roundhead Rush	*Juncus validus*
Red Cedar	*Juniperus virginiana*
Weedy Dwarfdandelion	*Krigia caespitosa*
Virginia Dwarfdandelion	*Krigia virginica*
Common Duckweed	*Lemna aequinoctialis*
Fetterbush	*Leucothoe racemosa*
Sweetgum	*Liquidambar styraciflua*
Tulip Poplar	*Liriodendron tulipifera*
Cylindricfruit Primrose-willow	*Ludwigia glandulosa*
Narrow-leaved Primrose-willow	*Ludwigia linearis*
Marsh Seedbox	*Ludwigia palustris*
Water Horehound	*Lycopus rubellus*
Staggerbush	*Lyonia fruticosa*

Common Name	Scientific Name
Southern Magnolia	*Magnolia grandiflora*
Sweet bay	*Magnolia virginiana*
Climbing Hempweed	*Mikania scandens*
Wax Myrtle	*Myrica cerifera*
Watermilfoil	*Myriophyllum pinnatum*
Slender Naias	*Najas guadalupensis*
Spatterdock	*Nuphar luteum*
American White Waterlily	*Nymphaea odorata*
Banana Lily	*Nymphoides aquatica*
Swamp Tupelo	*Nyssa biflora*
Sensitive Fern	*Onoclea sensibilis*
Cinnamon Fern	*Osmunda cinnamomea*
Royal Fern	*Osmunda regalis*
Hairy Wood Sorrel	*Oxalis dillenii*
Munro Grass	*Panicum rigidulum*
Switch Grass	*Panicum virgatum*
Virginia Creeper	*Parthenocissus quinquefolia*
Slender Beadgrass	*Paspalum setaceum*
Red Bay	*Persea borbonia*
Swamp Bay	*Persea palustris*
Slash Pine	*Pinus elliottii*
Longleaf Pine	*Pinus palustris*
Loblolly Pine	*Pinus taeda*
Narrowleaf Silkgrass	*Pityopsis graminifolia*
Virginia Plantain	*Plantago virginica*
Swamp Smartweed	*Polygonum hydropiperoides*
Dotted Smartweed	*Polygonum punctatum*
Bog Smartweed	*Polygonum setaceum*
Wild Black Cherry	*Prunus serotina*
Bracken Fern	*Pterydium aquilinum*

Common Name	Scientific Name
Mock Bishop's-weed	*Ptilimnium capillaceum*
Diamond-leaf Oak	*Quercus laurifolia*
Water Oak	*Quercus nigra*
Live Oak	*Quercus virginiana*
Meadow Beauty	*Rhexia mariana*
Handsome Harry	*Rhexia virginica*
Piedmont Azalea	*Rhododendron canescens*
Sand Blackberry	*Rubus cuneifolius*
Southern Dewberry	*Rubus trivialis*
Sour Dock	*Rumex hastatulus*
Palmetto	*Sabal minor*
Broad-leaved arrowhead	*Sagittaria latifolia*
Black Willow	*Salix nigra*
Lyreleaf Sage	*Salvia lyrata*
Elderberry	*Sambucus canadensis*
Lizard's-tail	*Saururus cernuus*
Wool Grass	*Scirpus cyperinus*
Yellow foxtail	*Setaria glauca*
White Blue-eyed Grass	*Sisyrinchium albidum*
Stout Blue-eyed grass	*Sisyrinchium angustifolium*
Ear-leaved Greenbrier	*Smilax auriculata*
Saw Greenbrier	*Smilax bona-nox*
Glaucous Greenbrier	*Smilax glauca*
Bristly Greenbrier	*Smilax hispida*
Bamboo Vine	*Smilax laurifolia*
Common Greenbrier	*Smilax rotundifolia*
Red-fruited Greenbrier	*Smilax walteri*
Canada Goldenrod	*Solidago canadensis*
Giant Goldenrod	*Solidago gigantea*
Prairie Wedgescale	*Sphenopholis obtusata*

Common Name	Scientific Name
Florida Hedgenettle	*Stachys floridana*
Pond Cypress	*Taxodium ascendens*
Bald Cypress	*Taxodium distichum*
Kunth’s Beech Fern	*Thelypteris kunthii*
Poison Ivy	*Toxicodendron radicans*
Clasping Venus's Looking-glass	*Triodanis perfoliata*
Southern Cat-tail	*Typha domingensis*
Bladderwort	*Utricularia spp.*
Farkleberry	*Vaccinium arboreum*
High-bush Blueberry	*Vaccinium corymbosum*
Elliott's Blueberry	*Vaccinium elliottii*
Deerberry	*Vaccinium stamineum*
Neckweed	*Veronica peregrina*
Possumhaw	*Viburnum nudum*
Lance-leaved Violet	*Viola lanceolata*
Lobed Violet	*Viola septemloba*
Common blue Violet	*Viola sororia*
Muscadine	*Vitis rotundifolia*
Southern Rockbell	*Wahlenbergia marginata*
Wisteria	*Wisteria frutescens*
Netted Chain Fern	*Woodwardia areolata*
Zephyr Lily	*Zephyranthes atamasco*
FISHES	
American Eel	*Anguilla rostrata*
Banded Sunfish	*Enneacanthus obesus*
Bluegill	*Lepomis macrochirus*
Bluespotted Sunfish	*Enneacanthus gloriosus*
Bowfin	*Amia calva*
Brook Silverside	*Labidesthes sicculus*
Chain Pickerel	*Esox niger*

