DRAFT COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL ASSESSMENT

EUFAULA NATIONAL WILDLIFE REFUGE

Barbour and Russell Counties, Alabama and
Stewart and Quitman Counties, Georgia

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

Southeast Region
Atlanta, Georgia

June 2008

TABLE OF CONTENTS

SECTION A. DRAFT COMPREHENSIVE CONSERVATION PLAN

I. BACKGROUND 1

Introduction 1
Purpose and Need for the Plan 1
U.S. Fish and Wildlife Service 2
National Wildlife Refuge System 2
Legal and Policy Context 4
Legal Mandates, Administrative and Policy Guidelines, and Other Considerations 4
Biological Integrity, Diversity, and Environmental Health Policy 5
National and International Conservation Plans and Initiatives 5
Relationship to State Wildlife Agencies 6

II. REFUGE OVERVIEW 9

Introduction 9
Refuge History and Purpose 12
Special Designations 13
Ecosystem Context 13
Regional Conservation Plans and Initiatives 14
Ecological Threats and Problems 14
Habitat Loss and Fragmentation 14
Alterations to Hydrology 16
Proliferation of Invasive Aquatic Plants and Animals 17
Physical Resources 17
Climate 17
Physiography, Topography, and Soils 19
Hydrology 19
Water Quality and Quantity 19
Air Quality 19
Biological Resources 20
Habitat 20
Wildlife 31
Threatened and Endangered Species 34
Invasive Species 35
Cultural Resources 37
Socioeconomic Environment 39
Refuge Administration and Management 43
Land Protection and Conservation 43
Visitor Services 50
Personnel, Operations and Maintenance 53

III. PLAN DEVELOPMENT 55

Public Involvement and the Planning Process 55
Summary of Issues, Concerns and Opportunities 56
Wildlife and Habitat Management 56
Resource Protection 58
Visitor Services 59

Refuge Administration 60
Wilderness Review 61

IV. MANAGEMENT DIRECTION 63

Introduction 63
Vision 63
Goals, Objectives, and Strategies 64
Wildlife Population Management 64
Habitat Management 75
Visitor Services 82
Refuge Administration 87

V. PLAN IMPLEMENTATION 93

Introduction 93
Proposed Projects 93
Fish and Wildlife Population Management 93
Habitat Management 94
Visitor Services 94
Refuge Administration 95
Funding and Personnel 96
Partnership and Volunteer Opportunities 96
Step-down Management Plans 96
Monitoring and Adaptive Management 96
Plan Review and Revision 97

SECTION B. ENVIRONMENTAL ASSESSMENT

I. BACKGROUND 103

Introduction 103
Purpose and Need for Action 103
Decision Framework 103
Planning Study Area 104
Authority, Legal Compliance, and Compatibility 104
Compatibility 104
Public Involvement and the Planning Process 105

II. AFFECTED ENVIRONMENT 107

III. DESCRIPTION OF ALTERNATIVES 109

Formulation of Alternatives 109
Description of Alternatives 109
Alternative A: Current Management (No Action) 109
Alternative B: Enhanced Wildlife and Habitat Management 111
Alternative C: Enhanced Wildlife-Dependent Public Use 113
Alternative D: Balanced Wildlife/Habitat Management and Public Use Activities (Proposed Alternative) 114
Features Common to All Alternatives 116
Comparison of Alternatives 117
Alternatives Considered but Eliminated from Further Analysis 127

Pre-Settlement Conditions 127
Custodial Management of Upland and Wetland Habitat 127
Control of Lake Eufaula Water Levels....127
Substantial Expansion of Recreational Opportunities 128

IV. ENVIRONMENTAL CONSEQUENCES....129

Overview....129
Effects Common to All Alternatives 129
Environmental Justice 129
Climate Change 129
Other Management 130
Land Acquisition....130
Cultural Resources....130
Refuge Revenue-Sharing....131
Other Effects 131
Summary of Effects by Alternative 131
Alternative A: Current Management (No Action)....131
Alternative B: Enhanced Wildlife and Habitat Management....133
Alternative C: Enhanced Wildlife-Dependent Public Use....134
Alternative D: Balanced Wildlife/Habitat Management and Public Use Activities (Proposed Alternative) 135
Unavoidable Impacts and Mitigation Measures....143
Water Quality from Soil Disturbance and Use of Herbicides....143
Wildlife Disturbance 143
Vegetation Disturbance....144
User Group Conflicts....144
Effects on Adjacent Landowners....144
Land Ownership and Site Development....144
Cumulative Impacts 145
Anticipated Impacts on Wildlife Species 145
Anticipated Impacts on Refuge Programs, Facilities, Cultural Resources, Environmental Justice, Environmental Resources, and Surrounding Communities 149
Direct and Indirect Effects or Impacts....151
Short-term Uses versus Long-term Productivity....151

V. CONSULTATION AND COORDINATION 153

Overview....153
Core Planning Team Members....154
Extended Planning Team Members 154

APPENDICES

APPENDIX I. GLOSSARY 155

APPENDIX II. REFERENCES AND LITERATURE CITED....165

APPENDIX III. RELEVANT LEGAL MANDATES AND EXECUTIVE ORDERS 169

APPENDIX IV. PUBLIC INVOLVEMENT....183

Summary Of Public Scoping Comments 183

APPENDIX V. APPROPRIATE USE DETERMINATIONS 187

APPENDIX VI. COMPATIBILITY DETERMINATIONS 199

APPENDIX VII. INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION 227

APPENDIX VIII. WILDERNESS REVIEW 231

APPENDIX IX. REFUGE BIOTA 233

APPENDIX X. BUDGET REQUESTS 245

APPENDIX XI. LIST OF PREPARERS 251

LIST OF FIGURES

Figure 1. Location of Eufaula National Wildlife Refuge. 10
Figure 2. USFWS-designated ecosystems in the conterminous U.S., with the Northeast Gulf Watersheds Ecosystem (#30) highlighted. 13
Figure 3. Expanding infestation of hydrilla on Lake Eufaula, 2001–2006. 18
Figure 4. Plant communities of Eufaula National Wildlife Refuge. 23
Figure 5. Major infestations of exotic and native weedy species on Eufaula National Wildlife Refuge. 36
Figure 6. Eufaula National Wildlife Refuge management units and main features. 44
Figure 7. Croplands at Eufaula National Wildlife Refuge. 46
Figure 8. Current organization and staffing chart for Eufaula National Wildlife Refuge. 98
Figure 9. Proposed future organization and staffing chart for Eufaula National Wildlife Refuge. 99

LIST OF TABLES

Table 1. Habitat types and their estimated acreages, Eufaula National Wildlife Refuge. 9
Table 2. Natural community occurrences for Eufaula National Wildlife Refuge. 21
Table 3. Exotic plant species observed in Eufaula National Wildlife Refuge. 38
Table 4. Employment of civilian population 16 years and older by industry. 40
Table 5. Comparison of demographic statistics for Russell, Barbour, Stewart, and Quitman counties, Alabama, Georgia, and the USA. 42
Table 6. Management units, Eufaula National Wildlife Refuge. 43
Table 7. Acreages of farm fields, Eufaula National Wildlife Refuge. 47
Table 8. Summary of projects. 100
Table 9. Eufaula National Wildlife Refuge step-down management plans related to the goals and objectives of the comprehensive conservation plan. 101
Table 10. Comparison of alternatives by management issues for Eufaula National Wildlife Refuge. 118
Table 11. Summary of environmental effects by alternative, Eufaula National Wildlife Refuge. 138

I. Background

INTRODUCTION

The U.S. Fish and Wildlife Service (Service) has prepared this Draft Comprehensive Conservation Plan and Environmental Assessment for Eufaula National Wildlife Refuge 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; 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.

The plan has been prepared 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 plan also meets the requirements of the National Environmental Policy Act of 1969 (NEPA) through the inclusion of an environmental assessment (Section B), which describes the alternatives that are being considered and their potential effects on the environment.

A planning team developed a range of alternatives that best meet the goals and objectives of the refuge and that could be implemented within the 15-year planning period. In developing the plan, the team has incorporated the input of federal and state agencies, nongovernmental organizations, local citizens, and the general public. This public involvement and the planning process itself are described in Chapter III, Plan Development.

This plan represents the Service's proposed alternative and is being put forward after considering three other alternatives, as described in the environmental assessment (Section B). It is being made available to federal and state 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 purpose; 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 the refuge's management direction;
- 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 its 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 Service also traces its origins 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, is in Alaska. The remaining acres are spread across the other 49 states and several United States territories. In addition to refuges, the Service manages thousands of small wetlands, national fish hatcheries, 64 fishery resource offices, and 78 ecological services field stations. The Service enforces federal wildlife laws, administers the Endangered Species Act, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid program that distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

NATIONAL WILDLIFE REFUGE SYSTEM

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

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

The National Wildlife Refuge System Improvement Act of 1997 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 resources 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 describes 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. Refuges established during the Depression focused on waterfowl production areas, i.e., protection of prairie wetlands in America's heartland. The emphasis on waterfowl continues today but also includes protection of wintering habitat in response to a dramatic loss of bottomland hardwoods. By 1973, the Service began to focus on establishing refuges for endangered species.

Approximately 38 million people visited national wildlife refuges in 2002, most to observe wildlife in their natural habitats. As the number of visitors grows, there are significant economic benefits to local communities. In 2001, 82 million people 16 years and older either fished, hunted, or observed wildlife, generating $108 billion. In a study completed in 2002 on 15 refuges, visitation had grown 36 percent in 7 years. At the same time, the number of jobs generated in surrounding communities grew to 120 per refuge, up from 87 jobs in 1995, pouring more than $2.2 million into local economies. The 15 refuges in the study were Chincoteague (Virginia); National Elk (Wyoming); Crab Orchard (Illinois); Eufaula (Alabama); Charles M. Russell (Montana); Umatilla (Oregon); Quivira (Kansas); Mattamuskeet (North Carolina); Upper Souris (North Dakota); San Francisco Bay (California); Laguna Atacosa (Texas); Horicon (Wisconsin); Las Vegas (Nevada); Tule Lake (California); and Tensas River (Louisiana) B the same refuges identified for the 1995 study. Other findings also validate the belief that communities near refuges benefit economically. Expenditures on food, lodging, and transportation grew to $6.8 million per refuge, up 31 percent from $5.2 million in 1995. For each federal dollar spent on the Refuge System, surrounding communities benefited with $4.43 in recreation expenditures and $1.42 in job-related income (Caudill and Laughland 2003).

Volunteers continue to be a major contributor to the success of the Refuge System. In 2002, volunteers contributed more than 1.5 million hours on refuges nationwide, a service valued at more than $22 million.

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

The 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 that will guide management decisions and set forth strategies for achieving refuge unit purposes. The plans 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 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 III for a complete list of the relevant legal mandates.

Treaties, laws, administrative guidelines, and policy guidelines assist the refuge manager in making decisions pertaining to soil, water, air, flora, fauna, and other natural resources; historical and cultural resources; research and recreation on refuge lands; and provide a framework for cooperation between Eufaula National Wildlife Refuge and other partners such as the Alabama Division of Wildlife and Freshwater Fisheries; Alabama Department of Conservation and Natural Resources; the Wildlife Resources Division of the Georgia Department of Natural Resources; Lake Point Resort State Park; Auburn University; private landowners; and others.

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 mandates set forth in the National Wildlife Refuge System Improvement Act. 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 as those uses benefit the conservation of fish and wildlife resources and contribute to the enjoyment of the public; and
- Ensure that visitor activities are compatible with refuge purposes.

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

BIOLOGICAL INTEGRITY, DIVERSITY, AND ENVIRONMENTAL HEALTH POLICY

The National Wildlife Refuge System Improvement Act of 1997 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 the 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 are required to use sound professional judgment to determine the 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 the environmental problems affecting regions. There is a large amount of conservation and protection information that defines the role of the refuge at the local, national, international, and ecosystem levels. Conservation initiatives include broad-scale planning and cooperation between affected parties to address declining trends of natural, physical, social, and economic environments. The conservation guidance described below, along with issues, problems and trends, was reviewed and integrated where appropriate into this draft comprehensive conservation plan.

This draft comprehensive conservation plan supports, among others, the Partners in Flight Plan, the North American Waterfowl Management Plan, the Western Hemisphere Shorebird Reserve Network, and the National Wetlands Priority Conservation Plan.

North American Bird Conservation Initiative

Started in 1999, the North American Bird Conservation Initiative (NABCI) is a coalition of government agencies, private organizations, academic institutions, and private industry leaders in the United States, Canada, and Mexico working to ensure the long-term health of North America's native bird populations by fostering an integrated approach to bird conservation to benefit all birds in all habitats. The 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. The plan's goal is to return waterfowl populations to their 1970s levels by conserving wetland and upland habitat. Canada and the United States signed the plan in 1986 in reaction to critically low numbers of waterfowl. Mexico joined in 1994, making it a truly continental effort. The plan is a partnership of federal, provincial, state, and municipal governments, nongovernmental organizations, private companies, and many individuals, all working toward the goal of achieving 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 regional projects contribute to the protection of habitat and wildlife species across the North American landscape.

Partners in Flight Bird Conservation Plan

Managed as part of the Partners in Flight Plan, the East Gulf Coastal Plain physiographic area represents a scientifically-based land bird conservation planning effort that ensures long-term maintenance of healthy populations of native land birds, primarily 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 the frequent local emphasis on rare and peripheral populations.

U.S. Shorebird Conservation Plan

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

Northern American Waterbird Conservation Plan

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, disturbance, and conflicts arising from abundant species. Particularly important habitats of the southeast region include pelagic areas, marshes, forested wetlands, and barrier and sea island complexes. Fifteen species of waterbirds are federally listed, including breeding populations of wood storks, 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.

RELATIONSHIP TO STATE WILDLIFE AGENCIES

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 other state fish and game agencies and tribal governments during the course of acquiring and managing refuges. State wildlife management areas and national wildlife refuges provide the foundation for the protection of species, and contribute to the overall health and sustainability of fish and wildlife species in the States of Alabama and Georgia.

The Alabama Department of Conservation and Natural Resources (ADCNR) provides management and protection for the state's fish and wildlife resources through conservation enforcement officers in each county statewide and through fisheries and wildlife biologists. The Department’s major goal is to promote stewardship and enjoyment of Alabama’s natural resources, both for present and future generations. It is responsible for freshwater fish, wildlife, marine resources, waterway safety, state lands, state parks, and other natural resources. The Department manages 24 state parks, 23 fishing lakes, 3 fish hatcheries, 2 waterfowl refuges, 2 wildlife sanctuaries, 34 wildlife management areas, and a mariculture center. It also administers more than 645,000 acres of trust lands set aside for wildlife purposes.

The Georgia Department of Natural Resources' (GADNR's) Wildlife Resources Division (GAWRD) manages 94 wildlife management areas on approximately 1 million acres, as well as public fishing areas and other natural areas. The Georgia State Parks and Historic Sites Division (GASPHS) is charged with managing the state's park lands and historic sites. The GASPHS manages 48 state parks and 15 historic parks that encompass more than 800,000 acres. In addition, the state agencies provide and direct public recreation opportunities, including an extensive hunting and fishing program on wildlife management areas and parks.

II. Refuge Overview

INTRODUCTION

Eufaula National Wildlife Refuge (NWR) was established in 1964 through community support and in cooperation with the U.S. Army Corps of Engineers to provide habitat for wintering waterfowl and other migratory and resident wildlife. The refuge provides habitat and protection for endangered and threatened species such as the wood stork and the occasional peregrine falcon. The refuge landscape offers a diverse contrast to adjacent land uses. A mixture of wetlands, croplands, woodlands, grasslands and open water creates a mosaic of wildlife-rich habitats. Table 1 shows the current estimated acreages of the habitat types on Eufaula National Wildlife Refuge. The refuge provides valuable wintering habitat for migrating waterfowl, and resting and nesting habitat for numerous neotropical migrant birds.

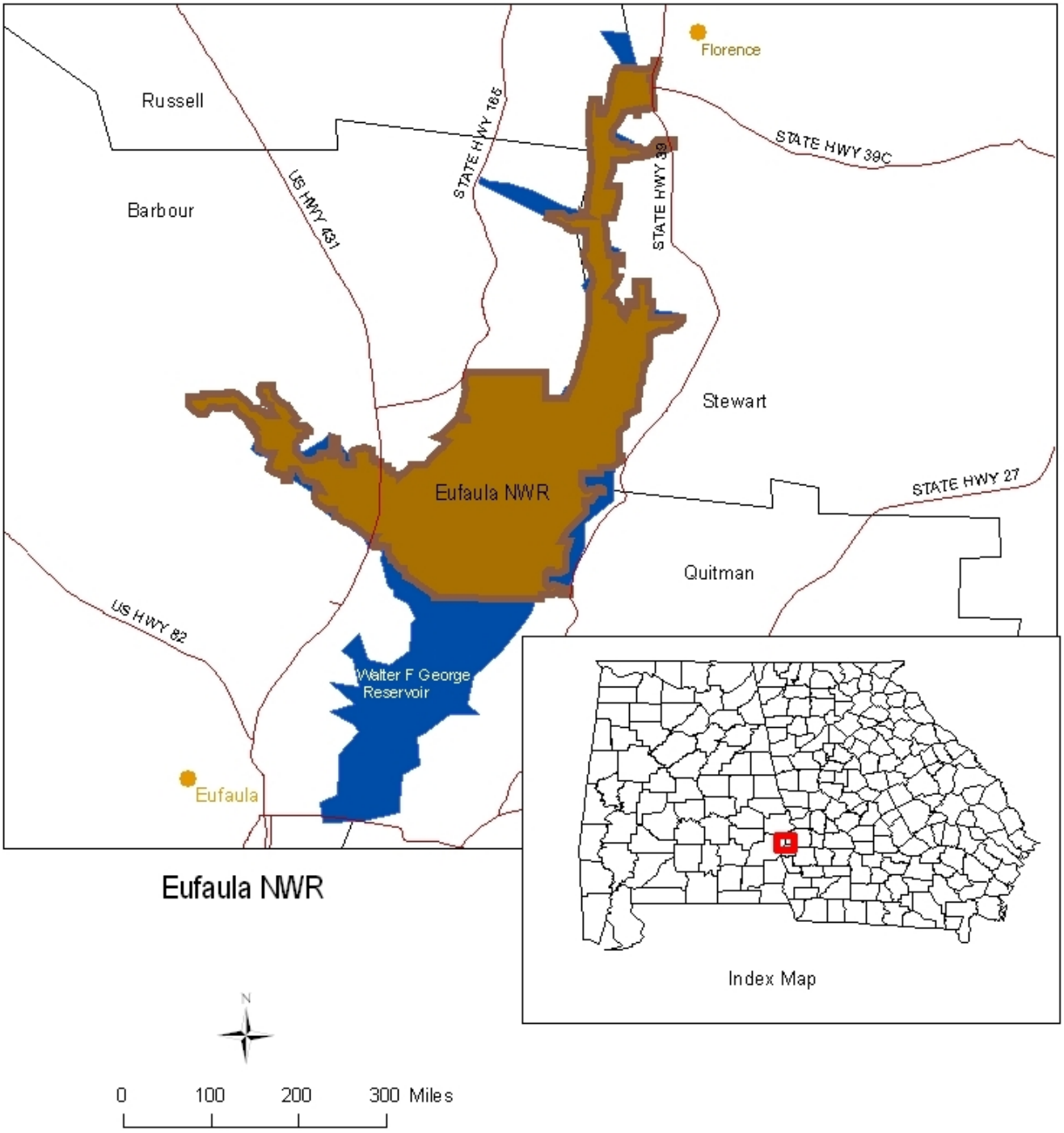
Eufaula NWR is located on both banks of the Chattahoochee River in southeast Alabama and southwest Georgia (Figure 1). The refuge is superimposed on the Walter F. George Reservoir (also referred to as Lake Eufaula), a river and harbor project of the U.S. Army Corps of Engineers. The reservoir was created from the impoundment of the Chattahoochee River between Alabama and Georgia. Named after the city of Eufaula, the refuge provides 11,184 acres of land and water for public enjoyment in a wide range of outdoor activities. The refuge covers 7,953 acres in Barbour and Russell counties, Alabama, and 3,231 acres in Stewart and Quitman counties, Georgia. The refuge also administers a conservation easement program covering 44 counties in Georgia and Alabama. Eighteen of these counties are located in Alabama and 26 in Georgia. There are 19 conservation easements in 11 counties (Alabama and Georgia) totaling 1,360 acres, and three fee title tracts in three counties (Georgia) totaling 591 acres. The refuge also manages one conservation easement for Ducks Unlimited in Russell County, Alabama. The refuge is crossed by U.S. Highway 431, Gammage Road, and Georgia Route 39. A natural gas pipeline and a sewer right-of-way for Lake Point Resort State Park also cross the refuge.

Table 1. Habitat types and their estimated acreages, Eufaula National Wildlife Refuge.

Habitat Type	Acres
Administration	74
Wetlands	3,560
Croplands	775
Forested	2,600
Successional Old Fields	175
Open Water	4,000
Total	**11,184**

Source: U.S. Fish and Wildlife Service 2003a

Figure 1. Location of Eufaula National Wildlife Refuge.



Eufaula NWR lies on the eastern edge of the Mississippi Flyway. Peak wintering populations of ducks reached over 40,000 in the mid-1970s. Recently, the refuge's duck populations have peaked at 12,000–20,000. Few migrant geese visit Eufaula NWR, but more than 2,000 Canada geese are residents. Large breeding populations of raptors such as bald eagles and osprey are becoming more common on the refuge. High populations of herons and other marsh birds are supported by the habitat. An abundance of other migratory birds and wildlife is present seasonally.

The Georgia unit of the refuge consists of shoreline along the Chattahoochee River and the Bradley Impoundment. The Bradley Impoundment is composed of wetlands, agricultural fields, and timberlands. The Alabama portion of the refuge includes the Davis Clark Unit, the Kennedy impoundment, the Houston Unit, the Molnar Unit, the Upland Unit, and many miles of shoreline along the western edge of the Chattahoochee River and Lake Eufaula. The land on the Alabama portion is a mosaic of wetlands, croplands, woodlands, and grasslands.

Eufaula NWR is a significant component in the region's recreational opportunities. The refuge's Management Information System (RMIS) showed 371,251 visits to the refuge in 2002 (Caudill and Henderson 2003). Fishing and nature observation were the most popular activities with 129,959 and 101,190 visits, respectively. Deer hunters accounted for 8,700 visits in 2002. The auto tour route attracted 35,974 motorists, and a small proportion of these people walked the nature trails or used the observation platform. The local economy significantly benefits from the refuge. In 2002, refuge visitors spent $7 million related to refuge recreation. This resulted in $5.6 million in local final demand, $2.4 million in earnings, and 125 jobs attributable to refuge visitation (Caudill and Henderson 2003).

The Muscogee Creek Indians once inhabited the land now known as the Eufaula National Wildlife Refuge. Hardwood trees dominated the landscape and the river's edges were filled with Muscogee Creek Indian villages. In the 1800s, European settlers moved into the area and a prosperous town developed. The town, which served as a port city for steamboats along the Chattahoochee River, was named Irwinton after its founder. Irwinton's name was later changed to Eufaula in honor of a local Indian tribe. As the town of Eufaula expanded, the hardwood trees were cleared for agriculture. After World War II, local residents reforested the previously cleared land with pine plantations. In 1963, the Corps of Engineers impounded a portion of the Chattahoochee River to improve navigation. The dam created Lake Walter F. George (Lake Eufaula). Local Eufaulians wanted to provide a place for migratory waterfowl and other resident wildlife, while protecting beautiful natural scenery. In 1964, the residents were pleased by the creation of the Eufaula National Wildlife Refuge. This positive bond between the refuge and the greater Eufaula community still exists today, four decades later.

The composition and distribution patterns of ecological communities within the greater Eufaula area have been significantly altered by the influence of humanity. Prior to the arrival of European immigrants and Euro-American settlers, the Native Americans, like humans everywhere, had shaped and modified the land to suit their purposes. Using simple but effective stone tools and controlled burning, the Creek Indians and other indigenous tribes had long since cleared parts of the eastern forest for agriculture. The resulting patchwork of garden plots, abandoned fields and woodlands had, in turn, increased habitat diversity for wildlife, thus adding to the variety and quantity of game available. Far from a virgin and primeval wilderness as many believed, North America was an already transformed landscape when Europeans first reached its shores. The effects of human occupation upon the natural vegetation of the region are readily apparent. To accommodate the progress of humanity, forests were cleared and burned and wetlands were drained, which was soon followed by a series of events that would forever alter the landscape.

Prior to government acquisition, most of the refuge lands were in agriculture and poorly managed forests. Game animal populations were low. The refuge's 1964 Narrative Report (U.S. Fish and Wildlife Service [USFWS] 1964) states, "refuge personnel have not observed any deer or deer signs on the refuge." Additionally, wild turkeys were also noted as absent from the refuge. However, waterfowl were plentiful according to the 1964 Narrative. Gradual reforestation efforts, providing early successional habitats near cropland areas, and sound forestry practices have improved upland habitat for many species and provide a contrast to the short-rotation pine silviculture that is present on neighboring lands.