Common Name	Scientific Name
Eastern Mosquitofish	*Gambusia holbrooki*
Eastern Mudminnow	*Umbra pygmaea*
Everglades Pygmy Sunfish	*Elassoma evergladei*
Flier	*Centrarchus macropterus*
Florida Gar	*Lepisosteus platyrhincus*
Golden Topminnow	*Fundulus chrysotus*
Lake Chubsucker	*Erimyzon sucetta*
Largemouth Bass	*Micropterus salmoides*
Lined Topminnow	*Fundulus lineolatus*
Mud Sunfish	*Acantharchus pomotis*
Pirate Perch	*Aphredoderus sayanus*
Pygmy Killifish	*Leptolucania ommata*
Redbreast Sunfish	*Lepomis auritus*
Redfin Pickerel	*Esox americanus*
Warmouth	*Lepomis gulosus*
Yellow Bullhead	*Ameiurus natalis*
AMPHIBIANS	
Barking Treefrog	*Hyla gratiosa*
Bullfrog	*Rana catesbeiana*
Central Newt	*Notophthalmus viridescens louisianensis*
Cope's Gray Treefrog	*Hyla chrysoscelis*
Dwarf Salamander	*Eurycea quadridigitata*
Eastern Narrowmouth Toad	*Gastrophryne carolinensis*
Eastern Spadefoot Toad	*Scaphiopus holbrooki*
Gray Treefrog	*Hyla versicolor*
Greater Siren	*Siren lacertina*
Green Frog	*Rana clamitans*
Green Treefrog	*Hyla cinerea*
Little Grass Frog	*Pseudacris ocularis*
Mole Salamander	*Ambystoma talpoideum*

Common Name	Scientific Name
Oak Toad	*Bufo quercicus*
Pig Frog	*Rana grylio*
Pine Woods Treefrog	*Hyla femoralis*
Slender Dwarf Siren	*Pseudobranchus striatus spheniscus*
Southeastern Slimy Salamander	*Plethodon grobmani*
Southern Cricket Frog	*Acris gryllus gryllus*
Southern Dusky Salamander	*Desmognathus auriculatus*
Southern Leopard Frog	*Rana utricularia*
Southern Spring Peeper	*Pseudacris crucifer bartramiana*
Southern Toad	*Bufo terrestris*
Squirrel Treefrog	*Hyla squirella*
Two-toed Amphiuma	*Amphiuma means*
REPTILES	
American Alligator	*Alligator mississippiensis*
Banded Water Snake	*Nerodia fasciata confluens*
Broadhead Skink	*Eumeces laticeps*
Brown Water Snake	*Nerodia taxispilota*
Chicken Turtle	*Deirochelys reticularia*
Common Musk Turtle	*Sternotherus odoratus*
Common Snapping Turtle	*Chelydra serpentina*
Eastern Box Turtle	*Terrapene carolina carolina*
Eastern Coral Snake	*Micrurus fulvius*
Eastern Cottonmouth	*Agkistrodon piscivorus piscivoris*
Eastern Hognose Snake	*Heterodon platyrhinos*
Eastern Kingsnake	*Lampropeltis triangulurn triangulum*
Eastern Mud Snake	*Farancia abacura abacura*
Eastern Mud Turtle	*Kinosternon subrubrum subrubrum*
Eastern Ribbon Snake	*Thamnophis sauritus sauritus*
Florida Cooter	*Pseudemys floridiana floridiana*
Florida Green Water Snake	*Nerodia floridana*