REFUGE HISTORY AND PURPOSE

The National Wildlife Refuge System Improvement Act states that each refuge is to be managed to fulfill the purpose for which it was established but also the mission of the National Wildlife Refuge System. If there is a conflict between the two, the purposes for which the refuge was established takes precedence.

The establishing and acquisition authorities for Eufaula NWR include the U.S. Fish and Wildlife Service Coordination Act (16 USC 661-667-E), and 76 Stat. 1195; 16 U.S.C. 460d. These documents state that the refuge:

1. "... shall be administered directly or in accordance with cooperative agreements... and in accordance with such rules and regulations for the conservation and maintenance, and management of wildlife, resources thereof, and its habitat thereon ..."

2. "... be suitable for (a) incidental fish and wildlife oriented recreational development, (b) the protection of natural resources, (c) the conservation of endangered or threatened species ..."

Specifically, the objectives for Eufaula NWR are:

- To provide food, water, and shelter to support 2,650,000 use days for waterfowl, and 2,000,000 use days for other migratory birds.

- Provide wood duck nesting and brood-rearing habitat to produce 2,100 birds annually.

- Protect, restore, and enhance refuge lands to ensure the survival of endangered and threatened plant and animal species.

- Provide for the continued public use and enjoyment of the refuge and its resources through wildlife observation and interpretation opportunities, environmental education, and hunting and fishing programs.

Eufaula NWR was established to provide food and resting habitat for migratory waterfowl and wood ducks. Objectives are achieved through a habitat management program involving six impoundment complexes using pumps and water control structures. Row crops and moist soil management techniques are used to produce waterfowl foods. An upland agricultural program, prescribed fire, reforestation, timber thinning, and invasive plant control are used to enhance diversity for game and nongame species and their habitats.

SPECIAL DESIGNATIONS

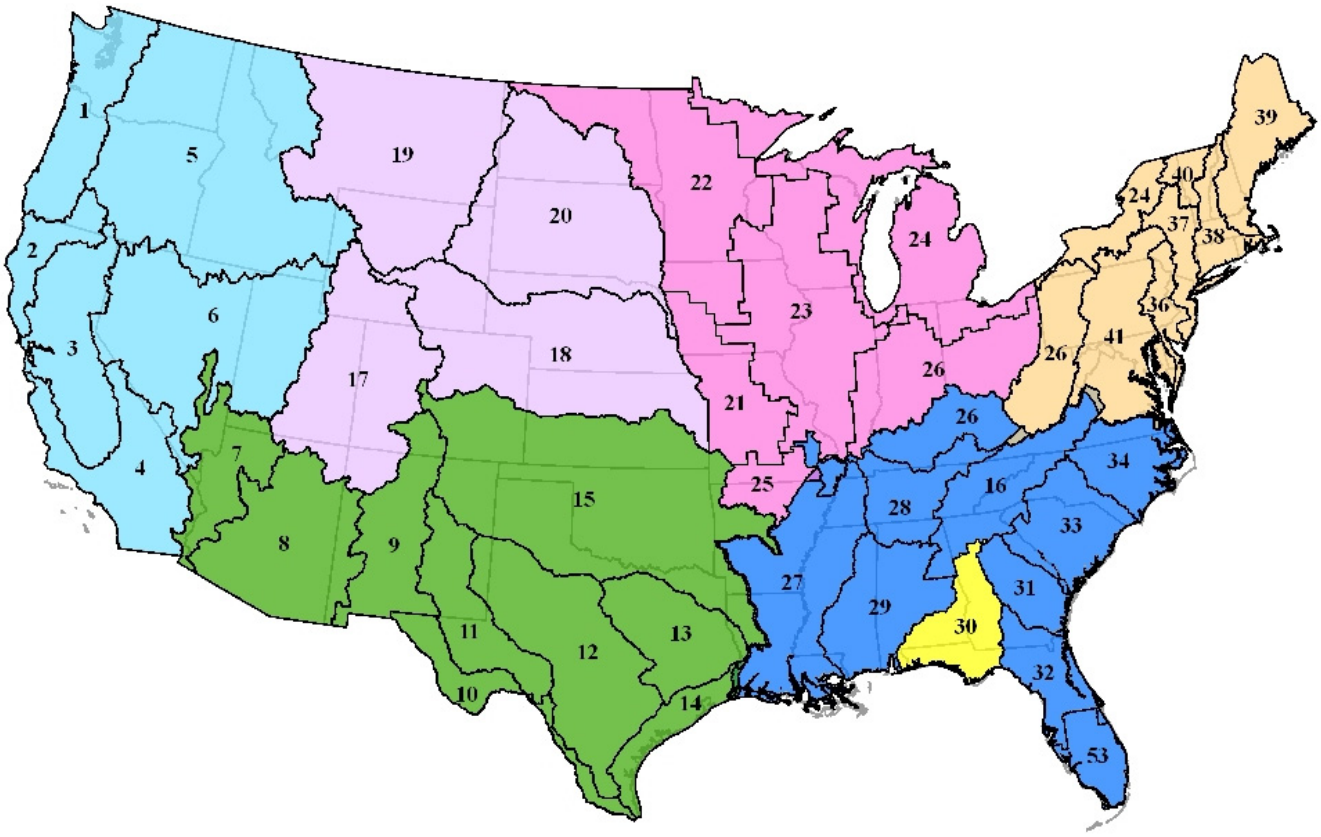
Eufaula National Wildlife Refuge does not include any lands under special designation. That is, it does not contain Congressionally-designated Wilderness Areas, federally-designated Wild and Scenic Rivers, demonstration areas, or research natural areas. In addition, oil and gas activities do not occur on the refuge.

ECOSYSTEM CONTEXT

In approaching its mission to conserve wildlife and their habitats throughout the country, the U.S. Fish and Wildlife Service has found it useful to divide the entire United States into 53 distinct ecosystems, drawn primarily along watershed boundaries (Figure 2). Eufaula National Wildlife Refuge lies within the Northeast Gulf Watersheds Ecosystem (formerly the Florida Panhandle Watersheds), which spans portions of Florida, Alabama, and Georgia (USFWS n.d.b).

The Service's Northeast Gulf Ecosystem (NEG) Team has developed a strategic planning approach using sub-teams to address conservation issues for which the Service has responsibility (i.e., trust resources). The sub-teams are oriented to identify and resolve habitat-based impacts upon coastal and inland wetlands, endangered species, migratory birds, water quality and quantity, and longleaf pine restoration. Partnerships with other agencies and concerned groups are used to accomplish the team's objectives. Eufaula NWR has provided both staff time and refuge funding to assist in meeting the biological goals and objectives of the NEG Team.

Figure 2. USFWS-designated ecosystems in the conterminous U.S., with the Northeast Gulf Watersheds Ecosystem (#30) highlighted.



Eufaula NWR has a special role to play in the conservation of migratory birds. Suitable wintering or nesting habitat for species including the wood stork, prothonotary warbler, common ground-dove, sandhill crane, bald eagle, bobwhite quail, least bittern, American kestrel, LeConte's sparrow, and others occur on the refuge. Utilizing recommendations from the Partners in Flight "Bird Conservation Plan for The East Gulf Coastal Plan" has helped increased awareness and improved capabilities to provide both seasonal and breeding habitat for many species. The refuge is a focal area for migratory waterfowl in Chattahoochee River valley. Wintering waterfowl populations of ducks peaked at over 40,000 in the mid-1970s. In recent years, wintering counts average around 15,000 (USFWS 2003a). Few migrant geese visit the refuge, but a there is a resident Canada goose population of approximately 2,000. Bald eagles and osprey are increasingly common, as are other breeding and wintering raptors. The refuge's habitats support large numbers of waterbirds, including herons, egrets, and other marshbirds.

REGIONAL CONSERVATION PLANS AND INITIATIVES

The State Wildlife Grants (SWG) program began in 2002. Under this new program, Congress provided an historic opportunity for state fish and wildlife agencies and their partners to design and implement a more comprehensive approach to the conservation of America's wildlife. A requirement of SWG was for each state to complete a Comprehensive Wildlife Conservation Strategy (CWCS) by October 1, 2005. Development of the CWCS is intended to identify and focus management on "species in greatest need of conservation." Congress expects SWG funds to be used to manage and conserve declining species and avoid their potential listing under the Endangered Species Act.

The State of Alabama's CWCS effort began when the Division of Wildlife and Freshwater Fisheries sponsored the 2002 Nongame Conference that assembled scientists and stakeholders to compile the best available information on Alabama's wildlife. This two-year effort resulted in a comprehensive four-volume publication entitled, *Alabama Wildlife*, which is the foundation for the Alabama CWCS. The Alabama CWCS was approved by the U.S. Fish and Wildlife Service in November 2005 (ADCNR n.d.). This CWCS defines those wildlife species in greatest need of conservation in Alabama and describes the actions necessary for their restoration.

In December 2002, the Georgia Wildlife Resources Division began the process to develop a comprehensive wildlife conservation strategy for Georgia. The goal 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 Georgia CWCS was approved by the U.S. Fish and Wildlife Service in August 2005 (GADNR n.d.).

The states' 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 states of Alabama and Georgia. An essential part of the comprehensive planning process is the integration of common mission objectives, where appropriate.

ECOLOGICAL THREATS AND PROBLEMS

HABITAT LOSS AND FRAGMENTATION

Over the past two centuries, as civilization spread throughout the region, ever-increasing needs for transportation, housing, water supply, electricity, food, and waste disposal have led to dramatic alterations of the landscape. The greatest alteration has been from land clearing for agriculture and

flood control projects. Although these changes have allowed people to settle and earn a living, they have also had a tremendous negative impact on biological diversity, biological integrity, and environmental health. The underlying threats to biological diversity include:

- Loss, alteration, and fragmentation of high quality habitat due to development;
- Loss of natural shoreline as a result of development, hydrologic modifications, natural erosion, bulkheading, shoreline armoring, and inadequate coastal engineering; and
- Lack of monitoring and regulation to protect fish and wildlife resources.

More generally, threats to biodiversity across the variety of habitat types represented in Northeast Gulf Watersheds Ecosystem are posed by invasive species, overuse of resources, pollution, global climate change, improper practices of fire suppression, and most of all, habitat loss and fragmentation.

As a consequence of these threats, all manner of habitats in this ecosystem have seen their acreages reduced. Forested wetlands and marshes are disappearing rapidly. Immense areas of bottomland hardwood forests have been reduced to forest fragments. These range from a few large areas of more than 10,000 acres that have maintained many of the original functions and values of bottomland hardwood forest, to very small tracts just a few acres in size possessing limited functional value.

Elimination and fragmentation of coastal habitats have decimated wildlife species throughout the Gulf Coast, and are recognized by the Service as serious threats to wildlife in Alabama and Georgia. The species most adversely affected by fragmentation are those that are area sensitive or require special habitat. Fragmentation affects migratory songbirds, sea turtles, beach mice, and many other species, primarily through high rates of nesting failure and predation. While more than 280 species of breeding migratory songbirds, shorebirds, waterfowl, and raptors are found in this region, some of these species have declined significantly, such as the red-cockaded woodpecker and Bachman's warbler. These species need the benefits of large, managed forest blocks to recover and sustain their existence.

The avian species most adversely affected by fragmentation include those that are area-sensitive (dependent on large continuous blocks of hardwood forest); those that depend on forest interiors; those that depend on special habitat requirements like mature forests or a particular food source; and those that depend on good water quality. Species such as the prothonotary warbler, cerulean warbler, and, in particular, Bachman's warbler, have declined significantly and will require the benefits of large, managed forest blocks to recover and sustain their existence.

Fragmentation of bottomland hardwood forests has left many of the remaining forested tracts as biological oases surrounded by inhospitable agricultural lands. Intensive agriculture has removed most of the forested corridors along sloughs that formerly connected forest patches. The loss of connectivity between the remaining forested tracts hinders the movement of a large range of wildlife between tracts, and reduces the functional value of many remaining smaller forest tracts. The severed connections also result in a loss of gene flow needed to maintain genetic viability and diversity within wildlife populations. Thus, remaining populations are rendered even more vulnerable to habitat modification and degradation. Particularly for wide-ranging species, reestablishing travel corridors to allow movement is of critical importance.

Increased urbanization is occurring along the Chattahoochee River around the town of Eufaula and the Highway 431 corridor. Commercial, industrial, and residential development continues to swallow farmland and natural areas at an alarming rate. Although many portions of the refuge are still surrounded by large agricultural tracts, this may decline in the next 10–20 years.

ALTERATIONS TO HYDROLOGY

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

In addition to the loss of vast acreages of bottomland-forested wetlands and other habitat types, significant alterations have occurred in the region's hydrology due to development, river channel modification, flood control levees, reservoirs, and deforestation. Aquatic systems have also been degraded from the effects of excessive sedimentation and contaminants.

Large-scale, man-made hydrological alterations have changed the spatial and temporal patterns of flooding throughout the entire watershed, in terms of both extent and duration of flooding, in comparison with the natural hydrology regime. This curtailment of the flooding regime has had an enormous impact on the forested wetlands and their associated wetland-dependent species.

In coastal estuaries, the saline stratification and location of the saltwater wedge can be impacted due to atypical levels of freshwater influxes. Factors affecting the level of freshwater inflow include erosion, sediment load changes, river runoff and pollution, dredging, and severe weather disturbances.

Southeastern states have the greatest numbers of imperiled and vulnerable freshwater fish species in the country. Channel modifications and pollution have gradually eliminated large populations of native aquatic species, including fish, mussels, snails, insects, and crustaceans. Barriers to movement prevent anadromous fish—including striped bass, gulf sturgeon and Alabama shad—from reaching spawning grounds and key habitat areas. Many other aquatic species have similarly become isolated. Without avenues for migration, impacts from land surface pollution runoff are exacerbated. Restoration of the structure and functions of a natural wetland is complicated by the fact that wetlands depend on a dynamic interface of hydrologic regimes to maintain water, vegetation, and animal complexes and processes.

The recent "water wars" between Alabama, Florida, and Georgia over flow rates into and through the Apalachicola–Chattahoochee–Flint basin have not been resolved. Reduced flow rates could have severe impacts upon wetland habitats along the Chattahoochee and affect management of refuge impoundments. Other river management issues include the proliferation of hydrilla and other exotic plants; sewage disposal by boaters; shoreline erosion; and the threat of exotic fish (i.e., bigheaded carp). Currently, Eufaula NWR has limited regulatory authority to address these problems. Finding solutions will require strong partnerships among the refuge, the Corps of Engineers, and state agencies.

SILTATION OF AQUATIC ECOSYSTEMS

Over a century ago, floodwaters and storms recharged aquatic and terrestrial habitats and created rich, dynamic systems that supported a diverse abundance of fish and wildlife. Currently, however, water quality is significantly impacted by agricultural and industrial runoff. Rivers and water bodies throughout the ecosystem are filling in with silt. They are highly turbid, laden with pesticides, and support a small fraction of the once-abundant aquatic resources. Declines in fish, wildlife, and habitats have prompted the Service to designate the coastal habitats found in this ecosystem as areas of special concern.

Aquatic systems, including lakes, rivers, sloughs, and bayous, have been degraded as a result of deforestation and hydrologic alteration. Clearing of bottomland hardwood forests has led to an accelerated accumulation of sediments and contaminants in all aquatic systems. Many water bodies are now filled with sediments, greatly reducing their surface areas and depths. Concurrently, the nonpoint source runoff of excess nutrients and contaminants is threatening the area's remaining aquatic resources.

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

PROLIFERATION OF INVASIVE AQUATIC PLANTS AND ANIMALS

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

Various species of nonnative wildlife and fish also flourish in this temperate climate. Animals like the nutria compete with native wildlife for limited resources and many, like feral hogs, have caused extensive habitat damage and alterations.

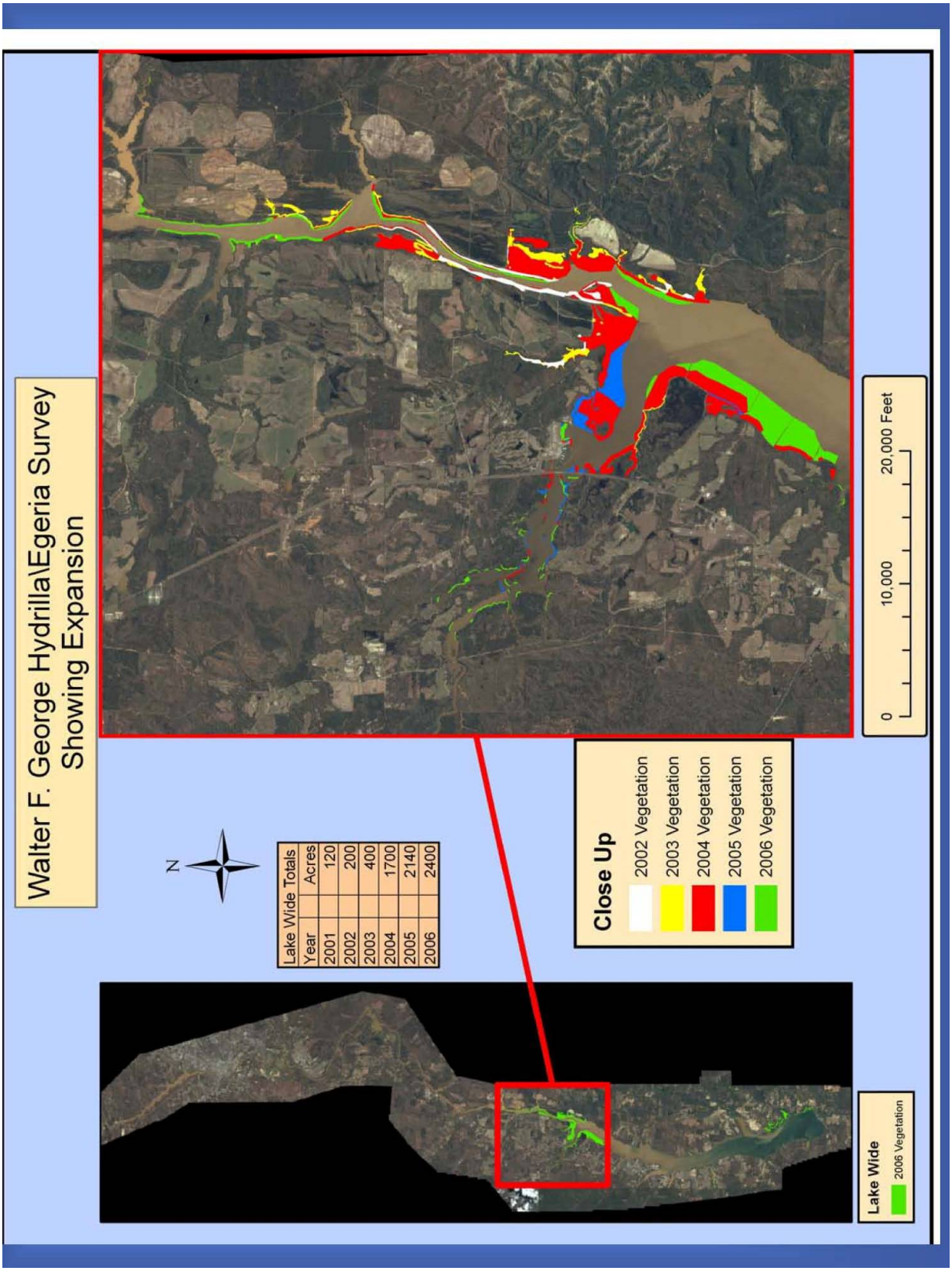
Exotic and invasive weedy species in moist soil areas, agricultural fields, wetlands, and forest edges can potentially overwhelm management efforts and devastate plant and animal diversity on the refuge. Feral hogs have become persistent annual pests in the Bradley Impoundment in Georgia, and it is only a matter of time before they expand into the refuge on the Alabama side. Hydrilla now occurs in refuge waters (Figure 3); it is expanding and poses severe implications for the refuge's fishery and other aquatic resources. Treating and managing invasive species is a complex issue.

PHYSICAL RESOURCES

CLIMATE

Eastern Alabama (Russell and Barbour counties) and western Georgia (Stewart and Quitman), where the refuge is located, have a humid, warm-temperate, continental climate typical of the southeastern United States. The average yearly rainfall is over 51 inches, with rainfall reasonably well distributed throughout the year, although winter is the wettest season. March is the wettest month at 6.1 inches and October is the driest at 2.32 inches (USFWS 2005). Tropical storms or hurricanes coming from the Gulf of Mexico may occasionally bring several days of heavy rain. Thunderstorms, which usually bring the heaviest rains, are rarely accompanied by hail and tornadoes. Drought conditions during the summer may increase the danger of fire. The average annual snowfall is less than an inch.

Figure 3. Expanding infestation of hydrilla on Lake Eufaula, 2001–2006.



Source: U.S. Army Corps of Engineers 2007

January is usually the coldest month, with an average temperature of 47 degrees Fahrenheit. July is normally the hottest, with temperatures averaging about 80 degrees (National Oceanic and Atmospheric Administration 2006). Winters are mild, with temperatures seldom remaining below freezing for long. Summers are hot and humid with heat indexes commonly reaching 110 to 115 degrees. Humidity averages 90% during summer. The average growing season is 230 days (University of Alabama 2006).

PHYSIOGRAPHY, TOPOGRAPHY, AND SOILS

The refuge is located within the East Gulf Coastal Plain physiographic region (Stein et al. 2000). Typical vegetation types found include southern mixed forest, oak-hickory-pine, and southern yellow pine (loblolly-shortleaf, loblolly-longleaf) mixed with intervening floodplain forests (Kuchler 1964). Major stream drainages include Cowickee, Wylaunee, Rood, Bustahatchee, and Soapstone.

The refuge's elevations range from 185 to 270 feet above mean sea level (MSL). Its upland and terrace soils are classified as fine sandy loams, deep to moderately deep, well drained, gentle sloping to level. Examples include the Blanton-Bonneau complex, Wickham, Amite, and Flint. Soil water movement ranges from freely moving to slow. Soils within the marshes, swamps, and floodplains vary from fine sandy loams to alluvial clays. These soils are very deep, poorly drained deposited on acid clayey sediments or fluvial and marine terraces. Examples include Bladen, Pelham, and the Annemaine-Wahee complex.

HYDROLOGY

Almost 36% (4,000 acres) of Eufaula NWR is open water, mostly Lake Eufaula. The refuge manages 16 impoundments that are flooded for waterfowl management. The refuge has six managed wetland units. The Bradley (750 acres), Houston (210 acres), and Kennedy (450 acres) units consist of inlet pumps to fill and outlet pumps to dewater. The Uplands (40 acres), Goose Pen (15 acres), and Molnar (25 acres) units are all filled by inlet pumps, but are drained by gravity-flow water control structures. Creeks found on the refuge include the North Fork Cowickee, Middle Fork Cowickee, Wylaynee, and Little Barbour in Alabama; and the Soapstone, Bustahatchee, Rood, and Grass in Georgia.

WATER QUALITY AND QUANTITY

Water quality remains a long-term concern as siltation, pesticides, treated and untreated wastewater, and nitrogen accumulation may eventually adversely impact aquatic resources. The refuge does not conduct water testing and relies on monitoring by the appropriate state agencies. The Corps of Engineers controls refuge water levels in a manner contradictory for good waterfowl management. More immediate benefits would occur to refuge wildlife if the Corps would modify its management of the water levels. Maintaining a lower pool elevation during summer would provide habitat for wading birds and migratory shorebirds and allow for moist soil plants to grow for wintering waterfowl use. Due to the Corps' navigational and flood control objectives for the Walter F. George Reservoir and the Chattahoochee River, this change is unlikely.

AIR QUALITY

Compared to other counties in the United States, Russell County, Alabama, has relatively high emissions of air pollutants. The county's emissions rank in the 90th percentile for carbon monoxide; 70th percentile for nitrogen oxide; 80th percentile for PM-25 (particulate matter below 2.5 microns in diameter); 60th percentile for PM-10; 70th percentile for sulfur dioxide; and 70th percentile for volatile organic compounds (Scorecard 2005).

However, Russell County's actual ambient air quality—the air to which its residents, flora, and fauna are exposed and actually breathe—is relatively good. Its overall Air Quality Index is in the 30th percentile of counties nationwide, and its 1-hour and 8-hour ozone concentrations are in the 20th percentile. Its PM-2.5, 24-hour average concentration is in the 30th percentile; its PM-10, 24-hour average concentration is in the 0–10th percentile range; and its PM-10 annual average concentration is in the 20th percentile. The only ambient air parameter of concern is the PM-2.5 annual average concentration, which is in the 70th percentile. Overall health risks, as judged by the number of person-days that exceed the national air quality standards for PM-2.5, are in the 1–10th percentile range (Scorecard 2005).

BIOLOGICAL RESOURCES

HABITAT

Eufaula National Wildlife Refuge contains a fragmented assemblage of managed and naturally occurring wetlands, interspersed with a mosaic of hardwood forests, pine hardwood uplands, successional fields, and active agricultural lands. The Service contracted with The Nature Conservancy's Alabama Natural Heritage Program (ANHP) to conduct a natural community and rare plant survey of the refuge, which was published in 2001–2002 (Schotz 2002). This survey identified 21 distinct natural plant associations or communities on the refuge, which are listed in Table 2 and shown in Figure 4. The most ubiquitous plant communities included the Upland Pine Forest and Upland Mixed Forest. Each of these 21 communities is briefly described below.

Upland Pine Forest

Historically, this forest type constituted the upland, well-drained portion of the once-extensive longleaf pine ecosystem that stretched from southeastern Virginia to east Texas. Under ideal conditions where frequent fire is allowed to burn every two to ten years, this system will assume an open and park-like appearance consisting of widely spaced longleaf pine and a ground cover of perennial grasses and forbs interspersed with a scattering of small oaks and shrubs. Formerly widespread throughout southern Alabama, examples have now been reduced to small, isolated remnants that occupy low ridges and slopes. One type is currently known from Eufaula National Wildlife Refuge:

- *Pinus palustris – Pinus (echinata, taeda) – Quercus (incana, margarettiae, falcata, laevis)* Woodland
  [Longleaf Pine – (Shortleaf Pine, Loblolly Pine) – (Bluejack Oak, Sand Post Oak, Southern Red Oak, Turkey Oak) Woodland]

The examples at Eufaula are represented by an open canopy of longleaf and shortleaf pines (*Pinus palustris* and *P. echinata*, respectively), with a high incidence of hardwoods that include mockernut hickory (*Carya tomentosa*); bluejack oak (*Quercus incana*); southern red oak (*Q. falcata*); sand post oak (*Q. margarettiae*); post oak (*Q. stellata*); and blackgum (*Nyssa sylvatica*). In addition to specimens of the foregoing canopy species, the understory is comprised of a low diversity of trees, shrubs, and vines, including Alabama black cherry (*Prunus alabamensis*); water oak (*Quercus nigra*); yellow hawthorn (*Crataegus flava*); winged sumac (*Rhus copallina*); sassafras (*Sassafras albidum*); sparkleberry (*Vaccinium arboreum*); dwarf blueberry (*V. darrowii*); poison oak (*Toxicodendron toxicarium*); muscadine grape (*Vitis rotundifolia*); and various briers (*Smilax bona-nox*, *S. glauca*, *S. rotundifolia*). For the most part, the herbaceous component is relatively sparse and irregularly distributed, and composed of herbaceous perennials which either benefit directly from the effects of growing season fire or from the open canopy.

Table 2. Natural community occurrences for Eufaula National Wildlife Refuge.

Scientific Name	*Common Name*	*Global Rank*	*State Rank*	*No. of EORs*
Pinus palustris – Pinus (*echinata*, *taeda*) *– Quercus* (*incana*, *margarettiae*, *falcata*, *laevis*) Woodland	Upland Pine Forest	G?	S1	1
Quercus hemisphaerica – Quercus (*falcata*, *nigra*) / *Ilex opaca – Vaccinium arboreum* / *Cnidoscolus stimulosus* Forest	Coastal Plain Dry – Mesic Oak Forest	G2G3	S1	0
Pinus taeda – Quercus falcata – Quercus alba / *Ostrya virginiana* / *Chasmanthium sessiliflorum* Forest	Upland Mixed Forest	G4G5	S2	0
Quercus falcata – Quercus alba – Carya tomentosa / *Oxydendrum arboreum* / *Vaccinium stamineum* Forest	Upland Hardwood Forest	G4G5	S2	0
Liquidambar styraciflua – Quercus (*nigra*, *phellos*) *– Pinus taeda* / *Vaccinium elliottii – Morella cerifera* Forest	Upland Mixed Forest	G5	S5	0
Quercus pagoda – Quercus nigra / *Halesia diptera – Ilex decidua* / *Chasmanthium sessiliflorum – Dicliptera brachiata* Forest	Bottomland Forest	G4?	S1	1
Fraxinus pennsylvanica – Ulmus americana / *Carpinus caroliniana* / *Boehmeria cylindrica* Forest	Bottomland Forest	G4?	S2	0
Pinus taeda Planted Forest	Loblolly Pine Plantation	G5	S5	0
Quercus pagoda Planted Forest	Cherrybark Oak Plantation	G5	S5	0
Quercus acutissima Planted Forest	Sawtooth Oak Plantation	G5	S5	0
Successional Field	Successional Field	G5	S5	0
Quercus phellos – Quercus nigra – Quercus alba / *Chasmanthium sessiliflorum* Forest	Bottomland Forest	G3G4	S1	1

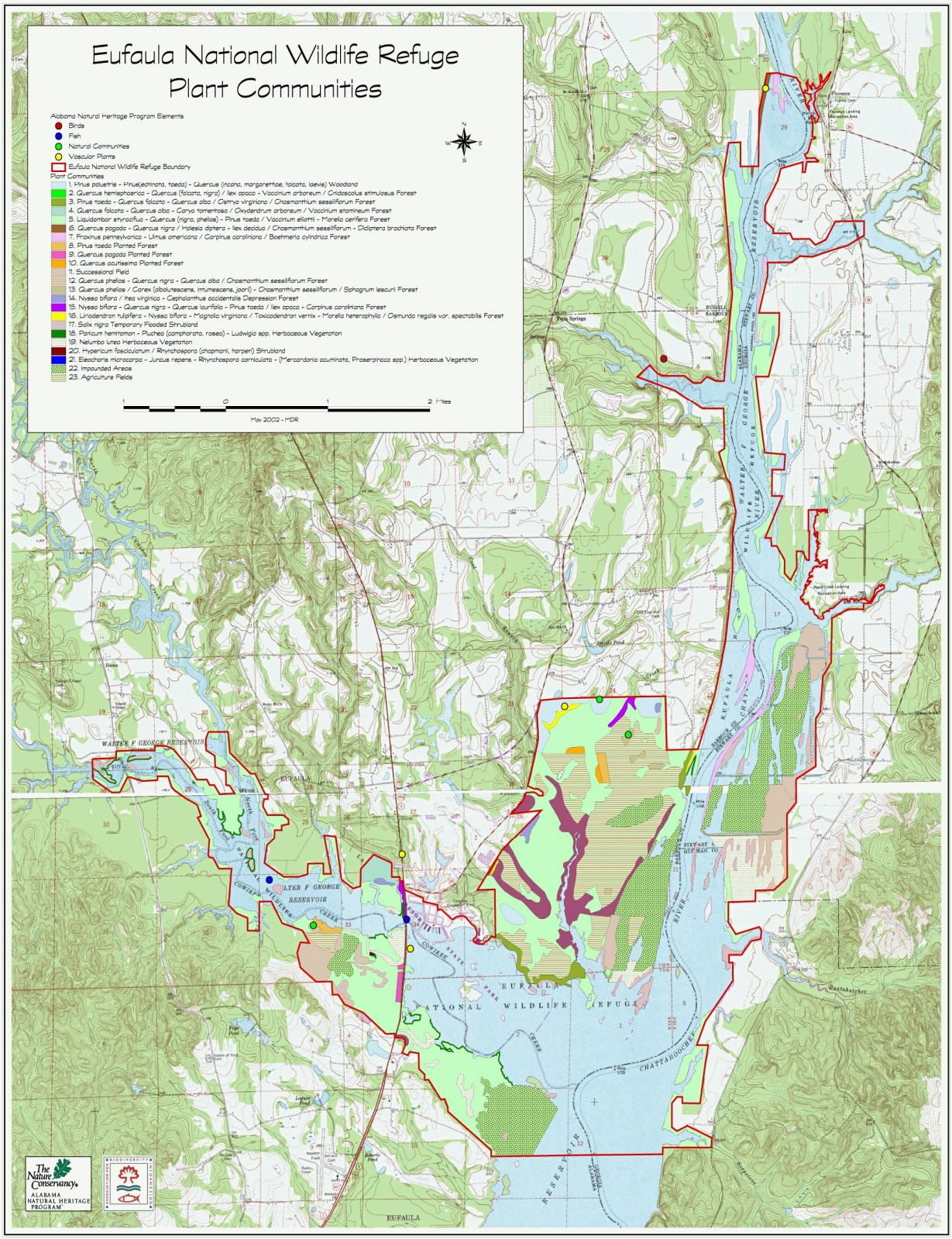
Scientific Name	Common Name	Global Rank	State Rank	No. of EORs
Quercus phellos / *Carex* (*albolutescens*, *intumescens*, *joorii*) – *Chasmanthium sessiliflorum* / *Sphagnum lescurii* Forest	Willow Oak Depression	G2G3	S1	1
Nyssa biflora / *Itea virginica* – *Cephalanthus occidentalis* Depression Forest	Gum Swamp	G3G4	S1	1
Nyssa biflora – *Quercus nigra* – *Quercus laurifolia* – *Pinus taeda* / *Ilex opaca* – *Carpinus caroliniana* Forest	Oak Depression Swamp	G5	S1	0
Liriodendron tulipifera – *Nyssa biflora* – *Magnolia virginiana* / *Toxicodendron vernix* – *Morella heterophylla* / *Osmunda regalis* Forest	Baygall	G2G3	S1	0
Salix nigra Temporary Flooded Shrubland	Black Willow Swamp	G5	S3	0
Hypericum fasciculatum / *Rhynchospora* (*chapmanii*, *harperi*) Shrubland	Coastal Plain Depression Marsh	G2G3	S1	0
Panicum hemitomon – *Pluchea* (*camphorata*, *rosea*) – *Ludwigia* spp. Herbaceous Vegetation	Maidencane Marsh	G3?	S2	0
Eleocharis microcarpa – *Juncus repens* – *Rhynchospora corniculata* – (*Mercardonia acuminata*, *Proserpinaca* spp.) Herbaceous Vegetation	Coastal Plain Depression Marsh	G2G3	S1	0
Nelumbo lutea Herbaceous Vegetation	American Lotus Aquatic Wetland	G3G4	S2	0
Impounded Areas	Impounded Areas	G5	S5	0

Source: Schotz (2002)

Total Number of Communities: 22
Total Number of EORs: 5

[NOTE: An element is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, sinkhole, or other ecological feature. An Element Occurrence (EO) represents the location of an element and is the environment which sustains a species' population or an example of a natural community. The Element Occurrence Record (EOR) is the computerized record that contains the biological and location information regarding a specific EO.]

Figure 4. Plant communities of Eufaula National Wildlife Refuge.



Definition of Heritage Ranks

The Alabama Natural Heritage Program uses the Heritage ranking system developed by The Nature Conservancy. Each species is assigned two ranks; one representing its rangewide or global status (G rank), and one representing its status in the state (S rank). Communities or species with a rank of 1 are most critically imperiled; those with a rank of 5 are most secure.

Global Ranking

G1	Critically imperiled globally (5 or fewer occurrences)
G2	Imperiled globally (6 to 20 occurrences)
G3	Either very rare and local throughout its range or found locally in a restricted range (21 to 100 occurrences)
G4	Apparently secure globally
G5	Demonstrably secure globally
G?	Not ranked to date

State Ranking

S1	Critically imperiled in Alabama because of extreme rarity (5 or fewer occurrences of very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extirpation from Alabama.
S2	Imperiled in state because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extirpation from Alabama
S3	Rare of uncommon in Alabama (on the order of 21 to 100 occurrences)
S4	Apparently secure in Alabama with many occurrences
S5	Demonstrably secure in Alabama and essentially “ineradicable” under present conditions

Upland Hardwood Forest and Upland Mixed Forest

Upland hardwood and upland mixed forests are currently found throughout Alabama, but their composition varies with the transition from a warm nearly subtropical forest in the South to a cool temperate flora in the North. In addition, the composition and abundances of species, as well as the structure and dynamics of these forests, are greatly affected by complex disturbance regimes that vary at different scales over space and time. Most recently, as well demonstrated at Eufaula, anthropogenic disturbance has complemented natural disturbance regimes, thus further modifying ecological processes. Hence, combinations of species and natural communities not present upon the Eufaula landscape during pre-settlement times are currently being formed. Given the above conditions, four associations are presently recognized from Eufaula National Wildlife Refuge:

- *Quercus hemisphaerica – Quercus (falcata, nigra) / Ilex opaca – Vaccinium arboreum / Cnidoscolus stimulosus* Forest
  [Upland Laurel Oak – (Southern Red Oak, Water Oak) / American Holly – Tree Sparkleberry / Tread-softly Forest

This association is predominantly comprised of upland laurel oak (Quercus hemisphaerica) in the canopy, often in accompaniment with a lesser frequency of post oak (Q. stellata); southern red oak (Q. falcata); water oak (Q. nigra); sweetgum (Liquidambar styraciflua); blackgum; and loblolly pine. Characteristic taxa of the open understory are well represented by the foregoing canopy species, as well as an assortment of small trees and shrubs, including tree sparkleberry (Vaccinium arboreum); Elliott's blueberry (Vaccinium elliottii); horse sugar (Symplocus tinctoria); American holly (Ilex opaca); black cherry (Prunus serotina); sebastian bush (Sebastiana fruticosa); sand holly (Ilex ambigua); and dwarf pawpaw (Asimina parviflora). The herbaceous component is typically very sparse with low-growing briers (Smilax glauca, S. bona-nox), panicled tick-trefoil (Desmodium paniculatum), and partridgeberry (Mitchella repens) appearing most conspicuous.

- *Pinus taeda – Quercus falcata – Quercus alba / Ostrya virginiana / Chasmanthium sessiliflorum* Forest
  [Loblolly Pine – Southern Red Oak, White Oak / Hop Hornbeam / Longleaf Spanglegrass Forest]

This community type is poorly represented on Eufaula, where it is narrowly confined to a complex of gently rolling slopes overlooking the backwaters along the west side of the Chattahoochee River. Examples are close canopies being codominated by loblolly and shortleaf pines, with some combination of southern red oak, upland laurel oak (*Quercus hemisphaerica*), white oak (*Q. alba*), and water oak (*Q. nigra*). Accenting the foregoing assemblage is a lesser frequency of post oak, mockernut hickory (*Carya tomentosa*), and sweetgum. Of special interest is the presence of an occasional longleaf pine, suggesting that this association may represent a transition zone between the hardwood-dominated bottomlands and the fire-maintained uplands.

- *Quercus falcata – Quercus alba – Carya tomentosa / Oxydendrum arboreum / Vaccinium stamineum* Forest
  [Southern Red Oak – White Oak – Mockernut Hickory / Sourwood / Deerberry Forest]

This association contains vegetation that can be described as a dry-mesic oak-hickory forest. A widespread association of the Piedmont and Upper Coastal Plain, its presence on Eufaula is limited to a small tract along the north side of Cowikee Creek, just west of U. S. Highway 431. The canopy is dominated by southern red oak, water oak, pignut hickory (*Carya glabra*), and mockernut hickory, with lesser amounts of upland laurel oak, white oak, and sweetgum. The subcanopy and shrub strata are comprised of flowering dogwood (*Cornus florida*); winged elm (*Ulmus alata*); hoary azalea (*Rhododendron canescens*); tree sparkleberry; sourwood (*Oxydendrum arboreum*); red maple (*Acer rubrum* var. *rubrum*); beautyberry (*Callicarpa americana*); dwarf pawpaw (*Asimina parviflora*); downy serviceberry (*Amelanchier arborea*); and hog plum (*Prunus umbellata*), among others.

- *Liquidambar styraciflua – Quercus (nigra, phellos) – Pinus taeda / Vaccinium elliottii – Morella cerifera* Forest
  [Sweetgum – (Water Oak, Willow Oak) – Loblolly Pine / Elliott's Blueberry – Southern Bayberry Forest]

Undoubtedly the most ubiquitous community type on Eufaula, this association contains a mixture of upland and lowland species that typically occur together following the cessation of agriculture. It is primarily dominated by hardwood trees, particularly sweetgum, water oak, and willow oak (*Quercus phellos*). However, this forest type occurs in two distinct phases: one with an emergent canopy of large loblolly pine, and the other without the emergent canopy. Coverage by *Pinus taeda* in the *Pinus taeda* phase ranges from 10 to greater than 60%. As the hardwoods mature, the pines gradually decrease in abundance, becoming only a minor component in the canopy. The closed canopy is characterized by a prominence of sweetgum and various oaks, most notably water and willow oaks.

The understory exhibits a high variability in structure and composition, with the greatest density of shrubs and small trees occurring in early successional stages. Vines are an important component of this association and include trumpet creeper (*Campsis radicans*); yellow jessamine (*Gelsemium sempervirens*); poison ivy; muscadine grape (*Vitis rotundifolia*); and seemingly a prominence of briers (*Smilax laurifolia*, *S. glauca*, *S. rotundifolia*, *S. bona-nox*). Japanese honeysuckle (*Lonicera japonica*), an opportunistic exotic species, has become well established in several areas. The herbaceous layer may be sparse, particularly if shrubs and vines are dense.

Bottomland Floodplain Forests

Southern floodplain forests have undergone some of the most rapid reductions in size and changes in floral composition than nearly any other forest biome in the United States, and are therefore of critical conservation concern. Many have been and are continually being converted to farmland, industrial parks, or are modified by urban and suburban expansion. Other bottomlands are managed for timber production or as recreational areas in ways that reduce their viability as natural wetland habitats. Nonetheless, an understanding of the distribution, physical and biotic characteristics, and functional properties of these systems are critical toward establishing appropriate criteria for their use and long-term preservation.

Floodplain forests are found wherever streams or rivers flood at least occasionally beyond their channels. In the southeastern United States, these forests are broadly classified into three general categories: bottomland forests, floodplain forests, and deepwater alluvial swamps, each being defined by the frequency and timing of annual flooding. Floodplain ecosystems are highly variable in size, ranging from broad alluvial valleys several miles wide to more narrow strips of streambank vegetation. On Eufaula, these forest associations exist as narrow remnants along the Chattahoochee River, two of which are currently recognized.

- *Quercus pagoda – Quercus nigra / Halesia diptera – Ilex decidua / Chasmanthium sessiliflorum – Dicliptera brachiata* Forest
  [Cherrybark Oak – Water Oak / Two-wing Silverbell – Deciduous Holly / Longleaf Spanglegrass - Mudwort Forest]

Occurring as a narrow corridor along the Chattahoochee River in the northernmost sector of Eufaula NWR, this association is represented by a codominance of cherrybark oak (*Quercus pagoda*), water oak, sweetgum, and loblolly pine in the canopy. More widely distributed, but seldom absent from the canopy, is a suite of secondary species, including winged elm; post oak; swamp chestnut oak (*Quercus michauxii*); black cherry (*Prunus serotina*); persimmon (*Diospyros virginiana*); and water hickory (*Carya aquatica*). The understory is open and park-like, containing a representation of the foregoing canopy associates, in addition to a scattering of small trees and shrubs such as deciduous holly (*Ilex decidua*); American holly; American elm (*Ulmus americana*); two-wing silverbell (*Halesia diptera*); dwarf palmetto (*Sabal minor*); and red maple (*Acer rubrum*). The herbaceous component is characterized by a mosaic of sparsely vegetated areas.

- *Fraxinus pennsylvanica – Ulmus americana / Carpinus caroliniana / Boehmeria cylindrica* Forest
  [Green Ash – American Elm / American Hornbeam / False Nettle Forest]

The extent of this association on Eufaula NWR is restricted to the margins of the Chattahoochee River, where it is represented by a small number of poor quality occurrences. Considered a close canopied forest, human-derived disturbances have resulted in an open overstory with a dense, nearly impenetrable understory of vines and shrubs. A suite of species indicative of bottomlands in the region characterize the canopy, including green ash (*Fraxinus pennsylvanica*); sugarberry (*Celtis*

laevigata); American elm; silver maple; water oak; sweetgum; and sycamore (*Platanus occidentalis*). The dense undergrowth contains a rich variety of species, most notably consisting of the following: silky dogwood (*Cornus amomum*); American hornbeam (*Carpinus caroliniana*); lead-plant (*Amorpha fruticosa*); pepper-vine (*Ampelopsis arborea*); southern bayberry (*Morella cerifera*); tag alder (*Alnus serrulata*); giant cane (*Arundinaria gigantea* var. *gigantea*); groundsel-tree (*Baccharis halimifolia*); giant ironweed (*Vernonia gigantea*); and Japanese honeysuckle.

- *Quercus phellos – Quercus nigra – Quercus alba / Chasmanthium sessiliflorum* Forest
  [Willow Oak – Water Oak – White Oak / Longleaf Spanglegrass Forest]

This is a temporarily flooded forest association dominated by willow oak in the canopy. Although occurring less frequently, other canopy associates include, in decreasing order of abundance, water oak; sweetgum; loblolly pine; swamp blackgum (*Nyssa biflora*); red maple; green ash; winged elm; water hickory; and white oak. The subcanopy/shrub stratum is generally well-developed and contains representatives of the foregoing canopy layer, as well as parsley-leaf hawthorn (*Crataegus marshallii*); green hawthorn (*Crataegus viridis*); dwarf palmetto; deciduous holly; and Virginia willow (*Itea virginica*). The greatest floral diversity is found in the herb layer, which is dominated by members of the grass (Poaceae) family. Resurrection fern (*Pleopeltis polypodioides*) and Spanish moss (*Tillandsia usneoides*) are epiphytic on the branches of some trees. An assortment of vines is also in evidence, appearing to be equally distributed along the forest floor as well as in the canopy. High quality occurrences of this association can still be found throughout Eufaula. The best examples occur in the vicinity of Cowikee Creek, along the south side of the creek in the refuge's Molnar Unit.

Forest Plantations

Plantations of trees have been planted throughout Eufaula NWR, with the primary intent of enhancing wildlife habitat. Three types are noted for the refuge, including one pine and two hardwood associations, all of which extend from 10 to 30 years of age.

- *Pinus taeda* Planted Forest
  [Loblolly Pine Planted Forest]

This association is classified as a loblolly pine plantation with little understory.

- *Quercus pagoda* Planted Forest
  [Cherrybark Oak Planted Forest]

Plantations of cherrybark oak are planted for wildlife habitat improvement. The understory is patchy but relatively open, containing beautyberry (*Callicarpa americana*), southern bayberry, sweetgum, St. Andrew's-cross (*Hypericum hypericoides*), and muscadine grape (*Vitis rotundifolia*).

- *Quercus acutissima* Planted Forest
  [Sawtooth Oak Planted Forest]

Plantations of sawtooth oak are grown for wildlife habitat enhancement.

Successional Fields

Successional fields are the result of former land use practices in which the forest was eliminated, and then allowed to become re-established. Fields represent the initial phase in the progression of

vegetational succession from which the cessation of active land use gradually transforms into climax forest. On Eufaula, this vegetation type is represented by the earliest levels of succession: herb-dominated fields occasionally accented by a series of low-growing trees and shrubs.

- Successional Field

This is a relatively short-lived association that will likely succeed to a *Liquidambar styraciflua – Quercus (nigra, phellos) – Pinus taeda / Vaccinium elliottii – Morella cerifera* Forest, a community type that usually follows the abandonment of agricultural lands. Examples at Eufaula are partially maintained through periodic mowing, thus retarding the growth of woody vegetation. The vegetation is characterized by a prominence of weedy herbaceous species such as gerardia (*Agalinis fasciculata*), sugarcane plumegrass (*Saccharum giganteus*), Canada goldenrod (*Solidago canadensis*), horseweed (*Conyza canadensis*), ragweed (*Ambosia artemisiifolia*), and Brazilian vervain (*Verbena brasiliensis*) that are accented with a scattering of small trees and shrubs, most notably loblolly pine, sweetgum, oaks, persimmon, and winged elm.

Basin Swamps

Basin swamps generally occur within irregularly shaped basins not associated with river systems. Three types are known from Eufaula NWR, all of which maintain similar hydroperiods (200–300 days), but possess a strikingly different combination of flora. Some basin swamps on the refuge, specifically those associations dominated by *Nyssa biflora*, are dependent on fire, which often dictates the vegetation to occupy a given site. Long intervals between droughts obscure the importance of fire in modifying and maintaining these wetland environments. Various wetlands burn on different cycles, with gum ponds having relatively long intervals of 50 to 150 years.

- *Quercus phellos / Carex (albolutescens, intumescens, joorii) – Chasmanthium sessiliflorum / Sphagnum lescurii* Forest
  [Willow Oak / (Greenish-white Sedge, Bladder Sedge, Cypress-swamp Sedge) Longleaf Spanglegrass / Yellow Peatmoss Forest]

This association occupies seasonally wet depressions along the upper floodplain terraces of the Chattahoochee River. A closed canopy forest, this community is represented by a prominence of willow oak. Water oak, sweetgum, swamp blackgum, sugarberry (*Celtis laevigata*), and loblolly pine generally occur less frequently and therefore are of secondary importance. The shrub and herb layers of high quality occurrences are relatively sparse, often characterized by a low diversity of plant life. The finest occurrence of this association can be found on the north side of a refuge road in the Upland Unit, in the southeast quarter of Section 24.