Common Name	Scientific Name
Florida Redbelly Snake	*Storeria occipitomaculata obscura*
Florida Softshell Turtle	*Apalone ferox*
Glossy Crayfish Snake	*Regina rigida*
Gopher Tortoise	*Gopherus polyphemus*
Gray Rat Snake	*Elaphe obsoleta spiloides*
Green Anole	*Anolis caroleninsis*
Ground Skink	*Scincella lateralis*
Northern Scarlet Snake	*Cemophora coccinea copei*
Red Rat Snake	*Elaphe guttata guttata*
Redbelly Water Snake	*Nerodia eryhtrogaster*
Rough Green Snake	*Opheodrys aestivus*
Scarlet Kingsnake	*Lampropeltis triangulum elapsoides*
Six-lined Racerunner	*Cnemidophorus sexlineatus sexlineatus*
Southeastern Five-lined Skink	*Eumeces inexpectatus*
Southern Black Racer	*Coluber constrictor priapus*
Southern Ringneck Snake	*Diadophis punctatus punctatus*
Striped Crayfish Snake	*Regina alleni*
Striped Mud Turtle	*Kinosternon baurii*
Timber Rattlesnake	*Crotalus horridus*
Yellowbelly Slider	*Trachemys scripta scripta*
MAMMALS	
Bobcat	*Felis rufus*
Cotton Mouse	*Peromyscus gossypinus*
Cotton Rat	*Sigmodon hispidus*
Eastern Harvest Mouse	*Reithrodontomys humulis*
Eastern Pipistrelle	*Pipistrellus subftavus*
Eastern Woodrat	*Neotoma floridana*
Evening Bat	*Nycticeius humeralis*
Fox Squirrel	*Sciurus niger*
Gray Fox	*Urocyon cineroargenteus*

Common Name	Scientific Name
Gray Squirrel	*Sciurus carolinensis*
Little Brown Bat	*Myotis lucifugus*
Northern Yellow Bat	*Lasiurus intermedius*
Pine Vole	*Pitymys pinetorum*
Raccoon	*Procyon lotor*
Red Bat	*Lasiurus borealis*
Red Fox	*Vulpes vulpes*
Rice Rat	*Oryzomys palustris*
Round-tailed Muskrat	*Neofiber alleni*
Seminole Bat	*Lasiurus seminolus*
Southeastern Bat	*Myotis austroriparius*
Southeastern Pocket Gopher	*Geomys pinetis*
Southern Flying Squirrel	*Glaucomys volans*
Virginia Opossum	*Didelphis virginiana*
White-tailed Deer	*Odocoileus virginianus*

Based on data provided by Dr. Mohlenbrock (Valdosta State University), The Nature Conservancy and Moody Air Force Base

Rare, threatened, or endangered species potentially occurring on the refuge.

Common Name	Scientific Name	Status	
		GWRD	USFWS
REPTILES			
American Alligator	*Alligator mississippiensis*	-	T(S/A)
BIRDS			
Wood Stork	*Mycteria americana*	E	E
MAMMALS			
Round-tailed Muskrat	*Neofiber alleni*	T	-
Key: E=endangered, T=threatened, T(S/A) = Similarity of Appearance (to Threatened American crocodile)			

Listed plant species likely to occur on the refuge.

Common Name	Scientific Name	Status	
		GWRD	USFWS
Greenfly Orchid	*Epidendrum conopseum*	SC	-
Hooded Pitcherplant	*Sarracenia minor*	SC	-
Yellow Flytrap	*Sarracenia flava*	SC	-

Nonnative species documented or potentially occurring on the refuge.

Common Name	Scientific Name
PLANTS	
Alligator Weed	*Alternanthera philoxeroides*
Annual Bluegrass	*Poa annua*
Asiatic False Hawksbeard	*Youngia japonica*
Bermuda Grass	*Cynodon dactylon*
Black Medic	*Medicago lupulina*
Brazilian Vervain	*Verbena brasiliensis*
Chinese Privet	*Ligustrum sinense*
Common Bedstraw	*Galium tinctorium*
Common Chickweed	*Stellaria media*
Curly Dock	*Rumex crispus*

Common Name	Scientific Name
Glossy Privet	*Ligustrum lucidum*
Hop Clover	*Trifolium campestre*
Japanese Honeysuckle	*Lonicera japonica*
Ladysthumb	*Polygonum persicaria*
Narrow-leaved Vetch	*Vicia angustifolia*
Quaking Grass	*Briza minor*
Southern Rockbell	*Wahlenbergia marginata*
Sticky Chickweed	*Cerastium glomeratum*
Water Hyacinth	*Eichhornia crassipes*
Yellow foxtail	*Setaria glauca*
BIRDS	
Cattle Egret	*Bubulcus ibis*
Eurasian Collared Dove	*Streptopelia decaocto*
European Starling	*Sturnus vulgaris*
House Sparrow	*Passer domesticus*
Rock Pigeon	*Columba livia*
MAMMALS	
Black Rat	*Rattus rattus*
Coyote	*Canis latrans*
Feral Hog	*Sus scrofa*
House Mouse	*Mus musculus*
Nine-banded Armadillo	*Dasypus novemcinctus*
Norway Rat	*Rattus norvegicus*

Appendix J. Budget Requests

REFUGE OPERATING NEEDS SYSTEM (RONS)

These will be made available in the Final CCP.

MAINTENANCE MANAGEMENT SYSTEM NEEDS

These will be made available in the Final CCP.

Appendix K. List of Preparers

George Constantino, USFWS, Refuge Manger, Okefenokee NWR
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