- *Nyssa biflora / Itea virginica – Cephalanthus occidentalis* Depression Forest
  Swamp Blackgum / Virginia-willow – Buttonbush Depression Forest

This community, while rare on Eufaula National Wildlife Refuge, is widespread throughout the southeastern United States, where it occupies peaty or mucky, acidic, semipermanently wet depressions and narrow sloughs. The canopy is predominantly comprised of swamp blackgum, while other bottomland species such as sweetgum, water oak, willow oak, red maple, and loblolly pine are more widely scattered, usually contributing less than 30% of the canopy. The abundance and diversity of the shrub and herb layers are generally sparse, often correlated with seasonal water fluctuation and canopy closure.

- *Nyssa biflora – Quercus nigra – Quercus laurifolia – Pinus taeda / Ilex opaca – Carpinus caroliniana* Forest
  [Swamp Blackgum – Water Oak – Laurel Oak – Loblolly Pine / American Holly – American Hornbeam Forest]

The example at Eufaula is represented by a closed canopy of swamp blackgum, laurel oak, and loblolly pine, with a slightly lesser abundance of water oak and sweetgum. The understory is poorly defined, with only a small number of species present, including American hornbeam, red maple, and Virginia willow, as well as various members of the canopy layer. Lizard's-tail (*Saururus cernuus*) is a prominent component of the ground cover, along with a rich diversity of other wetland species.

Baygalls

Rangewide, baygalls exhibit highly variable structural and compositional features, but are generally characterized as densely forested, acidic wetlands dependent on a continuous seepage flow or high water table. Baygalls occur throughout southern Alabama in several different landscape settings, including streamsides, flatwoods, depressions, wetter sections of pitcher-plant bogs, and floodplains. Hydrology, topographic variables, and soil properties exert a significant influence on the type of baygall vegetation occupying a particular site.

- *Liriodendron tulipifera – Nyssa biflora – Magnolia virginiana / Toxicodendron vernix – Morella heterophylla / Osmunda regalis* var. *spectabilis* Forest
  [Tuliptree – Swamp Blackgum – Sweetbay / Poison Sumac – Evergreen Bayberry / Royal Fern Forest]

This association is generally restricted to the margins of small blackwater and spring-fed streams, particularly those not subject to much flooding or siltation. Distinguished by the presence of poison sumac, this community is an uneven aged, mixed forest consisting of a closed canopy of tulip tree (*Liriodendron tulipifera*), swamp blackgum, sweetbay (*Magnolia virginiana*), and loblolly pine that overtops a dense shrub component principally composed of poison sumac, red maple, swamp redbay (*Persea palustris*), large gallberry (*Ilex coriacea*), beautyberry (*Callicarpa americana*), American olive (*Osmanthus americanus*), and sweet pepperbush (*Clethra alnifolia*). The herbaceous stratum is diverse and sphagnum moss (*Sphagnum* spp.) often carpets the ground.

Floodplain Marsh

Floodplain marshes are wetlands characterized by a prominence of herbaceous and/or woody vegetation that occurs in river floodplains, particularly in the Gulf Coastal Plain. Water and, to a minor extent, fire is the driving force responsible for maintaining the viability of naturally occurring systems and a corresponding diversity of wildlife. In fact, fire plays a crucial role in the ecology of some of Alabama's marshlands by limiting the invasion of woody vegetation, affecting the composition of the herbaceous component, and retarding or occasionally reversing peat accumulation. The presence of floodplain marshes on Eufaula originated from a combination of increased water levels resulting from the damming of the Chattahoochee River and the installation of dikes to artificially manipulate water levels for the benefit of waterfowl.

- *Salix nigra* Temporary Flooded Shrubland
  [Black Willow Temporary Flooded Shrubland]

This community type is composed of young or frequently disturbed thickets of black willow (*Salix nigra*) that inhabit shallow water associated with impounded areas and the backwaters of the Chattahoochee River. Occurrences are moderately vegetated in the understory with an assortment

of shrubs, vines, and herbs. Characteristic species include buttonbush (*Cephalanthus occidentalis*); hemp sesbania (*Sesbania macrocarpa*); sugarcane plumegrass (*Saccharum giganteum*); rose mallows (*Hibiscus militaris, H. moscheutos*); woolgrass (*Scirpus cyperinus*); broad-leaf arrowhead (*Sagattaria latifolia*); and water pepper (*Polygonum hydropiperoides*).

- *Panicum hemitomon – Pluchea (camphorata, rosea) – Ludwigia* spp. Herbaceous Vegetation
  [Maidencane – Camphorweed – Seedbox species Herbaceous Vegetation]

This is a broadly distributed association that primarily occurs along the margins of backwater areas associated with the Chattahoochee River. Characterized by a prominence of maidencane (*Panicum hemitomon*), this vegetation type is nearly monospecific, containing only a small number of associated herbs, including woolgrass (*Scirpus cyperinus*); panicgrass (*Dichanthelium scabriusculum*); spikerushes (*Eleocharis* spp.); rushes (*Juncus* spp.); sugarcane plumegrass (*Saccharum giganteum*); camphorweed (*Pluchea camphorata*); and various seedboxes (*Ludwigia* spp.).

- *Nelumbo lutea* Herbaceous Vegetation
  [American Lotus Aquatic Wetland]

The distribution of the American lotus association on Eufaula National Wildlife Refuge is primarily restricted to the backwaters of the Chattahoochee River. Stands are essentially monospecific and often cover extensive areas. Other floating-leaved aquatics such as yellow pond lily (*Nuphar lutea* ssp. *advena*), duckweed (*Lemna* sp.), mosquito fern (*Azolla caroliniana*), and the exotic water hyacinth (*Eichhornia crassipes*) are also present, as are various emergent species including pickerel-weed (*Pontederia cordata*), broad-leaf cattail (*Typha latifolia*), broad-leaf arrowhead (*Sagittaria latifolia*), water pepper (*Polygonum hydropiperoides*), and maidencane (*Panicum hemitomon*). Alligator-weed (*Alternanthera philoxeroides*), an adventive weedy species from South America, has also invaded some areas.

Depression Marsh

Depression marshes are shallow (less than a meter deep), often ephemeral wetlands that occur within a slight depression in an otherwise flat landscape. The origin of depression marshes is open to interpretation, with several explanations having been offered. However, one of the most accepted theories suggests that these wetlands were created by wind scouring of unconsolidated sands forming hollows that filled with water above a subsurface hardpan. The vegetation typically assumes a well-defined concentric zonation pattern, where shrub St. John's-wort (*Hypericum fasciculatum*) generally dominates the outer portion and a prominence of herbs, particularly grasses and sedges, characterize the innermost sections. Eufaula contains a single occurrence of depression marsh, in the Molnar Unit, represented by two associations, the outer shrub zone and the inner herbaceous zone.

- *Hypericum fasciculatum / Rhynchospora (chapmanii, harperi)* Shrubland
  [Peelbark St. John's-wort / (Chapman's Beakrush, Harper's Beakrush) Shrubland]

This association is poorly represented at Eufaula, occurring as a small, linear assemblage of shrubby vegetation along the margin of a pond in the Molnar Unit. The vegetation is readily distinguished by a prominence of peelbark St. John's-wort accompanied by a lesser abundance of other shrubs, most notably black willow and groundsel-tree (*Baccharis halimifolia*). A rich diversity of herbs are also present, represented by numerous members of the grass (Poaceae) and sedge (Cyperaceae) families. Principal species, including grasses and sedges, are maidencane (*Panicum hemitomon*); soft rush (*Juncus effusus*); wool grass (*Scirpus cyperinus*); nodding beakrush (*Rhynchospora*

inexpansa); short-bristle beakrush (*Rhynchospora corniculata*); bristlegrass (*Setaria geniculata*); rose-mallows (*Hibiscus* spp.); water pepper (*Polygonum hydropiperoides*); centella (*Centella erecta*); and flat-top goldenrod (*Euthamia minor*), among others.

- *Eleocharis microcarpa – Juncus repens – Rhynchospora corniculata – (Mercardonia acuminata, Proserpinaca* spp.) Herbaceous Vegetation
  [Small-fruit Spikerush – Creeping Rush – Shortbristle Horned Beakrush – (Axil-flower, Mermaid-weed species) Herbaceous Vegetation]

This association forms the center of saturated to seasonally flooded depression ponds throughout the southeastern United States. The example at Eufaula is dominated by a combination of small-fruit spikerush (*Eleocharis microcarpa*) and creeping rush (*Juncus repens*), two low-growing herbs capable of establishing large colonies. Also present in much smaller quantities are blunt spikerush (*Eleocharis obtusa*), short-bristle beakrush (*Rhynchospora corniculata*), and water-purslane (*Ludwigia palustris*). The depressions where this community type occurs typically experience a seasonal fluctuation in water level, filling in the winter and often drying completely in the summer. However, during some years, the deepest zone in the center may remain inundated.

Impounded Areas

Moist soil management refers to the management of land to provide moist soil conditions during the growing season to promote the natural production of beneficial plants. Seeds produced by these plants often attract and concentrate waterfowl and other wetland wildlife species. The decomposing vegetative parts of moist soil plants also provide substrate for invertebrates, which are critical food for many wetland wildlife and fish.

Eufaula NWR maintains several artificially flooded areas for the purpose of enhancing waterfowl habitat. Such areas are seasonally inundated generally to coincide with spring and fall migratory patterns. The extreme variation in water levels allow for a diverse, but nonetheless, weedy flora to exist. For the most part, herb-dominated vegetation is characteristic, often accented with patches of low-growing trees and shrubs. Although no single species is prominent, several share codominance, frequently occurring in nearly homogeneous stands. Although an impressive diversity of species is present, a small number have become well established, achieving localized prominence and forming monospecific stands. Examples include sugarcane plumegrass (*Saccharum giganteum*); bladder-pod; hemp sesbania; soft rush (*Juncus effusus*); and Virginia broomsedge (*Andropogon virginicus*). Herbs occurring in slightly lesser abundance are fascicled gerardia (*Agalinis fasciculata*); bugleweed (*Lycopus americanus*); Maryland meadow-beauty (*Rhexia mariana*); flat-top goldenrod (*Euthamia minor*); small white aster (*Aster vimineus*); and savanna panicgrass (*Phanopyrum gymnocarpon*). Woody vegetation is represented by sweetgum, southern bayberry (*Morella cerifera*), groundsel-tree (*Baccharis halimifolia*), and buttonbush.

WILDLIFE

With a variety of aquatic, managed wetlands and terrestrial habitats, Eufaula NWR supports a diversity of fauna on the upper Coastal Plain. Various species occur throughout the area. The refuge focuses most of its efforts on waterfowl habitat management, but a variety of these habitat management practices benefit numerous other species. The refuge's bird list includes 287 species. Thirty-six mammal, 25 reptile, 18 amphibian, and 37 fish species have also been recorded.

Waterfowl

Eufaula NWR is located on the extreme eastern edge of the Mississippi Flyway. Few Atlantic coast flyway waterfowl make it this far west. Primary waterfowl use areas occur in and around the Bradley Impoundment, Kennedy Impoundment, Blackmon Bottoms, the Davis Clark/Lakepoint Lodge area, Houston Bottoms, Upland Impoundment, and areas near Florence Marina. The common habitat component of these areas is shallow water, either natural or controlled by pumps.

The refuge's peak wintering populations of ducks reached over 40,000 in the mid-1970s. In recent years, populations have peaked at 12,000–20,000. Migratory waterfowl numbers fluctuate throughout the Chattahoochee Valley from year to year. Three major factors contribute to strong duck numbers at Eufaula NWR: subfreezing weather must dip into the southern portion of the state; it must occur before mid-December; and the sub-freezing weather must be sustained for several days. A wide variety of duck species can be observed during the winter. An early arrival in August is the blue-winged teal. By late October, wigeon, gadwall, green-winged teal, ring-necks and shovelers are common. Wood ducks and ring-necked ducks eventually become the most abundant duck species by mid-December. Larger groups of pintails and mallards can be observed in the Upland and Winter Loop impoundments (USFWS 2003a). A large number of wood duck nest boxes are scattered over a wide area on the refuge.

Few migrant geese use the refuge, but a resident Canada goose population now totals about 2,000. Primarily, they utilize the Houston Bottoms and Kennedy units; however, the entire refuge can be utilized by Canada geese during some part of the year. Only 100–200 true migrant Canada geese may be found during the colder winters. About 30–50 snow geese and 50–100 white-fronted geese use the refuge during the winter. A Ross' goose has been occasionally observed congregating with a small group of Canada geese (USFWS 2003a).

The refuge participates in the annual mid-winter waterfowl counts. Since 2000, the counts have ranged from 9,300 to 11,900 and about 27 species have been observed. The refuge staff estimates that annual peak wintering waterfowl populations average about 15,000 birds. The refuge serves as a survey area for the Audubon Society's Christmas Bird Counts. The refuge staff participates on the river portion of the survey. This count also provides an estimate for wintering waterfowl numbers.

The refuge has erected and maintained wood duck nest boxes for many years. Box numbers and placement strategy have evolved as new recommendations occur. Over the last several years, the staff removed clustered boxes from within the impoundments or from those lacking adequate water during the summer. The current strategy is to locate new boxes outside the impoundments near suitable brood habitat over permanent water. The program's goal is to inspect and maintain 200 boxes annually. Poorly located boxes continue to be removed and others are added following the Service's updated Southeast Region policies. The refuge currently maintains 104 wood duck boxes.

Marsh and Wading Birds

Providing foraging areas for wading birds and marsh birds is an important objective within the impoundments. This is accomplished by maintaining temporary mud flats and shallow water areas during spring and summer. Impoundments in the Bradley Unit are especially suited to drawdowns that expose productive foraging areas. Smaller areas in the Kennedy and Houston Bottoms are also managed to provide similar sites. Suitable habitat is not widely available during the fall, as most have revegetated with moist soil plants.

About 27 species of marsh and wading birds have been observed. The most abundant and visible species include the great blue heron, great egret, little blue heron, snowy egret, green-backed heron, double-crested cormorant, coot, anhinga and cattle egret, although birds as rare as roseate spoonbills can be observed. Other common water bird species include king rails, sora rails, American and least bitterns, common moorhens and purple gallinules (USFWS 2003a).

Several large rookeries are located on the refuge, consisting of hundreds of great blue heron, great egret, snowy egret, little blue heron, anhinga and cattle egrets. The refuge supports large populations of herons and other marsh birds year-round. About 100 wood storks are present during spring and summer and several hundred sandhill cranes winter on the refuge. It is possible that the soon to be established eastern population of whooping cranes will use the Eufaula Refuge during its migration flight. Colonial water bird rookeries have been located in the past in the Molnar Unit, Bradley Unit, Blackmon Slough, Houston Bottoms, Kennedy Unit, and Bird Island.

Shorebirds, Gulls, Terns and Allied Species

Eufaula NWR provides stopover and feeding habitats for migratory shorebirds, primarily within the impoundments during spring. River water levels are controlled by Corps of Engineers policy and are maintained about 188 feet above mean sea level (MSL) during the migration periods. This is too high to make the sandbars, mudflats, or other shallow water habitats available for shorebird use. Only during extended droughts or when the water levels are approximately 187 MSL or less are suitable shorebird habitats available along the Chattahoochee River. Resting and feeding areas are provided within the impoundments, particularly the Bradley Unit. Gradual spring drawdowns and daily water level fluctuations in the outlet pools provide ample habitat from March through June. By late July, these areas have normally revegetated with dense, tall herbaceous growth which is unsuited for shorebird use.

Peak shorebird migration takes place in April and October. About 50 different species of shorebirds, gulls, and terns are on the refuge's bird list. Willets, marbled godwits, ruddy turnstones, black-bellied plovers, short-billed dowitchers, greater and lesser yellowlegs, black-necked stilts, and several species of sandpipers have been observed (USFWS 2003a). Sandhill cranes are annual winter migrants on the refuge, and are highly coveted by birders. Between 75–150 sandhill cranes roost in marshy and shallow water habitats along the river and feed in nearby agricultural fields. Blackmon Bottoms and the nearby peninsulas are known roosting areas.

Raptors

The refuge supports large breeding and wintering populations of raptors, including bald eagles and ospreys. About 17 species of raptors have been documented on the refuge. Of these, the most common are the red-tailed hawk, red-shouldered hawk, Cooper's hawk, sharp-shinned hawk, American kestrel, Northern harrier, osprey, barred owl, great horned owl, screech owl, barn owl, turkey vulture, black vulture and bald eagle (USFWS 2003a). Raptors are an important consideration in the refuge's forest and successional habitat management programs.

Other Resident and Migratory Birds

The refuge's diverse habitat not only provides important habitats for waterfowl, wading birds and raptors, but also for a wide range of songbirds. Neotropical migratory songbirds are a priority species group in the management of timber resources and old field habitats. The refuge's goal is to provide diverse habitats with high quality stopover cover and food resources. The refuge contains approximately 2,200 acres of forested habitat and 800 acres of old field areas. Of the 2,200 forested acres, 1,700 acres are pine-dominated stands with 500 acres in hardwood types. The pine forests

are managed to provide a moderately open overstory with diverse understory conditions. Old field areas are managed to encourage use by migrating songbirds that require grassland and scrub/shrub habitats. These include bobolinks, meadowlarks, and several species of sparrows. Northern harriers and kestrels also benefit from old field management. The refuge has placed field borders and buffer zones along the edges of agricultural fields and retired fields or sections of fields to manage as old field habitats. Periodic mowing and fall disking are used to encourage a grass-herbaceous cover type. The refuge also contains resident populations of wild turkey and bobwhite quail.

Mammals

The various kinds of cover found on the refuge provide habitat for 36 species of mammals. Resident wildlife including beaver; fox; raccoon; opossum; bobcat; swamp and cottontail rabbit; nine-banded armadillo; coyote; and white-tailed deer are present in high numbers. Small mammals include shrews, mice, chipmunks, voles, and moles (USFWS 2003b).

Game mammals include the white-tailed deer, cottontail and swamp rabbit, raccoon, opossum, and gray and fox squirrels. Gray squirrels occur but are not very common, probably due to the absence of large, contiguous stands of hardwoods. Fox squirrels are very rare. In addition to these game mammals, furbearers include beaver, river otter, mink, weasel, and spotted and striped skunk. Four species of bats can also be found at the refuge.

Amphibians and Reptiles

The refuge supports an abundance of native reptiles and amphibians. Sixty-eight species of amphibians and reptiles are known from Barbour County based on museum specimens. In a herpetofaunal survey of the refuge conducted by Guyer and Green (1992), 46 species were observed: 17 species of frogs and toads, 2 species of salamanders, 6 species of turtles, 8 species of lizards, and 13 species of snakes. Also, a healthy, growing population of American alligators exists in refuge wetlands.

Fish

Lake Eufaula is regionally and nationally known for its bass fishing. Crappie, bluegill, and catfish are also popular sport fish. The most prominent species of fish present in Lake Eufaula include largemouth bass, crappie, catfish, various panfish, hybrid bass, and striped bass. A fishery survey of eight streams entering Eufaula NWR documented 37 species of fish (USFWS 2003a).

THREATENED AND ENDANGERED SPECIES

The endangered wood stork is commonly seen on the refuge between May and October, especially when the lake levels and impoundment water levels are low enough to provide isolated pools for foraging. The number of storks using the refuge fluctuates greatly from year to year, with as many as 70 birds having been observed (USFWS 2003a). Although the refuge has several active wading bird rookeries, no wood stork nesting has occurred in the refuge vicinity. The Molnar Unit was established as a management area for wood storks. Nesting platforms and decoys were installed but have not been successful to date. Periodically, excess fingerlings, minnows, and tadpoles from the Warm Springs Fish Hatchery are released in the Molnar Impoundment as a supplemental food resource for storks and other wading birds. Habitat management for wood storks is an objective in the other impoundments as well.

The formerly listed bald eagle and peregrine falcon are seen occasionally as they migrate through the area in winter.

In 1987, the Fish and Wildlife Service pronounced the American alligator fully recovered, and consequently removed the animal from the list of endangered species. The alligator population on the refuge and within the refuge area has increased since the reintroduction of the species in 1971. Alligators nest on the slopes of levees and on small, woody vegetation-covered islands in all the units. Young begin to hatch in late summer. A conservative estimate of the refuge population is over 1,000 animals (USFWS 2005). Most of the alligators are less than six feet in length; however, several 12- to 14-foot individuals are present on the refuge. Beginning in 2006, the refuge contracted with Dr. William Birkhead of Columbus State University to conduct alligator surveys in the impoundments. The surveys are conducted at night using a spotlight to perform direct counts in the Houston, Molnar, Kennedy, and Bradley impoundments. Sizes of alligators are approximated using the estimated distance between the nostril and eye.

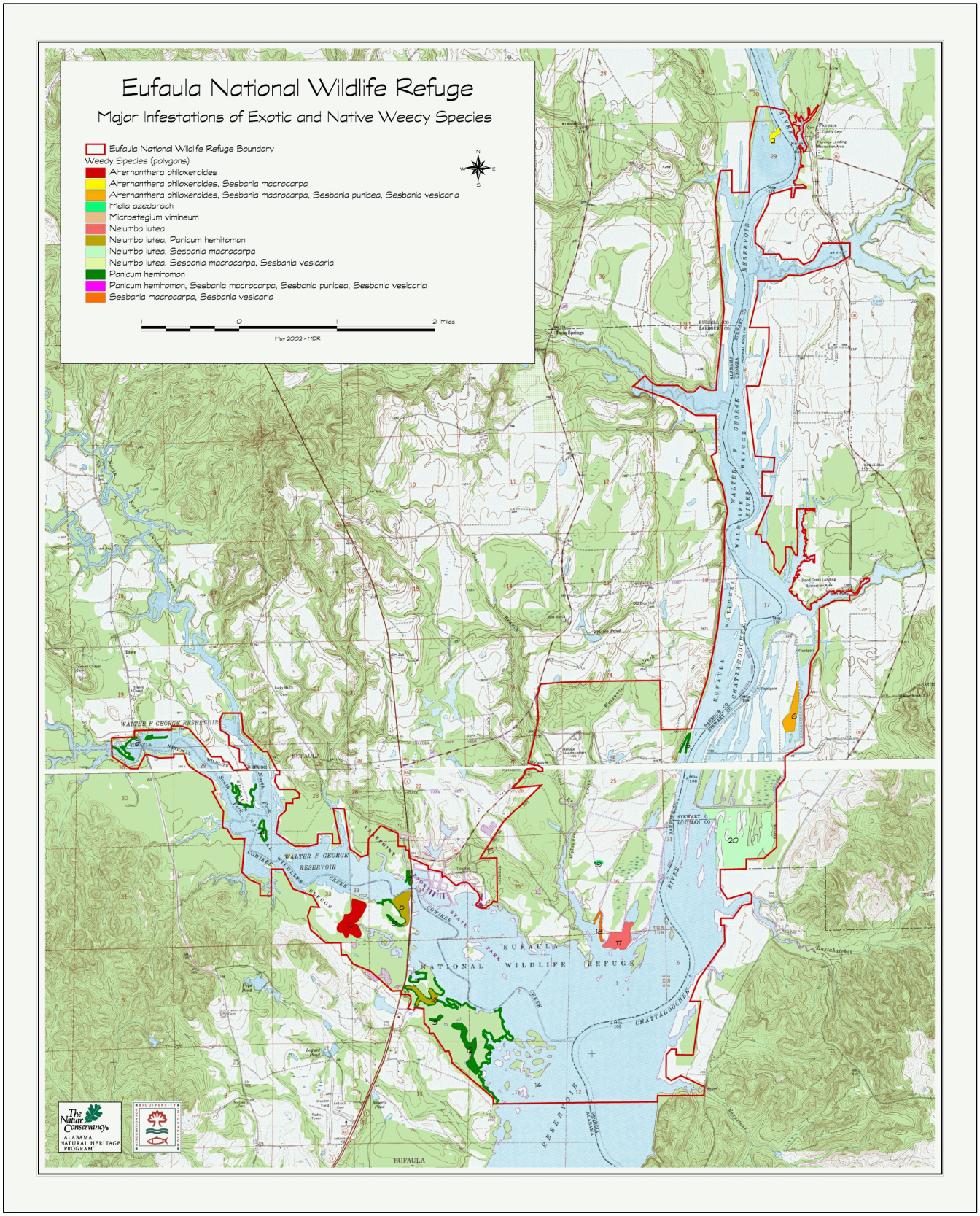
The federal endangered shinyrayed pocketbook mussel is documented to occur in Russell County, Alabama, north of the refuge, on a tributary of the Chattahoochee River. State-listed species found on the refuge include the alligator snapping turtle and bluestripe shiner.

INVASIVE SPECIES

Although habitat destruction and degradation are the most pervasive threats to the viability of Alabama's and Georgia's vegetation resources, the influence of exotic (nonnative) plants has proven to be equally as harmful to ecosystem integrity. Invasive exotic plants have demonstrably caused irreparable damage to various natural communities throughout the Southeast. Chinese privet (*Ligustrum sinense*), alligator-weed (*Alternanthera philoxeroides*), rattlebox (*Sesbania punicea*), bag-pod (*Sesbania vesicaria*), and Japanese honeysuckle (*Lonicera japonica*) are five invasive plant species that have become well established in several locations on Eufaula. The major infestations of exotic plants on the refuge are illustrated in Figure 5. These species are capable of colonizing large areas, generally in full sun, throughout the warmer regions of the world. Japanese honeysuckle was first introduced into the New World at Long Island, New York, to embellish the gardens of Colonial America. Since then, the popularity of this species as a garden plant has enabled it to quickly spread throughout much of the eastern United States, displacing desirable native vegetation. While not firmly established, the presence of Chinese tallow on the refuge is of concern. The species was first introduced from China during the early 1900s to promote the silkworm industry. Since then, the tree has become widely naturalized in the Southeast, often monopolizing large areas. The widespread dispersal of the above-mentioned and other exotic species have been primarily attributed to highway maintenance and construction, horticultural purposes, and the enhancement of wildlife habitat. The illegal disposal of yard trash has also aided the spread of these and other exotic species.

Table 3 lists the species of exotic plants that were observed in Eufaula during a recent plant communities survey (Schotz 2002). Other exotic species that occur at the refuge are two aquatic plants (hydrilla and common waterweed), feral hogs, and the Mediterranean gecko. Hydrilla in the Chattahoochee River has severe implications for the management of aquatic resources. Native invasive and weedy upland plants including sicklepod, cocklebur, and morning glory are problems in agricultural fields and impoundments. Chinese privet, Chinaberry, and Japanese honeysuckle are pervasive along forest edges, invading into the stands. Plant diversity along shorelines has been impacted by alligator-weed, water willow, maidencane, giant cutgrass, and primrose-willow. Treating areas infested with alligator-weed, maidencane, primrose-willow, sesbania, water smartweed or waterpepper, American lotus, and others occurs within the impoundments (USFWS 2003a).

Figure 5. Major infestations of exotic and native weedy species on Eufaula National Wildlife Refuge.



Management of invasive and exotic plants at Eufaula includes mechanical, biological, and chemical methods, or a combination of these. Mechanical methods include mowing, and disking or plowing using farm tractors. These methods are not effective as they provide only temporary relief. The very high occurrence of invasive seeds in seed banks and the rhizomatous nature of some species allow quick re-establishment and growth. The primary biological method used has been the release of host-specific alligator-weed beetles. The quantities released each year vary, normally between 2,000 to 3,000. The release of beetles has had limited success in reducing alligator-weed. The use of herbicides has provided partial control of some invasive species. The primary herbicides used are Roundup (glyphosate) and 2,4-D amine (organophosphates). Others include Rodeo (glyphosphate), Arsenal (imazapyr), and Tordon (picloram). Atrazine was previously used by the cooperative farmer for control of sicklepod in corn, but it is now banned from use on all refuges (USFWS 2003a).

The refuge's management strategy for exotic plants focuses on drying up the impoundments and using tractor-mounted boom sprayers to apply herbicides. The herbicides are applied as early as ground conditions allow equipment in the fields before the plants become tall, dominant, and produce seed. Abundant spring and summer rains delay treatments, allowing weed establishment. Aerial treatments have been used at the refuge but are effective only when there are large concentrated areas of invasives. Other application methods include backpack sprayers and an ATV-mounted boom sprayer. In agricultural fields, the cooperative farmer applies approved herbicides for weed control in corn, soybeans, winter wheat, oats, and rye.

Monitoring and treatment of existing infestations, and preventing the encroachment of new populations, should remain an important component of land management throughout Eufaula National Wildlife Refuge. Education of land managers about the problems associated with exotic pests, coupled with the use of native species for improving wildlife habitat, may be beneficial in this effort. If nonnative cultivars must be used, then invasive species should be avoided.

CULTURAL RESOURCES

Cultural resources include historic properties as defined in the National Historic Preservation Act (NHPA), cultural items as defined in the Native American Graves Protection and Repatriation Act (NAGPRA), archaeological resources as defined in the Archeological Resources Protection Act (ARPA), sacred sites as defined in Executive Order 13007, *Protection and Accommodation of Access to "Indian Sacred Sites"* to which access is provided under the American Indian Religious

Freedom Act (AIRFA), and collections. As defined by the NHPA, a historic property or historic resource is any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP), including any artifacts, records, and remains that are related to and located in such properties. The term also includes properties of traditional religious and cultural importance (traditional cultural properties), which are eligible for inclusion in the NRHP as a result of their association with the cultural practices or beliefs of an American Indian tribe. Archaeological resources include any material of human life or activities that is at least 100 years old, and that is of archaeological interest.

Table 3. Exotic plant species observed in Eufaula National Wildlife Refuge.

Scientific Name	Common Name	Degree of Severity*
AILANTHUS ALTISSIMA	Tree-of-heaven	3
ALBIZIA JULIBRISSIN	Mimosa	2
ALTERNANTHERA PHILOXEROIDES	Alligator-weed	1
CROTALARIA SPECTABILIS	Showy rattle-box	3
DAUCUS CAROTA	Wild carrot	2
JACQUEMONTIA TAMNIFOLIA	Hairy cluster-vine	3
LESPEDEZA BICOLOR	Shrub bush-clover	2
LESPEDEZA CUNEATA	Chinese bush-clover	2
LIGUSTRUM JAPONICUM	Japanese privet	2
LIGUSTRUM SINENSE	Chinese privet	1
LOLIUM MULTIFLORUM	Italian ryegrass	2
LONICERA JAPONICA	Japanese honeysuckle	1
LYGOPODIUM JAPONICUM	Japanese climbing fern	2
MACLURA POMIFERA	Osage orange	3
MELIA AZEDARACH	Chinaberry	2
MICROSTEGIUM VIMINEUM	Nepal grass	2
NARCISSUS SPP.	Narcissus	3
PASPALUM NOTATUM	Bahia grass	2
PASPALUM URVILLEI	Vasey grass	3
PERILLA FRUTESCENS	Beefsteak plant	3
POPULUS ALBA	White poplar	3
PUERARIA LOBATA	Kudzu	2
RAPHANUS RAPHANISTRUM	Wild radish	3
SAPIUM SEBIFERUM	Chinese tallow	2
SESBANIA PUNICEA	Rattle-box	2
SESBANIA VESICARIA	Bag-pod	1
VERBENA BRASILIENSIS	Brazilian vervain	3
VERBENA RIGIDA	Stiff vervain	2
WISTERIA SINENSIS	Chinese wisteria	2

Category 1 = Species that have invaded and disrupted native plant communities in Eufaula NWR.
Category 2 = Species that have shown a potential to invade and disrupt native plant communities, but pose no immediate threats in Eufaula NWR.
Category 3 = Species that have persisted around old homesites and have no or minimal potential to invade native plant communities.

Source: Schotz (2002)

Eufaula National Wildlife Refuge follows these legal mandates to protect the public's interest in preserving the cultural legacy that may potentially occur on the refuge. Whenever construction work is undertaken that involves any excavation with heavy earth-moving equipment, such as tractors, graders, and bulldozers used in the development of moist soil units, the refuge contracts with a qualified archaeologist or cultural resources expert to conduct an archaeological survey of the site. The results of these surveys are submitted to the Service's Regional Historic Preservation Officer, as well as the State Historic Preservation Officer (SHPO), which, in Alabama, is a member of the Alabama Historical Commission. The SHPO reviews the surveys and determines whether cultural resources will be impacted, that is, whether any properties listed in or eligible for listing in the National Register of Historic Places will be affected. If cultural resources are actually encountered during construction activities, the refuge is to notify the SHPO immediately.

In 1978, the Columbus Museum of Arts and Sciences published the results of a cultural resource background survey and archeological reconnaissance of Eufaula Refuge (Schnell and Knight 1978). The study's literature and background survey demonstrated that there were 57 archeological sites known to exist in or adjacent to the refuge prior to the reconnaissance. Ethnohistorical data suggested that a minimum of six historic Creek Indian villages were located in the refuge area. A number of archeological properties had already been impacted by the impoundment of the Walter F. George Reservoir.

During the reconnaissance portion of the 1978 study, 11 additional sites were discovered within the proposed Kennedy and Davis-Clark project areas. Two of the 11 sites were demonstrated to have archeological integrity. Both of these sites were believed to represent prehistoric occupation of the area. Data collected at the time of the survey were insufficient to allow for nomination of either of these sites to the National Register of Historic Places. However, limited sampling of lithics (rock materials) and ceramics at one of the sites suggested a possibly pure component assignable to the Swift Creek Period (ca. 500 AD), with perhaps an additional Archaic Period manifestation. At the other site, two components were identifiable, the strongest of which was assignable to the Cartersville Period (ca. 1 BC). Another component suggested an earlier occupation of the site during the transitional Archaic-Woodland Period (ca. 1000 BC).

SOCIOECONOMIC ENVIRONMENT

Eufaula National Wildlife Refuge is located on both banks of the Chattahoochee River in southeast Alabama and southwest Georgia. It lies in four counties: Barbour and Russell counties in Alabama and Stewart and Quitman counties in Georgia. The refuge is located about 40 miles south of Columbus, Georgia, and 80 miles east of Montgomery, Alabama. Much of the refuge lies within the city limits of Eufaula, Alabama.

Russell County is almost as densely populated as the state of Alabama (78 persons per square mile vs. 88 persons per square mile), while Barbour County has about half the density (33 persons per square mile). Stewart and Quitman counties in Georgia are very rural (11 and 17 persons per square mile vs. 141) (U.S. Census Bureau [USCB] 2006).

In 2004, Russell County's estimated population was 49,262, about 0.01% of Alabama's population of 4,530,182 (USCB 2006). The county's population declined by 1% from 2000 to 2004, compared to Alabama's 1.9% growth in the same four years. Barbour County's estimated population in 2004 was 28,557. The county's population declined 1.7% from 2000 to 2004.

Stewart County's estimated 2004 population was 4,981, about 0.0006% of Georgia's population of 8,829,383. The county population declined by 5.2% from 2000 to 2004, compared to Georgia's 7.8% growth in the same four years. Quitman County's estimated population in 2004 was 2,467. The county's population declined 5% from 2000 to 2004.

The local economy is dominated by nearby Fort Benning, and the largest industries are durable-goods manufacturing followed by state and local government. In 2004, of the data available, manufacturing was the largest of twenty major economic and employment sectors in Russell and Barbour counties in Alabama (STATS Indiana 2006). Health care and social assistance was the largest sector in Stewart County and retail trade in Quitman County in Georgia. Employment by major industrial sectors is shown in Table 4.

Table 4. Employment of civilian population 16 years and older by industry.

Industry	Russell County, Alabama	Barbour County, Alabama	Stewart County, Georgia	Quitman County, Georgia
Agriculture, Forestry, Hunting	N/A	1.9%	6.3%	9.0%
Mining	N/A	0.9%	N/A	N/A
Construction	7.3%	1.1%	N/A	N/A
Manufacturing	22.0%	36.6%	N/A	N/A
Wholesale Trade	1.2%	N/A	2.3%	N/A
Retail Trade	15.7%	10.4%	10.31%	9.2%
Transportation and Warehousing	2.3%	6.9%	1.2%	1.9%
Utilities	0.7%	0.6%	N/A	N/A
Information	0.9%	0.4%	N/A	N/A
Finance and Insurance	2.9%	2.6%	N/A	N/A

Industry	Russell County, Alabama	Barbour County, Alabama	Stewart County, Georgia	Quitman County, Georgia
Real Estate	1.6%	0.6%	N/A	N/A
Professional and Technical Services	1.7%	N/A	N/A	N/A
Management of Companies	0%	N/A	N/A	N/A
Waste Services	1.4%	1.5%	N/A	N/A
Educational Services	9.2%	6.4%	18.6%	N/A
Health Care and Social Assistance	N/A	7.6%	28.6%	N/A
Arts, Entertainment, Recreation	0.5%	0.5%	N/A	N/A
Accommodation and Food Services	10.0%	6.1%	N/A	N/A
Other Services	2.7%	1.2%	1.7%	1.9%
Public Administration	1.6%	9.6%	9.1%	1.3%

Source: STATS Indiana 2006

(Note: N/A = data not available)

Alabama's statistics are well below the national averages for persons below the poverty line, median household and per capita income, and educational attainment levels (USCB 2006). Russell and Barbour counties conform to this profile and worse. Georgia conforms closely to the national averages; however, both Stewart and Quitman counties fare significantly worse, as shown in Table 5. In terms of race and ethnicity, whites and blacks dominate both the county and the state populations.

Table 5. Comparison of demographic statistics for Russell, Barbour, Stewart, and Quitman counties, Alabama, Georgia, and the USA.

Location	Median Household Income	Per Capita Income	% Below Poverty	% High School Graduates	% Bachelor Degree	% White	% Black	% Hispanic	% Asian	% Native American
Russell County, AL	$27,492	$14,015	19.9	66.5	9.7	56.7	40.8	1.5	0.4	0.4
Barbour County, AL	$25,101	$13,316	26.8	64.7	10.9	51.3	46.3	1.6	0.3	0.5
Alabama	$34,135	$18,189	16.1	75.3	19.0	71.1	26.0	1.7	0.7	0.5
Stewart County, GA	$24,789	$16,071	22.2	63.2	9.3	37.1	61.5	1.5	0.2	0.2
Quitman County, GA	$25,875	$14,301	21.9	57.8	6.1	52.1	46.9	0.5	0	0.2
Georgia	$42,433	$21,154	13.0	78.6	24.3	65.1	28.7	5.3	2.1	0.3
USA	$41,994	$21,587	12.4	80.4	24.4	75.1	12.3	12.5	3.6	0.9

Source: U.S. Census Bureau 2006

REFUGE ADMINISTRATION AND MANAGEMENT

LAND PROTECTION AND CONSERVATION

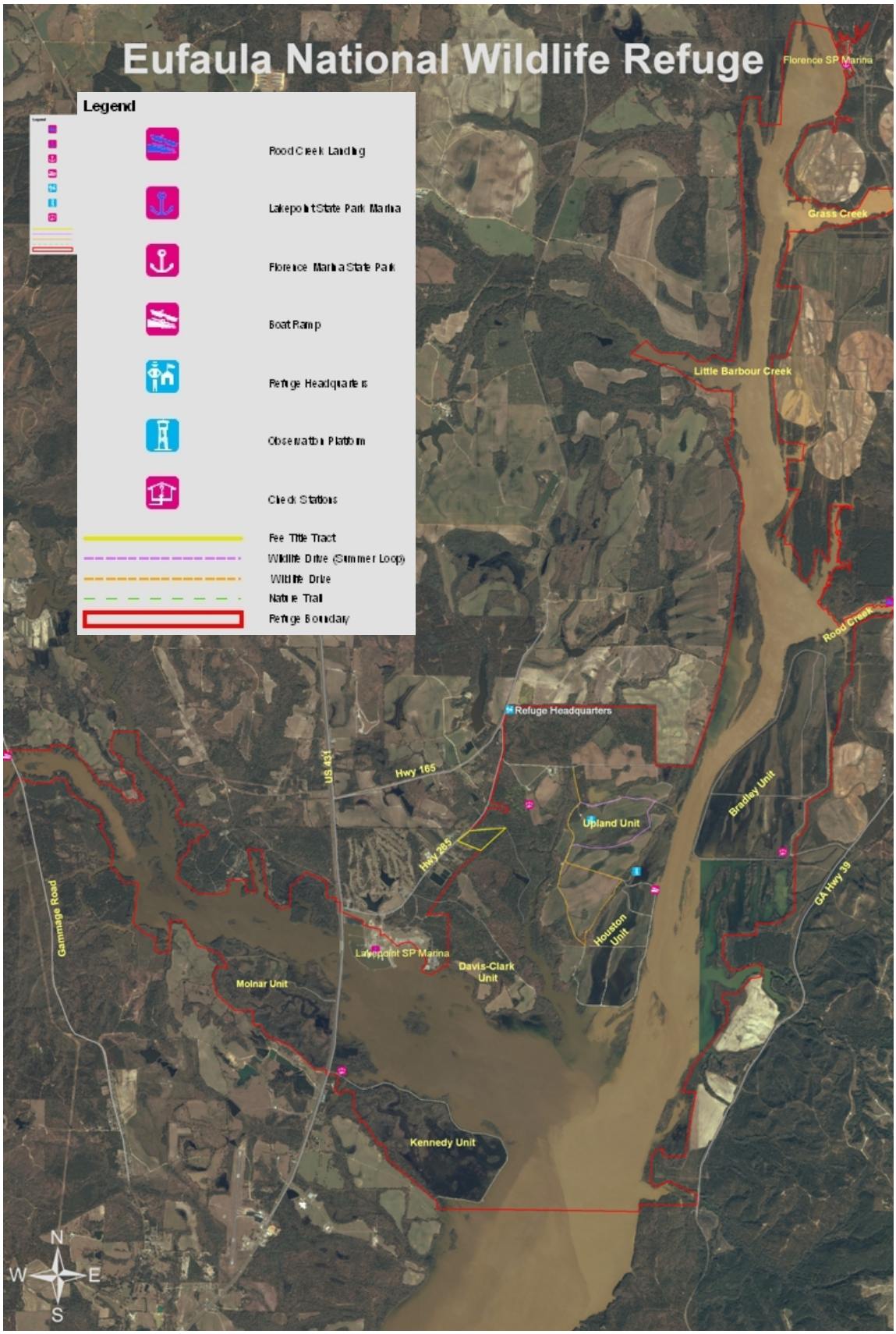
In keeping with the purpose for its creation, management efforts at Eufaula NWR are aimed toward the improvement of habitats under its jurisdiction for the benefit of migratory waterfowl and wood ducks, threatened and endangered species, and all other native wildlife. To this end, the refuge staff undertakes a vigorous program of active habitat restoration, management, and manipulation that includes levee and drainage canal construction and upkeep, disking, prescribed fire, planting, and exotic plant control. Most refuge habitats, if they are left to nature, would be either too wet or too dry to be optimal for wildlife. Thus, the staff attempts to manage the water levels through a variety of means. Table 6 shows the refuge's management units and the current management methods for each. Figure 6 shows the locations of the management units.

Table 6. Management units, Eufaula National Wildlife Refuge.

Unit	Acres	Description	Current Management
Molnar Unit	25	2 Impounded freshwater marsh units and 1 green tree reservoir	Managed for wood ducks, shorebirds, wading birds Inlet pump / gravity drained
Kennedy Unit	450	Moist Soil	Managed for wintering waterfowl Moist soil/pumping Inlet and outlet pumps
Houston Unit	230	5 impounded freshwater marsh units	Managed for wintering waterfowl, shorebirds, and wading birds Agriculture / moist soil mgt. Inlet and outlet pumps
Upland Unit	35	2 impounded freshwater marsh units	Managed for wintering waterfowl Agriculture / moist soil Inlet pump / gravity drained
Bradley Unit	750	5 impounded freshwater marsh units	Managed for wintering waterfowl, shorebirds, and wading birds Inlet and outlet pumps
Goose Pen	20	2 impounded freshwater marsh units and 2 green tree reservoir units	Managed for wintering waterfowl Inlet pump and gravity drained

The Corps of Engineers controls the refuge's water levels in a manner contrary to good waterfowl management. Full pool elevation of 189–190 MSL is annually maintained from spring through fall (mid-April to October); water levels drop to approximately 186 MSL during winter. Only during drought years is an abundance of moist soil plants produced in wetlands normally not exposed to water level fluctuations. Thus, the majority of the Chattahoochee River and Lake Eufaula is not high quality waterfowl habitat, emphasizing the refuge's responsibility to make the most of a suboptimal situation.

Figure 6. Eufaula National Wildlife Refuge management units and main features.



The refuge manages 16 impoundments controlled by eight pumps (seven diesel, one electric) and a system of water control structures (primarily screwgates with headwalls), with culverts, ditches, and irrigation pipes to move water. The Bradley, Houston and Kennedy units consist of inlet pumps to fill and outlet pumps to dewater. The Upland, Goose Pen, and Molnar units are all filled by inlet pumps, but are drained by gravity-flow water control structures.

All impoundments with the exception of the Molnar Unit are managed in a similar manner. The Molnar Unit serves as a wood duck banding site and also as a wood stork and wading bird area. It is maintained as a shallow water feeding site during the summer. Flooding the other impoundments begins in mid-October until they are at full pool by early November. Drawdowns begin in mid-March; the Upland and Goose Pen impoundments are emptied by gravity flow in several days, although if ducks are still present, the drawdown is extended for several weeks. These impoundments are the primary sanctuary and feeding areas. They are managed as row crop production areas, annually planted to corn. The areas are gated from November 15 to February 28 with no public access allowed. Drawdowns in the Kennedy, Bradley, and Houston Bottoms impoundments occur over several months, although 75 percent of the water volume is pumped out within 4–5 weeks. Thus, a slow drawdown is employed to encourage growth by moist soil plants. The Upland, Goose Pen, and Houston Bottoms impoundments contain agricultural fields managed under a cooperative farming agreement.

The Houston Bottoms area contains six impoundments. Corn is normally planted on higher ground in four impoundments, with the lower elevations managed for moist soil plants. The other two impoundments (Outlet Pool and Observation Tower) are difficult to dry out and moist soil plants are a priority. There is currently a beaver pond area on the north end of the Observation Tower Impoundment which contributes to its wet nature. There is a need for lateral drainage ditches to allow some impoundments to drain and dry out more thoroughly. Portions of these impoundments hold ponded water into late summer, allowing for invasive plants to grow and out-compete desired moist soil plants. The Kennedy Impoundment serves as a waterfowl hunting area and is approximately 350 acres. Annual flooding by electric pump covers approximately 200 acres. Exotic and nuisance plants are a major problem.

The Bradley Impoundment in Georgia is the largest at approximately 750 acres, approximately 350 acres of which can be flooded. The area is divided east to west by a cross-dike road with higher elevation ground subdividing the area into three subunits. Water is moved by two pumps and five major ditches controlled with screwgates. Waterfowl hunting is allowed during the state season.

Farming Issues

Eufaula NWR has a long history of farming prior to and after its establishment in 1964. The acreage planted to agricultural crops peaked in 1968 when 1,689 acres were farmed and 232 acres were grazed (USFWS 1988). Cattle grazing was permitted until 1980. Currently, 500 acres are under agricultural management (Figure 7) in more than 20 farm fields (Table 7). Croplands are managed under a Cooperative Farming Agreement (CFA). The CFA is annually negotiated for the period January 1 – December 31. The basis for the CFA is to provide food resources for wintering waterfowl by allowing private citizens to farm refuge property at fair market values with benefits accruing to both parties. The 2006 CFA is based on an acre-for-acre crop share ratio of 75% / 25% (farmer/refuge). Acreage shares are determined by the total acres of the cooperative plants as its share. Under the 2006 CFA, the cooperative farmer farmed 384 acres as its share and 116 acres (15 percent) as the refuge's share. The refuge allows the farmer to plant any grain crop he wishes such as corn or small grains (wheat, oats, and rye) for his share. For the refuge's share, the farmer is required to plant corn. Normally, the farmer rotates corn, small grains, and soybeans. There are 36 acres of hayfields in the current CFA. They are treated the same as a grain crop. The farmer is required to provide all

Figure 7. Croplands at Eufaula National Wildlife Refuge.

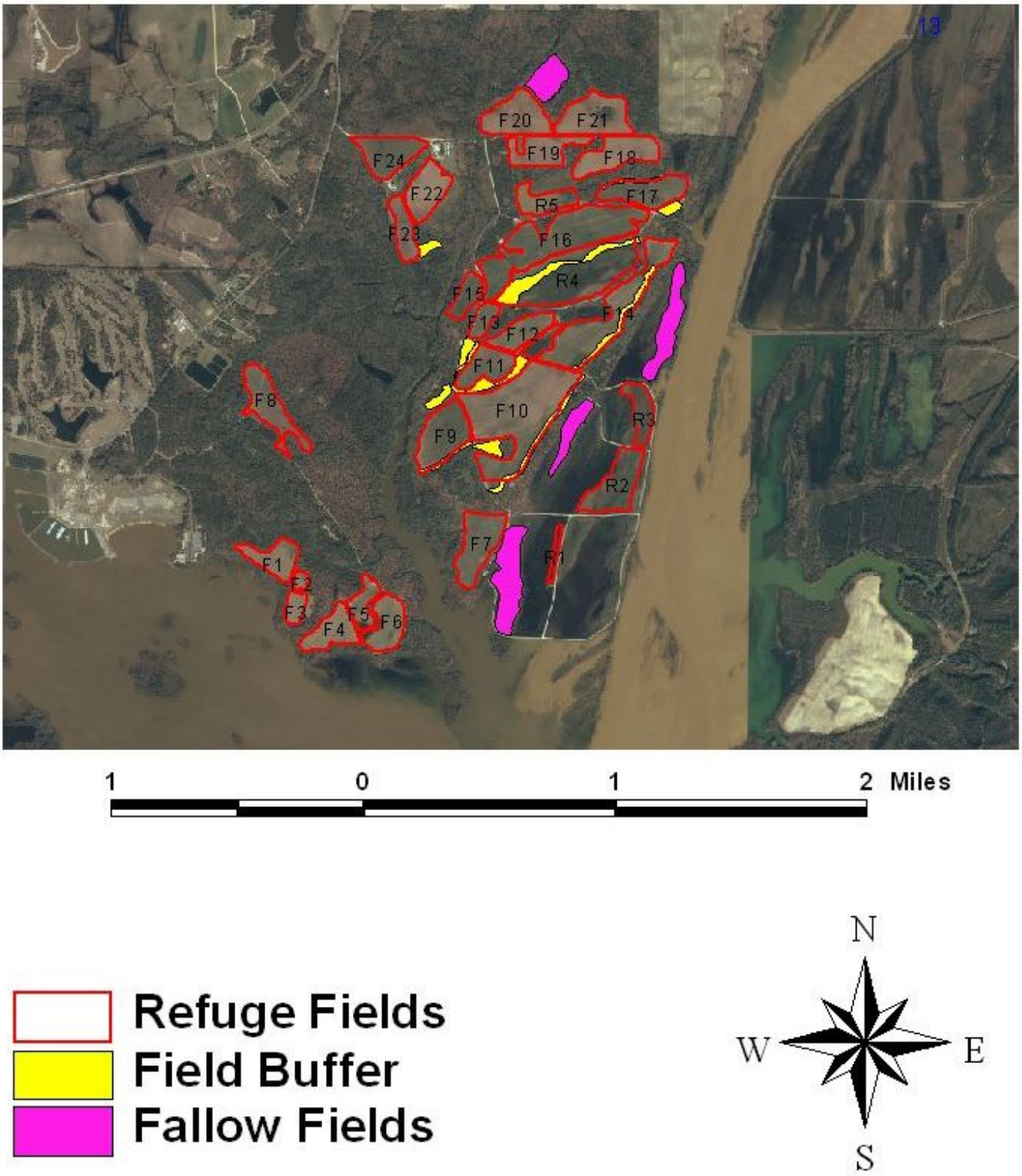


Table 7. Acreages of farm fields, Eufaula National Wildlife Refuge.

Field Name	Acres	Hectares
R1	3.13	1.27
R2	22.79	9.22
R3	10.79	4.37
R4	58.11	23.52
R5	12.63	5.11
R6	5.95	2.41
F1	14.03	5.68
F2	2.44	0.99
F3	5.47	2.21
F4	15.49	6.27
F5	9.49	3.84
F6	16.19	6.55
F7	22.61	9.15
F8	20.75	8.40
F9	24.38	9.87
F10	72.63	29.39
F11	15.83	6.41
F12	13.42	5.43
F13	6.43	2.60
F14	44.99	18.21
F15	8.93	3.61
F16	58.27	23.58
F17	20.29	8.21
F18	21.27	8.61
F19	17.10	6.92
F20	23.11	9.35
F21	25.69	10.40
F22	17.58	7.12
F23	11.07	4.48
F24	18.77	7.60

necessary labor, equipment, ground preparation, seed, fertilizer, lime, and pesticides for each party. The refuge's share of corn is left unharvested for wildlife consumption.

The 1988 Croplands Management Plan (USFWS 1988) sets a goal of producing 7,050 bushels of corn (or equivalent as waste grain in combination with other grain crops in the refuge's share). The goal is to provide sufficient available metabolizable energy (ME) to sustain 50 percent of the refuge's objectives for duck maintenance. The objective level is 2,300,000 duck use-days. The 7,050 bushels of corn was determined using published equations for basal metabolic rate, the gross energy content and ME of corn, with an added 20 percent to buffer effects from weather, consumption by other wildlife, and corn unavailability. As noted previously, approximately 80 to 120 acres of corn are left unharvested for winter waterfowl use. To meet this goal, average yields of 88 bushels/acre must be obtained. Under "normal growing conditions" the refuge is able to meet this goal. Furthermore, using reported conversions of one acre of corn providing enough energy for 233 ducks for 110 days equates to the refuge's 80 acres providing for approximately 18,840 ducks per season. Assuming an average winter population of 15,000 ducks, it appears the refuge is planting and providing enough corn for wintering waterfowl needs (USFWS 2003a).

Forest Management and Fire

Prior to 2001, the Eufaula Refuge conducted very few timber sales. Both natural and planted pine forests were typified by mature trees with closed canopies and poor regeneration. Southern pine beetle outbreaks in 2000 and 2001 required the timber to be thinned. In other areas, beetle infestations have gradually killed timber over the past five years. Problems with insect outbreaks are typical of overstocked stands with closed canopies. Therefore, the north boundary of the refuge has recently been thinned to prevent continued timber loss. Periodic thinning and burning of upland timber results in healthier forests with productive, diverse, wildlife habitat. The refuge's Forest Management Plan (USFWS 1971) calls for silvicultural treatments every eight years based on an 80-year rotation cycle. In conducting timber sales, the refuge's goal is to reduce the existing timber basal area of pine to approximately 50 square feet/acre. The average basal area for maintaining pine forests in the south is approximately 80. The management goal in pine and pine/hardwood stands is to increase plant diversity, and habitat conditions for bobwhite quail, migratory birds (Bachman's sparrow, woodcock, brown-headed nuthatch), and wild turkey (USFWS 2003a). Subsequent to thinning, the areas are burned during winter. Hardwood trees in pine/hardwood stands are removed using timber stand improvement (TSI) methods. The healthiest, dominant, large crown trees are left, removing the smaller, subdominant, deformed ones. Streamside protection zones are left around perennial streams and shorelines. Standing snags and dead trees are retained. Bottomland hardwood stands are found primarily in narrow, isolated strips along the river, and no management action is proposed for these areas.

Reforestation goals for the refuge are currently being developed. A new forest management plan will need to be developed after the completion of this comprehensive conservation plan. Natural regeneration will restock thinned loblolly and slash pine stands. Eufaula NWR is within the historic natural range of longleaf pine habitat. Over the last 50 years, changes in land use and forest management have significantly altered most of the longleaf pine habitat, replacing it with loblolly pine and mixed hardwood forests. The forest management goal is to reestablish longleaf pine as the dominant pine forest habitat on the refuge. This will be accomplished by underplanting longleaf pine seedlings in the remaining loblolly pine forest. Longleaf will also be planted in and around portions of reclaimed agricultural fields. The long-term goal is to reforest 1,000 acres with longleaf pine. As the longleaf matures, prescribed burning and selective forest thinning will be important tools for successful habitat management. Beginning in 2006, the refuge began planting longleaf seedlings on 328 acres. This effort was assisted with funding through the Southern Company and the National

Fish and Wildlife Foundation. Reforestation of fallow fields or along upland ditches is another option. Many field edges in upland areas are dominated by exotic Chinaberry trees, which should be removed and replaced with native species.

As stated in the Corps of Engineers permit, the refuge is allowed to keep receipts from all timber sales. The refuge cannot use the proceeds to fund additional staff positions, but they can supplement normal operating expenses, allowing the refuge to upgrade its equipment, conduct many habitat management activities, and fund research projects.

Eufaula NWR has an active prescribed fire program and it has an RXB3 Burn Boss, qualified staff, and good logistical support. Good relationships have been established with Okefenokee NWR and Mississippi Sandhill Crane NWR for burning assistance. The refuge is capable of conducting low complexity prescribed burns. The Davis Clark area, North Boundary area, and State Park Lodge area are the three prescribed burning units. Due to the refuge's location within the Eufaula city limits and its proximity to Lakepoint Resort State Park, there are wildland/urban interface issues arising primarily from smoke management concerns. For moderately complex prescribed burns, assistance is required from neighboring refuges and a RXB2 Burn Boss.

The refuge has an approved Fire Management Plan (USFWS 2001) with goals to burn on a 2–3 year rotation, depending on vegetation responses. Winter burns, or occasionally fall burns, are conducted in small fallow fields. As the refuge staff gains additional experience, summer burns in longleaf pine sites will be conducted. Current problems with the fire program revolve around smoke management and dependence upon obtaining a RXB2 Burn Boss and additional assistance from other refuges. Equipment needs include an improved fire plow and a fuel trailer. Permanent fire breaks are also needed in some areas.

Resource Protection

The refuge has two collateral duty law enforcement officers: the Refuge Manager and Assistant Refuge Manager. However, new policies may soon require refuge managers to relinquish law enforcement duties, leaving Eufaula with one collateral duty officer. Finding time to actively enforce refuge regulations is a challenging dilemma for these officers with primary management and supervisory responsibilities. The refuge has good relationships with conservation officers in Georgia and Alabama, the Eufaula City Police Department, and the Barbour County Sheriff's Department for additional assistance. Annual coordination meetings are held to discuss and review hunting season regulations and plans.

The average number of notices of violation (NOVs) issued each year is moderately low (usually less than 25) (USFWS 2003a). Casual contacts by refuge staff and verbal warnings are frequently used to educate and control public use. As the refuge is divided by the Chattahoochee River, boat patrol is necessary to contact deer hunters and potential illegal waterfowl hunters. Typical NOVs include fishing without a license; vehicle trespass; spotlighting; over limit on waterfowl; improperly plugged shotguns; leaving permanent deer stands on refuge property; and excess fish or game limits. Littering is a problem near gates and bank fishing areas. Two significant archaeological sites are located on the refuge and remain closed to public access. They are signed and periodically patrolled.

The refuge staff does not believe there are major disturbance issues to wildlife. Potential and occasional disturbances to refuge wildlife include noise and boat activity around the Bird Island rookery and vehicle and foot traffic to wintering waterfowl in or near closed areas. The east side of Bird Island is along the main river channel and exposed to boat traffic, and anglers are occasionally observed in the shallow water areas on the north and west ends. Refuge policies do not regulate

recreational vessels unless they involve wildlife disturbance. There are no restrictions on the types of boats, jet skis, or boating activities. Airboats are prohibited on Lake Eufaula (Walter F. George Reservoir). The Corps of Engineers is the primary regulatory agency in this area. Seasonally closed areas provide sanctuary for wintering waterfowl. The Upland and Goose Pen impoundments are the primary waterfowl sanctuary areas. These areas are closed to all public access from November 15 to March 1. Portions of the Houston Bottoms are gated and closed to vehicle access but foot travel is allowed. Periodic disturbance to waterfowl occurs near the boat ramp area, and because of this disturbance the ramp was closed in 2006. The ramp will be seasonally closed from November 15 through March 1.

Land Acquisition, Fee Title Tracts, and Easements

Eufaula NWR does not have an approved refuge boundary expansion program. Expanding the refuge or purchasing new land is not a national or regional priority at this time. The refuge has three fee title tracts totaling 591 acres in Miller (256 acres), Colquitt (177 acres), and Taliaferro counties (158 acres), Georgia. The refuge has conducted past management activities at these sites. However, because they are not priority areas, management efforts have recently been curtailed. Similarly, the refuge has management responsibilities for 21 Farmers Home Administration (FmHA) easements in Alabama and Georgia, and one conservation easement that is being monitored for Ducks Unlimited in Barbour County, Alabama. Periodic inspections and limited management activities occur on these easements, but not on a regular basis.

VISITOR SERVICES

Presidential Executive Order 12996 and the National Wildlife Refuge System Improvement Act of 1997 recognized six priority public uses on national wildlife refuges as long as they are compatible with the purposes for which the refuge was established. These include hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation, which “have been and are expected to continue to be generally compatible uses.” However, these “Big Six” public uses are by no means the only permitted public uses of national wildlife refuges; other uses have been and can continue to be permitted, provided that they are determined to be compatible with the refuge’s purposes, including walking dirt/gravel roads, bicycling dirt/gravel roads, canoeing, horseback riding, and general boating. Horseback riding is confined to gravel roads only. All-terrain vehicles (ATVs) are not permitted.

Eufaula NWR is located on U.S. Highway 431, the primary transportation route between Atlanta and the Florida Panhandle. More than five million people travel through Eufaula NWR annually, providing a huge potential for visitation. Eufaula NWR is part of the Corps of Engineers’ Lake Eufaula/Walter F. George Reservoir, which hosts more than 3.5 million visits annually, including large national fishing tournaments (USFWS 2003c). The refuge recorded more than 418,000 visits during 2006; the vast majority of these were recreational anglers. Wildlife Drive users and other nonconsumptive users were second and hunters third (USFWS 2006).

Eufaula NWR has a growing, multifaceted public use program that serves an estimated 400,000 visitors annually. The most popular uses include fishing and boating, wildlife observation, and hunting. There is considerable mutual visitation between the refuge and adjacent Lakepoint Resort State Park, the Florence Marina State Park, and on Walter F. George Reservoir.

Fishing

Since being impounded in the mid-1960s, Lake Eufaula has had a national reputation for excellent largemouth bass fishing, and is often referred to as the "Bass Capital of the World." Lake Eufaula has hosted numerous major national fishing tournaments. Sport fishing within refuge boundaries is one of the major economic engines of the local economy.

Fishing is offered on the refuge year-round. Bank fishing is limited to daytime use only, but there are no timing restrictions for fishing from boats. The refuge adopts fishing laws from both Alabama and Georgia. The two states have reciprocal agreements addressing license requirements for the entire lake; however, there are several differences in each set of regulations.

About 49 percent—about half—of all visitors to Eufaula NWR come for fishing, with over 205,000 use days recorded in 2006 (USFWS 2006b). Reduction of the legal bass size limit from 16 inches to 14 in several years ago has stimulated great interest in bass fishing. Crappie, catfish and bluegill are also heavily pursued. Bank fishing, often by subsistence users, occurs at many sites throughout the refuge, especially at the outlet pumps in spring. Six boat ramps are located on the refuge. Four boat launches are maintained by partner agencies (Lakepoint Resort State Park by the State of Alabama, Florence Marina State Park by the State of Georgia, and Rood Creek Landing by the Corps of Engineers). Two boat launch areas are the responsibility of Eufaula NWR: the Houston Bottoms boat launch and the Gammage Road boat launch. The Gammage road boat ramp is maintained as a public access ramp year-round. The Houston Bottoms boat ramp has never been designated as a public launch; however, previous management has permitted hunters and anglers to use this ramp. The Houston Bottoms ramp will continue to be used seasonally from March 1 through November 15.

Hunting

Eufaula NWR is open to hunting of waterfowl, deer, dove, squirrel, and rabbit. Hunting is permitted in designated areas only. The refuge staff participates in hunt coordination meetings with the two states. The hunt coordination meetings are held annually with the State of Alabama and every other year with the State of Georgia. Hunting laws on the refuge are enforced by collateral duty law enforcement officers. Other public use activities are not allowed in the hunting areas during the quota gun hunts and quota waterfowl hunts. However, during the dove gun hunt, the Wildlife Drive, observation tower and platform remain open, presenting a possible safety hazard.

The two primary hunting opportunities at Eufaula NWR are archery hunting for white-tailed deer and waterfowl hunting. The archery hunts are free nonquota hunts requiring a refuge permit and state hunting license. Approximately 2,800 use days for archery hunting (25 hunters/day for 115 days) occurred in 2002–2003 (USFWS 2003a). Youth gun hunts for deer are held annually in the Bradley Unit. These are quota pay hunts for youth 10–15 years of age during the weekends in October. Waterfowl hunting occurs only in the Kennedy and Bradley units. These are quota pay hunts using computer-randomized drawings to select hunters. The selected hunters draw for their blind selections at the check station, with up to three hunters allowed per blind. A record 624 hunters participated in waterfowl hunts during the 2005 season (USFWS 2005). Adult, adult/youth, and youth waterfowl hunts occur annually. Each year, several organized hunts for mourning doves are held. Normally, two to four hunts (including youth) occur in upland fields. A free permit is required. Attendance is usually between 75–100 hunters distributed over about 350 acres. The refuge also provides other hunting opportunities for small game such as squirrel and rabbit, but few hunters participate. Hunting for bobwhite quail and wild turkey is not permitted.

Waterfowl hunters experience good success at the refuge. The waterfowl hunter success rate has averaged from 0.85 to 2.48 birds per hunter, with a five-year average of 1.65 birds/hunter. Wood ducks are the most commonly harvested species, followed by ring-necked ducks, shovelers, gadwall, hooded merganser, and mallards.

Wildlife Observation and Photography

Ample opportunities exist for observing wildlife on Eufaula NWR. The primary method is viewing from vehicles along the Wildlife Drive. Over 34,000 visits were documented on the drive during 2002 (USFWS 2003a). The eight-mile drive meanders through a variety of upland and wetland habitats, providing good chances to see numerous wildlife species. Stops at the waterfowl viewing platform or wildlife observation tower can be very rewarding, especially during winter. Birding attracts many visitors to the refuge. Birding groups from the tri-city area (Columbus, Montgomery, and Pensacola) normally visit several times each year. The refuge is a designated site on the Georgia Southern Rivers Birding Trail and on a birding trail in Alabama. The refuge also participates in the Watchable Wildlife Weekend with the Alabama State Parks. The refuge's hiking trails are in a transition phase. A new trail system is being evaluated and planned. Wildlife photography is a popular activity for refuge visitors. Local photographers and camera clubs visit often. The refuge does not currently provide photography blinds.

Environmental Education and Interpretation

Eufaula NWR does not have an environmental education (EE) plan. Every effort is made to accommodate any request for education programs on or off the refuge. The refuge staff provides numerous EE programs throughout the year, responding to requests from teachers and the general public, consisting mostly of in-class visits and some field trips on the refuge. The refuge does not have a full-time position dedicated to public outreach or education; however, it plans to hire a refuge Ranger/Interpretive Specialist who will be responsible for developing an EE program. Some volunteers have been identified in the community to work with refuge staff to develop the EE program. Current materials include coloring books, posters, the refuge-specific video, and a presentation about the refuge. Approximately 40 presentations were given to area schools, civic groups, and at festivals or county fairs in 2002 (USFWS 2003a).

Visitors to refuge headquarters are able to speak to any available staff member or to volunteers for information. All staff members greet and provide information to visitors while at the headquarters. Brochure information is provided at the headquarters' front entrance and at hunter check stations. The Service has an 18-minute video about Eufaula NWR produced at the National Conservation Training Center. Videos and other programs are currently presented in the office conference room. The refuge has partnered with the Barbour County Chamber of Commerce to create an interactive exhibit about the refuge at the Eufaula Barbour County Chamber of Commerce office in the city.

A variety of entrance, boundary, interpretive, and regulatory signs are located throughout the refuge at public use areas. The refuge recently installed regulatory signs at the entrance to the Kennedy, Houston, Molnar, and Bradley units. An entrance sign is located at the main entrance to the office along Alabama Highway 165; the entrance to the Wildlife Drive on Alabama 285; and off of Georgia 39 to the Bradley Unit. Interpretive signs are located at the main entrance, the Houston Observation Tower, and the Observation Platform. Informational signs have also been erected at the boat landings at Rood Creek, Florence Marina, and Lakepoint State Park to inform the public that the waters are part of the refuge. Signs have been placed by the Alabama Department of Transportation along U.S. 431 to inform the traveling public that they are entering and exiting Eufaula NWR. These signs are very effective in raising public awareness of the refuge.

All brochures are produced in accordance with the Service's Graphic Standards and include a general brochure, an auto tour brochure for the Wildlife Drive, a bird list, and hunting and fishing regulations. The general brochure is designed to welcome visitors and provide basic refuge information, regulations, and a map of the public use areas.

PERSONNEL, OPERATIONS AND MAINTENANCE

Eufaula National Wildlife Refuge has six permanent full-time employees: a Refuge Manager (GS–13), Assistant Refuge Manager (GS-11), Wildlife Biologist (GS-11), Office Assistant (GS–7), Engineering Equipment Operator (WG-10), and a Maintenance Worker (WG-8). One intermittent (temporary) Park Ranger has been hired to assist with the public use program in 2005 and 2006. In past years, a temporary Tractor Operator (WG-6) has also been hired. The refuge does not have a full-time law enforcement officer, but does have two collateral duty law enforcement officers, the Refuge Manager and Assistant Refuge Manager. The refuge's annual budget in 2006 was approximately $933,000.00.

The refuge headquarters is located on the refuge just north of the City of Eufaula, Alabama. Refuge facilities include a maintenance office, workshop, and storage yard. The refuge does not have a visitor center; the new headquarters office in Eufaula serves as a visitor contact station. A planned new visitor center is on the Service's top 20 national list of planned visitor centers. It is unknown when funding will become available for its construction. One location being considered for this planned visitor center is in the Kennedy Unit with the entrance off U.S. 431, then a short drive to the visitor center. There is substantial community support for the construction of the new visitor center.

The refuge's roads are graveled and maintained (graded) regularly by the refuge staff. Many of the roads are located on levees, which are also maintained by refuge staff. The Houston Bottoms boat ramp parking area is maintained. However, the parking area at the Gammage Road boat ramp has not been maintained (gravel and graded) or mowed as frequently as needed in recent years due to higher priority habitat projects for the refuge's maintenance staff. Small parking areas are maintained outside the entrance gates at the Kennedy, Bradley, Houston, and Molnar units and at the Houston Observation Tower and Observation Platform. No accessible parking is provided.

Nine permanent hunting blinds are maintained in the Kennedy Unit and 15 in the Bradley Unit. Parking and directional signs, along with maintained trails posted with reflectors, lead hunters to each blind. The refuge maintains the Houston Observation Tower and an Observation Platform at the Upland Unit.

Partnerships and Volunteers

Eufaula National Wildlife Refuge enjoys active, productive partnerships with a number of agencies, institutions, and individuals. Among these are the Army Corps of Engineers; the U.S. Department of Agriculture's Wildlife Services division; Natural Resources Conservation Service; Alabama Department of Conservation and Natural Resources; Georgia Wildlife Resources Division; and the Barbour County Chamber of Commerce. The Nature Conservancy, a nonprofit, nongovernmental conservation organization, cooperates with the refuge on resource management issues. Other nongovernmental organizations that partner with the refuge include Ducks Unlimited, the National Wild Turkey Federation, the W.C. Bradley Company, Alabama Power, and the Tri-Rivers Waterway Development Association.

The refuge also has an active and growing volunteer program. In 2001, some 52 volunteers contributed more than 4,000 service hours. Volunteers contributed 1,440 hours in 2006, conducting wildlife surveys, assisting with the hunter check stations, performing general maintenance, monitoring and maintaining bluebird and wood duck boxes, rehabilitating walking trails, and helping with

International Migratory Bird Day activities. Youth Conservation Corps volunteers have assisted in the past. Other past volunteer activities have included the construction of a new asphalt shingle roof on the kiosk at the head of the nature trail; the building of brochure racks for the refuge kiosks; the installation of shelves in the carpentry shop in the maintenance building; the building of duck blinds; office duties; Geographic Information Systems (GIS) support; and the participation of volunteers in the refuge's Environmental School Day Program.

Currently, the refuge does not have an official Friends group.

III. Plan Development

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 Eufaula National Wildlife Refuge. This 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 refuge's management direction. The Service as a whole, and the refuge staff, in particular, are grateful to each individual who has 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.

Scoping refers to the process by which the planning team gathers input from a variety of internal and external sources on the key issues, concerns, and opportunities that need to be addressed in the comprehensive conservation plan. Sources of internal scoping include the refuge staff itself and other Service biologists and professionals. External scoping sources include concerned private citizens; research and educational institutions; members of conservation, sportsmen, and civic groups; refuge neighbors; citizens of the local community; and state, tribal, and local agencies. These various interests are sometimes referred to collectively as "stakeholders," that is, those individuals and groups that have a stake in how the refuge is managed. In developing this comprehensive conservation plan for Eufaula National Wildlife Refuge, the planning team conducted both internal and external scoping.

The first step in developing the plan was a biological review that took place during the week of August 11–15, 2003. The biological review team included 15 Service biologists, managers, foresters, and non-Service managers and biologists. The biological review involved onsite evaluations to assist the refuge in meeting its purposes and determining the role(s) the refuge could play regarding its wildlife needs and objectives at various geographical scales (local, ecosystem, regional, and national). The approach was to take a holistic look at achieving refuge and landscape-level conservation needs, while still giving priority to accomplishing the refuge's originally established purposes. The team presented its recommendations in a Biological Review Report (USFWS 2006a). In keeping with the comprehensive planning process, these recommendations were made in the form of goals, objectives and strategies for the management of the refuge's biological resources. These preliminary goals, objectives and strategies were studied by the planning team and modified and adapted for use in this comprehensive conservation plan.

A visitor services review was also conducted in 2003. The five-member visitor services review team consisted of personnel from the Service's Visitor Services and Outreach Division at the Southeast Regional Office in Atlanta; a representative of Eufaula National Wildlife Refuge; and a representative of the Piedmont and Bond Swamp national wildlife refuges. The team met with the refuge manager and biological technician to tour the refuge and discuss its recreational, educational, and interpretive programs and opportunities. After touring the refuge and reviewing its visitor services program, the team presented a set of draft recommendations to the refuge staff and held an open discussion of the pros and cons of the various recommendations (USFWS 2003c). Later in January, 2006, the team submitted its Final Public Use Review Report with a number of recommendations for improving and expanding the refuge's visitor services facilities and operations (USFWS 2006b).

The comprehensive conservation planning team, composed of the refuge manager; assistant refuge manager; wildlife biologist; a natural resources planner from the Service's Jackson, Mississippi, field office; and an outside professional consultant (see Appendix XI, List of Preparers) met for the first time on November 16–17, 2005. The planning team toured the refuge and received an overview of its habitats, fish and wildlife, and public use programs, facilities, and opportunities. It also conducted additional internal scoping and prepared a preliminary schedule, a mailing list, and plans for public involvement. A Notice of Intent to prepare a comprehensive conservation plan for the refuge was published in the *Federal Register* on January 26, 2006.

The planning team held an open house and public scoping meeting on January 31, 2006, at the Bevill Center on the campus of Wallace Community College in Eufaula, Alabama. The meeting was coordinated with officials of other governmental agencies, various organizations, and the surrounding communities. The meeting was publicized in advance in several ways. Letters and flyers were sent to those on the mailing list, which included refuge users, government and civic leaders, congressional staff, private organizations, and other interested parties. Information announcing the public scoping meeting was also sent to local newspapers, and a public service announcement was sent to local radio stations. Approximately 30 citizens attended the open house and scoping meeting. The attendees were able to meet and interact with the refuge staff, ask questions, view the exhibits and maps on hand, and provide comments.

The meeting began with brief overviews of the refuge and the comprehensive planning process, followed by a facilitated open-floor question and comment period. The attendees were given the opportunity to ask questions and voice their thoughts and concerns about the refuge and how it should be managed in the future. In addition, a comment form was distributed for the attendees and other interested parties to submit written comments. The written comments could be submitted either at the meeting or subsequently by mail or e-mail. The issues, concerns, and suggestions received at the scoping meeting were considered and evaluated in the preparation of this draft comprehensive conservation plan. A total of 23 comment forms and letters were received. Appendix IV, Public Involvement, provides a summary of the public scoping comments.

SUMMARY OF ISSUES, CONCERNS AND OPPORTUNITIES

The planning team identified a number of issues, concerns and opportunities related to fish and wildlife protection, habitat restoration, recreation, and management of threatened and endangered species. Additionally, the planning team considered federal and state mandates, as well as applicable local ordinances, regulations, and plans. The team also directed the process of obtaining public input through public scoping meetings, 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. Nevertheless, the team did consider all issues that were raised 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. These priority issues are summarized in the following sections.

WILDLIFE AND HABITAT MANAGEMENT

Internal

- Invasive aquatic vegetation encroachment needs to be kept under control via cooperative work agreements with the U.S. Army Corps of Engineers (ACE) and the states. Additionally, to better document the extent of the problem and to track trends over time (including sedimentation problems), aerial and GIS map documents are needed.

- An updated Forest Inventory/Management Plan should be prepared soon. This will probably require the help of a nearby forester (perhaps Noxubee Refuge). Some tree harvest removal will be necessary to improve understory and midstory conditions, with an emphasis on regeneration of bottomland hardwood oaks and other mast-bearing trees.

- Devices/capability to document refuge habitat types, water coverage, etc., need to improve, since habitats change over time and change in response to ACE flooding regimes. There is a need for some past and present satellite imagery/aerial photos, etc., tied to water gauge readings and different seasons of the year.

- Wood duck box and trapping activities: continue with them, but when old boxes and poles need replacing, use only one box/pole and place boxes so one is not in sight of the other. At present, limit wood duck banding to a July to September 20 period (possible to September 30; see updated 2003 Regional Wood Duck Management Guidelines).

- Species of concern and threatened and endangered species, which every national wildlife refuge aims to safeguard.

- Moist soil management, which is carried out at Eufaula on behalf of waterfowl and shorebirds.

- Shorebirds and wading birds, both of which utilize shore margins, sloughs, wetlands, and moist soil units on the refuge.

- Woodcock, for which there is habitat on the refuge and whose populations have declined in the Southeastern United States in recent decades.

- Terrestrial nongame birds, which are abundant on the refuge and some of which may be of management concern in the region, or, in the case of neotropical migrants, throughout the continent.

External (Public)

Attendees at the public scoping meeting and others who submitted written comments made the following points with regard to wildlife and habitat management at Eufaula NWR:

- Exotic and invasive species pose a very serious threat to the conservation of natural resources on the refuge.

- Prescribed burning and smoke management in the urban interface is a concern.

- Longleaf pine and hardwood reforestation are needed to increase habitat diversity.

- It is important to manage fallow fields and buffer strips.

- Maintenance and improvement of wildlife habitat is an important issue.

- There is a lack of attention provided to boundary lands along the borders of the refuge. For example, the problem with beetle infestation on the South Fork Cowickee is an area that has been completely ignored by refuge management.

- Balance prohibiting waterfowl disturbance with providing public access.

- Help educate Lakepoint administration so that they can become more conservation-minded. Birds and other wildlife don't recognize manmade boundaries. It would be great if Lakepoint would do a conservation/environmental plan that reflects and enhances refuge philosophies.

- Assist in the development of waterfowl habitat on private lands.

- Consider alternative crops for wildlife, such as rice; plant millet and other crops which attract waterfowl.

- Mosquito control is needed.

- Mammal conservation should be made a priority, incorporating both a deer hunting program and beaver control.

- Suitable habitat should be maintained for mammals such as woodrats, several species of mice, spotted and striped skunks, and cottontail and swamp rabbits.

- Because the refuge is not on a main flyway, more emphasis should be focused on attracting and holding waterfowl. Have more flooded impoundments with food and resting areas. Eliminate farming leases because they do nothing for waterfowl, since all the crops are gathered before most of the wintering waterfowl arrive. Nothing is left in the field after harvest.

- Eufaula NWR is a refuge, and should be a place of peace, with a place for birds to rest, not be hunted.

RESOURCE PROTECTION

Internal

- Monitoring of water quality/contaminants should occur to have baseline data for fish and certain key pools in the refuge. Utilize Corps of Engineers data from nearby river (if available).

- Cultural resources: in addition to the above issues identified by the public and by the biological and public use reviews, the Service should identify the protection and preservation of its cultural resources as an important issue.

External (Public)

Attendees at the public scoping meeting and others who submitted written comments made the following points with regard to resource protection at Eufaula NWR:

- Hire a full-time law enforcement officer.

- Litter control is needed.

VISITOR SERVICES

Internal

- Permits or user fees: Could revenue from permits or fees be directed toward improving habitat and wildlife management on the refuge?

- Emphasis on fishing and hunting: given current staffing/budget limitations, as well as the interests of most visitors, the public use program should continue to emphasize fishing and hunting.

External (Public)

Attendees at the public scoping meeting and others who submitted written comments made the following points with regard to visitor services at Eufaula NWR:

- There are safety concerns about the nonconsumptive public use activities occurring too close to hunting activities. Close hunting areas to other public uses during hunts to ensure public safety, and create a no-hunting zone around the Houston Observation Tower.

- Eufaula NWR is located on U.S. Highway 431, the primary route for the public driving from Atlanta to the Florida Panhandle. More than 5 million people travel through Eufaula NWR annually, providing huge potential for visitation.

- Evaluate the current environmental education and outreach program, including the audience, message, and outreach tools (website, events, field trips, presentations) used to reach those audiences. Revise environmental education and outreach programs to target primary audiences more efficiently.

- Promote Eufaula NWR to the birding community by opening a portion of the Bradley Unit as a birding drive, working with birding trail organizers in Georgia and Alabama, and partnering with the Chamber, Audubon and others to promote Eufaula NWR as a birding destination.

- Develop an up-to-date Visitor Services Plan that reflects current legislation, director's orders, initiatives, policy, and the mission of Eufaula NWR, the NWR System and the U.S. Fish and Wildlife Service. The plan should also address the current and future visitor services and recreation needs of refuge visitors.

- Develop Sneads Pond Road for public use, including signage, culvert, road maintenance, and parking.

- Implement a plan for an accessible fishing/wildlife observation pier at Houston Bottoms.

- Open a portion of the Bradley Unit as a birding drive.

- Develop a canoe trail along Wylaunee Creek.

- Give seniors a better chance to hunt. Applicants for the waterfowl hunt should be sorted into two groups: one 16 years and up to 59 years of age, and the other 60 years and older.

- There should be more public school involvement with education programs and more programs to educate the public about the refuge. Family programs should be created and presented on a regular schedule.

- Observation areas need to be located where people can really see a lot of species.

- The quota system for duck hunting should be revised to provide the public with a greater opportunity to be selected by taking into account prior year rejections. A rejection notice system would give those who have not had an opportunity to hunt in recent years a greater chance at being selected for a given year's duck hunt.

- Continue to include hunting as a priority recreational use; put more emphasis on providing quality dove and waterfowl hunts.

REFUGE ADMINISTRATION

Internal

- Personnel and facility needs, which limit the ability of the refuge to fulfill its purpose.

- Special studies/research, for which the refuge can provide a "natural laboratory" for studies of particular interest to management of refuge resources and/or of interest to the academic community.

- Partnerships with conservation groups could enhance wildlife observation opportunities as well as outreach.

- Volunteers and partners could assist refuge, as would a "Friends" group.

- Continue close coordination with the Alabama Department of Conservation and Natural Resources' Division of Wildlife and Freshwater Fisheries on hunting and fishing programs on the refuge and expand the state's participation in refuge planning activities. Continue the interagency agreement with the U.S. Army Corps of Engineers concerning management of the refuge.

- Develop and strengthen partnerships related to environmental education and visitor use programs; control invasive plant species; manage and protect migratory birds; and increase law enforcement.

External (Public)

Attendees at the public scoping meeting and others who submitted written comments made the following points with regard to refuge administration at Eufaula NWR:

- Increase the volunteer program by defining volunteer needs and strategically recruiting volunteers.

- Develop a Friends group. A Friends group could do volunteer work that would benefit the refuge. It would also serve as a tax-deductible fund for donations by businesses and individual contributors that would be used on behalf of habitat improvements, birds, waterfowl, etc.

- Hire an Outreach and Interpretive Specialist.
- Acquire additional lands for refuge expansion.
- Build a new visitor center that provides interpretation and an education/nature center with classrooms.
- Continue to enhance partnerships.

WILDERNESS REVIEW

Refuge planning policy requires a wilderness review as part of the comprehensive conservation planning process. The results of the wilderness review are included in Appendix VIII.

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. The Service has identified six priority wildlife-dependent public uses. Hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation are therefore emphasized in this plan.

Described below is the proposed comprehensive conservation 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.

Four alternatives for managing the refuge were considered: Alternative A, Current Management Direction (No Action); Alternative B, Enhanced Wildlife and Habitat Management; Alternative C, Enhanced Wildlife-dependent Public Use; and Alternative D, Balanced Wildlife/Habitat Management and Public Use Activities. Each of these alternatives is described in Chapter III of the Environmental Assessment (Section B). The Service chose Alternative D, Balanced Wildlife/Habitat Management and Public Use Activities, as the proposed management direction.

Implementing the proposed alternative will result in the conservation, protection, and enhancement of native habitats and wildlife populations representative of the Middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species. It would also furnish the public with quality wildlife-dependent recreation, environmental education, and interpretation that will lead to a greater understanding and enjoyment of fish, wildlife, and their habitats.

VISION

Eufaula National Wildlife Refuge was established in 1964, as a result of strong community support, on land that was acquired as part of an Army Corps of Engineers water development project on the Chattahoochee River called the Walter F. George Reservoir. The Service manages the refuge under a perpetual Lease Agreement with the Corps of Engineers. In its first four decades, the refuge has focused on providing wintering habitat for migratory waterfowl, nesting and brood-rearing habitat for wood ducks, protecting threatened and endangered species, and furnishing public recreational opportunities.

In the next 15 years, refuge staff will focus its wildlife and habitat management efforts in several areas: (1) providing habitat for migratory birds, including waterfowl and neotropical migrants; (2) protecting threatened and endangered species that might occur; (3) controlling invasive species, including aquatic and terrestrial; (4) managing existing forest lands to achieve sustainable forest ecosystems, to include restoring a significant area of the historic longleaf pine ecosystem; (5) managing refuge habitat for the benefit of indigenous terrestrial species of plants and animals; and (6) managing conservation easements or agreements for which the Service has responsibility.

A healthy refuge environment will also encourage opportunities for visitors to participate in compatible, wildlife-dependent recreation in a natural setting. Fishing, hunting, wildlife observation, wildlife photography, and environmental education and interpretation will all be encouraged. The refuge will also fulfill its obligations to protect cultural resources that may occur. To meet all of the above challenges, the Service will nurture and seek partnerships with other federal and state agencies, interest groups, landowners, schools, and local communities.

GOALS, OBJECTIVES, AND STRATEGIES

The goals, objectives, and strategies presented below are the Service's responses to the issues, concerns and needs expressed by the planning team, the refuge staff and partners, and the public and are presented in a 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 Eufaula 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 POPULATION MANAGEMENT

Goal: Conserve, protect, and enhance native wildlife populations representative of the Middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species.

Discussion: The diverse habitats at the Eufaula Refuge furnish shelter and food for migratory waterfowl and neotropical migratory birds. Other nonmigratory resident wildlife species such as deer, turkey, quail, dove, hawks, owls, rabbits, squirrel, otters, coyote, bobcat and beaver are also well represented on the refuge throughout the year. Large populations of reptiles, amphibians, insects and fish also inhabit the refuge. Eufaula's habitats also provide protection for endangered and threatened species such as the wood stork. The American alligator, bald eagle, and the occasional peregrine falcon are also found on the refuge. These species were formerly listed as threatened or endangered, but have been de-listed because their populations have recovered sufficiently due to conservation efforts like those of Eufaula's.

Objective: Wintering Waterfowl Management – Provide a complex of habitats, both moist soil and grain crops, to meet the foraging needs of 25,000 wintering ducks.

Discussion: The 11,184-acre refuge has lands and waters in both Alabama (a Mississippi Flyway state) and Georgia (Atlantic Flyway state). Peak wintering populations of ducks at Eufaula NWR reached over 40,000 in the mid-1970s. In recent years, populations have declined, peaking at 12,000–20,000. Few migrant geese use the Eufaula Refuge, but a resident Canada goose population now totals about 2,000.

Approximately 4,000 acres at the refuge are part of the main Walter F. George Reservoir (upper end/shallower waters of Lake Eufaula), often with abundant submerged or emergent aquatic vegetation of mostly poor to fair value as waterfowl foraging habitat. There are approximately 1,250 acres of manageable impoundments where some degree of water control is available and another approximately 700–1,000 acres of upland open lands where agricultural crops can be grown.

In order to meet the late fall/winter needs of most dabbling duck species, it is desirable to have a complex of habitat types, including natural moist soil aquatics, flooded timber, and high caloric/grain foods, all preferably within a 10-mile radius. Additional life history requirements involve energy and protein/amino acid needs associated with molts, pair-banding, mating, migration reserves, egg-laying, metabolizable energy, and brood-rearing. These requirements necessitate some sanctuary, nondisturbance factors, as well as adequate foraging needs. Diving duck species such as ring-necked ducks and scaup are also associated with deeper water habitats, floating and submerged aquatics, and/or small fish and foraging opportunities.

Strategies:

- Strive to meet half of the duck foraging needs by moist soil habitats and half by hot foods (planted grain crops).
- Provide approximately 1,000 acres of flooded moist soil habitat within impoundments or other refuge sites that average ≥ 400 lbs. of seed/acre.
- Provide approximately 70–75 acres of flooded, unharvested corn or an equivalent amount of other grains, that averages at least 50 bushels per acre.
- Work aggressively to improve capability of impoundments to provide desirable food resources (control invasive aquatic plants, water depths).
- Utilizing ground and aerial chemical treatments as well as mechanical devices (burning, disking, mowing), control/treat invasive aquatic and wetland plants that reduce the foraging value of managed impoundments.
- Improve drainage and drying capabilities via maintenance of internal drainage ditches and canals.
- Consider options for an experimental deep flooding (≥3') of portions of an impoundment for several years (2–3) to control invasive aquatics. Document plant/animal responses.
- Prevent, reduce or eliminate disturbance factors in several key waterfowl feeding, roosting, and loafing areas (on land and water) to ensure sufficient sanctuary to meet numerous life history needs.
- Maintain the current no-hunt and/or no firearm hunt procedures and areas as described in the 2003–2004 Hunting/Fishing Regulations brochure. Consider further reduction of vehicle and foot traffic in or near the Houston, Goose Pen, and Upland units during the November 15–February 28 period. Discourage fishing in impoundments and from impoundment banks during key waterfowl use periods (approximately November 15–March 15).
- Do not locate wildlife drives in or on impoundment and dewatering areas during key waterfowl use periods (November–February). Extend closure for waterfowl sanctuary by two weeks to March 15.
- Limit waterfowl hunting to no more than 2 half-days per week, less if higher quality hunts are desired (no immediate major expansion beyond current 2003–2004 procedures, with possible exception of future September teal/resident goose hunts in limited areas).

Objective: Geese/Cranes – Provide adequate open space (upland crop fields) for winter utilization and feeding of at least 500 geese/cranes.

Discussion: Larger waterfowl species such as wild geese and cranes prefer more open grazing areas (clover, young wheat, sedges/grasses) and grain ("hot food") opportunities. Sandhill cranes are annual refuge winter migrants and highly desired by birders. Between 75–150 sandhill cranes roost in marshy and shallow water habitats along the river and feed in nearby agricultural fields. Blackmon Bottoms and nearby peninsulas are known roosting areas. As noted above, while the refuge has a resident Canada geese flock of about 1,500–2,000, few migrant geese visit or winter at Eufaula, and the harvest of geese from refuge hunts is insignificant. Snow geese and white-fronted geese (in combination) also frequent the refuge and nearby areas.

Strategies:

- Maintain at least one upland site of 100± acres, leaving 10+ acres of unharvested grain to support 500 geese and/or sandhill cranes. The unharvested grain should be left in the center of the field, surrounded by green forage.

- Provide for utilization and feeding by cranes and geese for 90–100 days.

- Work cooperatively with the state to band Canada geese at their request.

Objective: Wood Ducks – Maintain 200 wood duck boxes on the refuge.

Discussion: Management of wood duck populations has historically been a key part of Eufaula's mission. Wood ducks are the most commonly harvested species by hunters at the refuge. Wood ducks require cavities (in trees or nest boxes) of proper dimensions and drainage for nesting, and abundant brood-rearing habitat for offspring survival and growth. Staff has erected and maintained wood duck nest boxes for many years. Box numbers and placement strategy have evolved as new recommendations occur. Over the last several years, the refuge staff removed clustered boxes from within impoundments or those lacking adequate water during the summer. The current strategy is to locate new boxes outside impoundments near suitable brood habitat over permanent water. Sixty-five boxes were installed in fiscal year 2003, with additional boxes to follow over the coming years. The wood duck nest box program is in a transitional period. The staff plans to continue removing poorly located boxes while adding others following updated Region policies.

Wood ducks have been historically banded at the refuge, although the demand for banding data has varied. Regional interest in wood ducks has increased, reviving staff banding efforts. Two banding stations are employed: one at the Molnar Unit using rocket netting, and the other at the Lakepoint State Park's sewage lagoons, utilizing walk-in funnel traps.

Strategies:

- Utilize the Regional Office 2003 guidelines, *Increasing Wood Duck Productivity: Guidelines for Management and Banding, USFWS Refuge Lands (Southeast Region)* to improve overall wood duck status.

- Utilize well-maintained wood duck boxes to improve wood duck nesting success; follow Regional Office 2003 guidelines for placement, maintenance, and number of boxes to erect.

- If possible, utilize volunteers or Biological Technician in placing and maintaining nest boxes.

- Help meet Regional/National banding goals and quotas for both regular duck banding and reward duck banding programs.

- Increase banding efforts by adding additional personnel to assist with the banding program.

- Do not totally remove beaver ponds known to be good wood duck roosting or brooding areas (with exceptions for human hazard/economic reasons).

Objective: Forest Birds – Provide forest habitat conditions conducive to supporting both priority pine- and hardwood-associated bird species by 2010.

Discussion: An opportunity exists to manage for both open pine forest-associated and mature hardwood-associated bird species at Eufaula, but the distribution and past management history of forest patches forces treating most of the mature forest types under one category. The entire forest component is 2,178 acres, including both the Alabama and Georgia units. Less than 1,500 acres are in upland forest types, and the rest is in bottomland forest.

At present, with the abandonment of agriculture, forested conditions have returned, but with fire suppression and dense planting of mostly loblolly pine the longleaf and shortleaf pine communities were greatly reduced. With very few exceptions, mature pine stands are densely stocked and in poor condition to support open pine forest-associated species, such as the brown-headed nuthatch and Bachman's sparrow. Most of the pine today is still mostly loblolly or plantation slash pine, but some individual remnant longleaf and shortleaf pines can still be found on refuge lands.

Ultimately, the loblolly pine-dominated stands should be replaced by about 1,000 acres of longleaf/shortleaf pine savanna and open woodland conditions, with frequent fire that will benefit resident and migratory birds as well as other wildlife. Although red-cockaded woodpeckers infrequently disperse and will not likely establish a population at Eufaula, the site might serve as part of a river corridor link between Fort Benning and International Paper's Southlands Experiment Forest on Lake Seminole. More likely will be the establishment of Bachman's sparrow populations and healthier populations of brown-headed nuthatch, northern bobwhite, and red-headed woodpecker than now found on the refuge. The potential for the southeastern breeding subspecies of American kestrel nesting on the refuge should increase as more longleaf pine is reestablished and ground cover is maintained in a mostly grassy-herbaceous condition.

Managed bottomland forests could potentially support breeding and resident priority forest species such as the wood thrush, worm-eating warbler, Kentucky warbler, and Swainson's warbler, among many other species. Optimal habitat conditions would include thinning the canopy to about 60 percent cover, allowing the understory vegetation layer to increase and then through group selection-sized openings, increasing denser patches of understory vegetation. Supporting canebrake conditions would be part of this management which, in addition to nongame songbirds, should provide important diurnal habitat conditions for both nesting and foraging American woodcock.

One wintering species—the rusty blackbird—is in need of at least monitoring attention, mostly as a roosting and foraging species in and around forested wetlands. At the present time, the refuge staff is simply attempting to locate areas of fairly consistent use by this increasingly vulnerable species of blackbird. The staff has been requested to keep notes on where, when, and how many rusty blackbirds are observed during the winter months.

Shrub-scrub species that should also benefit from proposed forest management include the northern bobwhite quail, American woodcock (nesting and diurnal foraging habitat), common ground-dove, prairie warbler, field sparrow, and eastern towhee. Most of these species are already regular at Eufaula and would be expected to increase as the forest management practices outlined above are implemented, along with any other shrub-scrub conditions that are available, including feathered edges between croplands and forested habitat.

American woodcock would most likely benefit from development of dense canebrakes in forested wetlands and otherwise a dense understory layer that would develop from appropriate thinning of the forest canopy, as described above. Availability of adjacent fields would also lead towards supporting woodcock populations.

Many forest birds (and other landbirds) are migratory, such as the neotropical migrants. Beyond habitat availability, one of the most important issues affecting their survival in North America is the proliferation of communication towers that may cause significant mortality during inclement weather nights, when nocturnal migrants are attracted to the tall towers' slowly blinking beacon lights. The Service has guidelines on how to reduce the mortality associated with communication towers when they are being planned near the refuge.

Strategies:

- By 2010, identify and subject to heavy thinning and growing season prescribed fire a minimum of 1,000 acres of pine stands intended for longleaf or shortleaf restoration.
- By 2010, conduct thinning and patch openings, with rare incidence of fire, in 700 acres of forested wetland that are infrequently flooded (at least during the breeding season).
- Revise and update the Eufaula NWR Forest Management Plan by 2012. Work to be done by contract or FWS forester.
- When forest management decisions are made, establish point counts in stands that will be subjected to management in the near-term as well as stands that will not be managed in the near-term to track bird responses by 2007.
- By 2008, during the winter months, refuge staff will keep records on their encounters with rusty blackbirds, including locations, numbers, and dates when observed.
- By 2010, link status of shrub-scrub species at Eufaula with habitat improvements established for 1,000 acres of upland forest that will be maintained in savanna or open woodland condition as described above.
- All forest edges with fields should be feathered by cutting into the existing woods to maximize potential use by shrub-scrub species by 2010.

- Establish roadside point counts along forest and field edges across the refuge to track habitat use by all priority shrub-scrub species by 2008.

- By 2007, implement USFWS communication tower guidelines.

Objective: Grassland Birds – Provide high quality grassland habitat to support grassland bird species on 220 to 300 acres while achieving priority waterfowl objectives by 2008. This includes planting native warm season grass species on old farm fields.

Discussion: Eufaula National Wildlife Refuge has long been known to be an excellent place to encounter rare or otherwise hard-to-find grassland species in Georgia and Alabama. The highest priority grassland birds include the following species: Henslow's sparrow, yellow rail, American woodcock, Wilson's snipe, short-eared owl, northern bobwhite, grasshopper sparrow, barn owl, loggerhead shrike, sedge wren, and Le Conte's sparrow.

About 3,000 acres of open land is now available at Eufaula. Managed wetlands constitute 2,000 acres, while less than 50 acres of hayfields through other fallow acres can provide excellent grassland bird habitat. Most of the remaining 1,000 acres of open land is dedicated to cropland management each year, with some acreage left fallow, but this varies from year to year in terms of acreage and location. In addition, some of the moist soil units (or at least the edges of these units) can also provide grassland bird habitat.

Grasslands should be managed using fire, mowing, chemicals, and soil disturbance as needed to establish and maintain proper plant composition. Some type of management probably will be needed every 1–2 years. Native warm season grasses and other plants will be established if feasible (if seed sources and establishment techniques are available). Management needs to ensure that late summer or fall management activities do not leave too much area bare of cover for the winter.

Strategies:

- By 2008–2009, consider research on how to provide the range of habitat conditions for grassland species wintering at the Eufaula Refuge, with emphasis on yellow rails, Henslow's sparrows, sedge wrens, and Le Conte's sparrows.

- By 2009–2010, implement Project Prairie Bird or similar surveys to attempt a better understanding of habitat use by wintering species.

- By 2008, establish a protocol to survey American woodcock using fields during winter and spring.

- By 2010, provide high quality grassland habitat and nesting sites to support northern bobwhite, barn owls, and loggerhead shrikes.

- By 2008, establish roadside point counts that would include grassy areas as well and concurrently conduct quail call-counts.

- By 2007, consult with Georgia Department of Natural Resources personnel to establish nest boxes that should support nesting barn owls on each unit near open land.

- By 2010, develop conditions in a subset of fields where nesting loggerhead shrikes may be best supported in scattered trees within or adjacent to fields.

- Plant thickets of native Chickasaw plum, hawthorn, and crabapple trees along field edges and borders.

Objective: Marsh Birds – By 2010, promote tall emergent vegetation sufficient to support a population of 10–20 king rails and to benefit other species of marsh birds.

Discussion: All of the priority marsh birds found at Eufaula NWR require tall emergent vegetation as part of their habitat. All are breeding species, except the American bittern. Breeding populations of pied-billed grebe and American coot are considered of regional conservation interest, even though wintering populations are considered secure. Of the marsh birds of most conservation interest at Eufaula, the king rail is of highest concern, followed by the least bittern and purple gallinule. Since 2006, a survey for king rails and least bitterns has been conducted under the Research Partnership Program with Auburn University. Auburn researchers will utilize standard marsh bird survey protocol to document presence of these species.

During the last several decades, overall loss of freshwater emergent wetlands has been underway as development pressures increase, especially away from immediate coastlines. The king rail, in particular, is thought to have declined dramatically from inland areas and is now considered to be a species in potentially deep conservation trouble away from coastal areas. The least bittern likely has never been common in the inner Coastal Plain, but is also likely to be suffering from freshwater wetland losses in recent decades. The purple gallinule is close to the northern edge of its distribution at Eufaula, but is also a species that may be in decline locally, if not regionally. All these factors considered together suggest that Eufaula National Wildlife Refuge is well positioned to support healthy habitat for these and other marsh bird species.

The king rail may serve as an umbrella species for the other priority marsh birds. King rail may be the most habitat-specialized of those species nesting in tall emergent vegetation. Their nests are constructed near the soil, usually where standing water depths are about 10 inches. Higher water levels have the potential to flood out the species and little or no standing water potentially exposes nests to greater depredation pressure from predators like raccoons. These conditions should support nesting least bitterns as well, with nests usually placed higher in the vegetation, making this species more tolerant of deeper flooding.

Density estimates for breeding pairs of king rails are extremely variable and more work is needed at Eufaula to establish specific population and habitat objectives. However, from the data that do exist, it appears realistic that in high quality habitat, tall emergent wetlands could support at least one pair per five acres. Other estimates suggest 20 acres may be necessary to support a pair, but there is no information to determine the relative quality of habitat or the accuracy of these estimates. Assuming that a minimum of five acres and a maximum of 20 acres is necessary to support at least one pair and all the marshland acres are in suitable condition for king rails, then somewhere between five and 20 pairs of king rails could be supported on the refuge in managed wetlands under present conditions.

Strategies:

- By 2010, focus specific attention on promoting tall emergent vegetation in a way that would support sizable breeding king rail and least bittern populations primarily in the Bradley and Kennedy units.

- Promote 50–70 percent tall emergent vegetation in the larger patches of marsh, with the remaining 30–50 percent in open water, floating vegetation, and submergent aquatic vegetation in support of breeding purple gallinules, pied-billed grebes, and American coots, as well as brooding wood duck and wintering waterfowl.

- If emergent vegetation is treated with herbicides in coves within the reservoir, do so in patches or strips, striving to maintain 50–70 percent of each cove in emergent vegetation.

- By 2007, determine the presence of marsh bird species in suitable habitat and the response of these species to habitat management by contributing to the secretive marsh bird survey data presently coordinated by Courtney Conway, BRD-University of Arizona.

Objective: Wading Birds – By 2010, provide for both secure nesting sites and ample foraging habitat.

Discussion: In general, nesting wading birds have ample habitat available at Eufaula, but the issue of how much disturbance nesting wading birds can tolerate is key to protecting these species. If the refuge staff finds nesting areas at remote sites (from the standpoint of public use), it may be worthwhile to occasionally monitor these sites for potential disturbance problems and make entry adjustments accordingly. In other situations where colonies form and there is high public use nearby, no public use restrictions may be necessary to be too concerned. The main priority should be tracking changes in public use around established colony sites (e.g., Bird Island) and responses by the nesting birds.

One important aspect of managing for long-legged wading birds is providing post-breeding foraging habitat in late summer and early fall, which may include dispersing endangered wood storks. Proper management would involve furnishing habitat conditions similar to those provided for shorebirds by drawing down water in impoundments. Drawdowns and stocking of forage fish improve foraging habitat and concentrate birds for viewing.

Species of conservation interest in the South Atlantic Coastal Plain include the little blue heron, tricolored heron, black-crowned night heron, yellow-crowned night-heron, wood stork, and white ibis. Daily observations of these species, their numbers, use of impoundments, and the condition/management of these impoundments would provide valuable information for guiding future management decisions, again in line with what is needed for brooding wood duck and later use by migrating and wintering waterfowl.

Strategies:

- Locate nesting sites for colonial waterbird species each year and determine if special measures are needed to reduce disturbance, by 2010.

- By 2010, determine use of managed wetlands and flooded cropland during post-breeding periods by long-legged waders, concurrently with southbound shorebird surveys, by 2010.

Objective: Shorebirds – By 2010, provide for at least two areas of up to 20 acres each for shorebirds, during both northbound and southbound movements.

Discussion: Eufaula NWR provides stopover and feeding habitats for migratory shorebirds, primarily within the impoundments during spring. River water levels are controlled by Corps of Engineers policy and maintained at about 188 feet MSL during migration periods. This is too high to expose sandbars, mudflats, or shallow water habitats for shorebird use. Only during extended droughts or when water levels are approximately 187 feet MSL or less are suitable shorebird habitats available along the Chattahoochee River.

However, the Service provides resting and feeding areas within the impoundments, particularly the Bradley Unit. Gradual spring drawdowns and daily water level fluctuations in the outlet pools provide ample habitat from March through June. By late July, these areas have normally revegetated with dense, tall herbaceous growth unsuited for shorebird use.

Willets, marbled godwits, ruddy turnstones, black-bellied plovers, short-billed dowitchers, greater and lesser yellowlegs, black-necked stilts, and several species of sandpipers have been observed in refuge impoundments. Sandhill cranes are annual refuge winter migrants and highly sought after by birders. Between 75 and 150 sandhill cranes roost in marshy and shallow water habitats along the river and feed in nearby agricultural fields. Blackmon Bottoms and nearby peninsulas are also known roosting areas.

Where opportunities exist, managing shorebird habitat should be focused on both northbound (spring) and southbound (autumn) movement periods. For areas away from the Lake Eufaula shoreline, consideration for flooding and gradual drawdown should be undertaken between late March and late May and again from late July to early October.

Strategies:

- By 2008, identify potential sites (e.g., impoundments, fallow crop fields) where water can be drawn down during late March to late May and late July to early October, rotating among sites as needed to ensure available waterfowl habitat, by 2008.

- Contribute to the International Shorebird Survey by implementing counts in coordination with the South Atlantic Migratory Bird Initiative.

Objective: Threatened and Endangered Species – Provide protective conservation measures for federally or state-listed species and habitats for future ecological existence.

Discussion: Eufaula NWR is not known to provide significant habitat for any plants or animals listed as threatened or endangered under the Endangered Species Act. However, the refuge does provide seasonal or temporary use by federally listed species, such as the wood stork. Additionally, some species of wildlife that are listed for protection by the states of Alabama or Georgia are found on the refuge. These are the alligator snapping turtle and Barbour's map turtle. The refuge does not have any resident federally listed species other than the American alligator, which is only listed for "similarity of appearance" (SA) to the American crocodile found only in south Florida and the Florida Keys.

The area in and around Eufaula NWR likely did support a modest red-cockaded woodpecker population that persisted through heavy conversion of forestland to agriculture during the late 1800s through to the early 1900s. Today, the nearest recovery population is north of the refuge at Fort Benning, and a small but increasing population now exists along Lake Seminole on the Georgia side under active management from International Paper. There also may be scattered family groups in the vicinity of the refuge, but there are no reports of nesting red-cockaded woodpeckers from the refuge proper. Nevertheless, future forest conditions may over the long term support this endangered species, but not likely within the next several decades.

Strategies:

- Inventory and conserve unique and rare habitats.
- Contract with the state natural heritage programs, universities, private consultants, and others to survey and classify for unique habitats and any species occupying them on the refuge.
- Survey and identify waters and habitat preferred by alligator snapping turtles and Barbour's map turtles.
- Continue to participate in the Georgia mid-winter bald eagle survey.
- Provide and maintain potential nest trees for eagles in future forest management operations**.**
- Provide and post information for fisherman on identifying and safe release of alligator snapping turtles.
- Conduct survey for the federally endangered relict trillium (*Trillium reliquum*), which thrives best in mature, moist, undisturbed hardwood forests**.**

Objective: <u>Resident Wildlife</u> – Expand capability and effort to implement sound scientific principles to better manage healthy populations of resident wildlife species.

<u>Discussion</u>: The primary resident game animal is the white-tailed deer. No specific management is conducted solely for white-tails, but deer and other game animals are benefiting and even thriving as a result of Eufaula's timber thinning, prescribed burning, and farming programs. Bow hunting is allowed by free permit on both the Alabama and Georgia portions of the refuge. The refuge does not conduct deer population surveys or counts to provide a population index. Harvest data from 2003 indicate a stable or slowly increasing population. While not a precise indicator of herd health, the buck/doe ratio from archery harvests is 1.7/1.0. A deer health check by the Southeastern Cooperative Disease Study conducted in 1998 revealed no major health problems with deer in either state.

Mourning doves are another hunted game species on the refuge. Two to four free hunts are permitted annually. Wild turkeys are becoming more prevalent at Eufaula NWR. While no surveys or monitoring of adults or broods is conducted, groups of adults and hens with broods are commonly seen. Timber thinning activities the past 3 years and associated prescribed burning appear to be providing better brooding and nesting habitat. Turkey hunting is currently not allowed on the refuge.

Other resident game animals include gray and fox squirrels and Eastern cottontail rabbits. Fox squirrels are uncommon and gray squirrels occur in the isolated pockets of mature hardwoods and along stream drainages. Eufaula does not have the large stands of hardwoods typical of productive squirrel habitat. Eastern cottontails are common but not overly abundant.

Bobwhite quail populations are very low, typical for wild populations in this region. In recent years, the refuge staff has been placing field borders around croplands and periodically mowing and strip disking fallow fields and field edges. Low areas and irregular portions of crop fields have been taken out of production and will be managed for early successional habitats. Since 2003, approximately 50 acres of cropland were retired and will be managed as old field habitats. It is hoped these practices

will allow the quail populations to gradually increase. Currently, quail hunting is not allowed. Hunting for rabbits is allowed during February, but the staff sees few hunters in the field. It is hoped rabbits will benefit from the refuge's increased quail habitat management activities.

The refuge provides a wide diversity of habitats for nongame mammals, herpetofauna (reptiles and amphibians), resident songbirds, raptors, and marsh and wading birds. Raccoons, opossums, nine-banded armadillos, bobcats, coyotes, and beaver are very common. River otter are occasionally observed. The Eufaula bird list contains 287 species and was last updated in 2001. A herpetofaunal survey of the refuge was also completed in 2001.

Strategies:

- Continue current recognized management practices including prescribed burning, selective thinning, farming, strip disking, mowing, herbicide use, and others to benefit wildlife**.**
- Monitor and evaluate white-tailed deer population through hunter harvest data, periodic herd health checks, and spotlight surveys.
- As opportunities arise, remove upland agricultural fields from crop production and manage as habitat for quail, rabbits, and turkey.
- Continue thinning pine stands and gradually convert to longleaf pine habitats. Manage for open stands with grass/forb understory.
- Use sound scientific management practices to maintain or increase healthy populations of nongame species.
- Monitor and adapt management practices for game species to benefit nongame species**.**
- Expand field borders and buffer strips around all agricultural fields.
- Plant stands or thickets of Chickasaw plum, mayhaw trees, and crab apple in fallow fields, field edges and borders.
- Conduct a detailed herpetofaunal survey of the refuge.
- Determine most effective method of long term monitoring of herpetofaunal species or species groups for population trends.

Objective: <u>Pest and Nonnative Species Control</u> – Control domestic, feral, or pest animals, especially feral hogs, removing 100-plus hogs annually, or as needed.

<u>Discussion</u>: Domestic pets roaming or being left on the refuge are occasionally encountered by personnel. Normally the animals are captured by Eufaula Animal Control or taken to the city pound. Beaver can cause problems in the impoundments by building dams and stopping up water control structures. The refuge staff removes problem beavers by shooting and removing or exploding dams. Feral hogs are a severe problem in the Bradley Impoundment in Georgia and are quickly becoming a problem in the Houston Unit in Alabama. Live trapping has been conducted for the past three years but has not been very effective. Alternative methods including contract hunters or trappers must be

pursued to limit the impacts of these highly destructive animals. A Feral Hog Management Plan has been recently prepared by the refuge describing guidelines of approved control methods.

Approximately 1,000–1,500 giant Canada geese are year-round residents of Lake Eufaula. This flock began in 1965 with 104 donated geese from Wheeler National Wildlife Refuge, Alabama; transplanting continued periodically until 1971, with 257 geese from Brigantine National Wildlife Refuge, New Jersey, released in the interim. Refuge personnel have assisted the park with trapping and relocating birds to private lands.

Strategies:

- Help control resident Canada geese numbers to reduce negative impacts to parks, golf courses, etc.
- Do not purposely stock giant Canada geese on refuge lands and do not provide nesting structures.
- Help trap and remove geese to private lands desiring birds.
- If resident numbers expand, consider special hunting opportunities (September hunts).
- Update the Pest Control Plan authorizing methods and personnel allowed to control domestic, feral, or pest animals.
- Determine appropriate control method on a case-by-case basis.
- Utilize public education and outreach to publicize impacts of feral and free-roaming pets.
- Use contract hunters and trappers to remove feral hogs. This will be done through the issuance of Special Use Permits under the guidelines of the refuge's Feral Hog Management Plan.

HABITAT MANAGEMENT

Goal: Provide suitable habitats for native wildlife populations representative of the Middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species.

Discussion: Recognizing the direct influence of habitat suitability and diversity on the abundance and distribution of wildlife on the refuge, Eufaula NWR has had and will continue to have—under this CCP—an active habitat management program. Habitats that are managed include croplands, forests, and moist soils. The refuge also contains open water and marsh. While the Service has no control over the water levels in Lake Eufaula, which is under the jurisdiction of the Army Corps of Engineers, the refuge does cooperate with the Corps and state agencies to control invasive aquatic species.

Objective: Farming – Gradually reduce cropland acreage to 300 acres over the 15-year life of the CCP. Cultivate crops on 100 to 300 acres (refuge-maintained) to provide food, cover, and sanctuary areas for wildlife and other species. This will provide adequate habitat for wintering waterfowl and provide quality dove hunting opportunities.

Discussion: The Eufaula NWR area has a long history of farming prior to and after refuge establishment in 1964. Refuge acreage planted to agricultural crops peaked in 1968 when 1,689 acres were farmed and 232 acres allowed grazing. Cattle grazing was permitted until 1980. Currently, 501 acres are under agricultural management. Croplands are currently managed under a Cooperative Farming Agreement (CFA), which is negotiated annually. The basis for the CFA is to provide food resources for wintering waterfowl by allowing private citizens to farm refuge property at fair market values with benefits accruing to both parties. The current CFA is based on a acre for acre crop share ratio of 75%:25% (farmer/refuge).

Under the current CFA, the cooperative farmer is farming 384 acres as his share and 117 acres (23 percent) as the refuge's share. The refuge allows the farmer to plant corn and small grains for his share. For the refuge's share he is required to plant corn. Normally, the farmer rotates corn, small grains (wheat, oats, or rye), and soybeans. There are 36 acres of hayfields in the current CFA and they are treated the same as a grain crop. The farmer is required to provide all necessary labor, equipment, ground preparation, seed, soil amendments, and pesticides for each party. The refuge's share of corn is left unharvested for wildlife consumption.

Eufaula's Croplands Management Plan (1988) sets a goal of producing 7,050 bushels of corn (or equivalent, in waste grain in combination with other grain crops, and in the refuge's share). The cropland goal is to provide sufficient available metabolizable energy (ME) to sustain 50 percent of the refuge's objectives for duck maintenance. The objective level is 2,300,000 duck use days. The 7,050 bushels of corn was determined using published equations for basal metabolic rate, the gross energy content and ME of corn, and by adding 20 percent to buffer effects from weather, consumption by other wildlife, and corn unavailability.

As noted previously, approximately 117 acres of corn are left unharvested for winter waterfowl use. To meet this goal, average yields of 60 bushels/acre must be obtained. Under "normal growing conditions" the refuge is able to meet this target. Furthermore, using reported conversions of one acre of corn providing enough energy for 233 ducks for 110 days equates to the refuge's 117 acres providing for approximately 27,261 ducks per season. Assuming an average winter population of 15,000–20,000 ducks, it appears the refuge is planting and providing enough corn for wintering waterfowl needs. It is worthwhile to note these calculations do not include any food consumption or energy obtained from moist soil management.

In deciding to scale back the Eufaula Refuge's farming program from approximately 500 to 300 acres, several questions were addressed: (1) Is the program adequately balanced between acres planted to row crops and acres managed as moist soil units? (2) Is cooperative farming the best conservation approach to providing food resources for wintering waterfowl? Can contract farming accomplish the same goals with less resource impacts? (3) If the refuge switches to contract farming, will adequate annual base funding be improved to cover the new expenses? The refuge staff feels a balanced farming program is important to provide food resources for wintering waterfowl. Additionally, other wildlife species benefit from farming as well. Force-account farming by the refuge staff is an option; however, additional maintenance staff is needed to meet this objective. Adapting the scale and the methods of farming as a land management tool to meet changing refuge demands is the challenge.

Strategies:

- Continue current cooperative farming program until an alternative method is adopted and annual funding support is found.

- Review acreage needed for corn production for waterfowl use.

- Continue to manage and expand when possible buffer strips and field borders around all agricultural fields.

- Plan to end cooperative farm agreements by 2007–2008 and switch to alternative "force account" farming.

- Identify and manage appropriate cropland fields for waterfowl feeding and sanctuary areas.

- Secure the necessary increase in annual base funding to administer new force account farming.

- Initiate planning process to restore and manage excess farm fields to native habitats**.** Restore Davis Clark hayfield to native habitat.

- Develop scopes of work, consultant lists, and other necessary contract administration to carry out above tasks**.**

- Use refuge staff to carry out force-account farming program.

- Secure approvals to obtain additional employees for force-account farming.

- Identify and manage appropriate cropland fields (Kennedy Unit, Bradley Unit) for waterfowl feeding and sanctuary areas.

- Secure additional equipment and training to conduct farming.

- Initiate planning to restore and manage excess farm fields to native habitats.

Objective: Forest Management – Use silvicultural treatments to improve 2,800 acres of refuge forestland to provide benefits to forest-dependent wildlife.

Discussion: Prior to 2001, the Eufaula Refuge had conducted very few timber sales. Both natural and planted pine forests were characterized by mature trees with closed canopies and poor regeneration. Southern pine beetle outbreaks in 2000 and 2001 required the timber to be thinned. In other areas, the beetle infestations have gradually killed timber over the past 10 years. Problems with insect outbreaks are typical of overstocked stands with closed canopies. Periodic thinning and burning result in healthy forests with productive and diverse wildlife habitat. The refuge's Forest Management Plan (1971) calls for silvicultural treatments every eight years based on an 80 year rotation cycle.

In conducting timber sales, the refuge's goal is to reduce the existing timber basal area of pine to approximately 40 square feet per acre or less. The average basal area for maintaining pine forests in the South is approximately 80 feet/acre. The management goal in pine and pine/hardwood stands is to increase plant diversity and habitat conditions for bobwhite quail, migratory birds (e.g., Bachman's sparrow, woodcock, brown-headed nuthatch), and wild turkey. Subsequent to thinning, the areas are burned during winter. Hardwood trees in pine/hardwood stands are removed using timber stand improvement (TSI) methods. The healthiest, dominant, large crown trees are left, removing the smaller, subdominant, deformed ones. Streamside protection zones are left around perennial streams and shorelines. Standing snags and dead trees are retained. Bottomland hardwood stands are found primarily in narrow, isolated strips along the river and creek drains. No management action is proposed for these areas.

Within the last 10 years, interest and funding for restoration of longleaf pine habitats has increased. The refuge is within the historical range of longleaf pine and contains remnant longleaf pine stands. These stands have poor regeneration due to invasion by loblolly pine. Restoration of these former longleaf pine habitats has begun and should continue into the future. Historical aerial photography document that these forests had a more open canopy and ground cover conditions than in recent times. Long-time residents speak of the grassy open understory and of quail hunting in these forests. Thinning out the remaining loblolly pine and replanting longleaf combined with growing season burns will accomplish the restoration efforts.

Reforestation of fallow fields and excess agricultural fields are other options. Many field edges in upland areas are dominated by exotic Chinaberry trees, which should be removed and replaced with native species.

As stated in the Corps of Engineers permit, the refuge is allowed to keep receipts from all timber sales. This additional funding has supplemented normal operating expenses, allowing the refuge to update its equipment, conduct many habitat management activities, and fund several research projects.

Strategies:

- Manage forested habitats to restore and conserve historic native habitats and species.
- Restore and manage all pine forest habitats for open canopy conditions dominated by a grass/forb understory**.**
- Restore longleaf pine habitats into all suitable areas. The objective is approximately 1,000 acres of restored longleaf pine forests by 2015.
- Revise and complete a refuge Forest Plan by 2010. Contract it out to a private consultant or use a USFWS forester.
- Continue to plan, obtain approvals, and schedule future forest treatments for disease prevention, longleaf pine restoration, and wildlife habitat improvement**.**
- Incorporate growing season burns into all forest management plans.
- Treat and control invasive plants that infest refuge forests. Focus on chinaberry, Chinese privet and Japanese honeysuckle.

- Maintain dominant large crown pines for potential eagle nest sites.

- Determine survival response of planted longleaf pines and adjust techniques to improve if needed.

Objective: Fire Management – Use fire as a management tool on approximately 800–1,000 acres annually in suitable habitats for species and habitat conservation.

Discussion: The primary ecological force for managing most refuge habitats is fire. Eufaula NWR has an active prescribed fire program after a few years of low activity. The lack of a RXB3 Burn Boss, turnover in personnel, and insufficient staff hampered efforts. Today, the refuge has an RXB3 Burn Boss, more qualified staff, and better logistical support. Good relationships have been established with Okefenokee NWR and Mississippi Sandhill Crane NWR for burning assistance. The refuge is capable of conducting low complexity prescribed burns. Due to its location within the Eufaula city limits and its proximity to Lakepoint Resort State Park, the refuge has wildland/urban interface issues, primarily smoke management concerns. For moderately complex prescribed burns, assistance must be sought from the neighboring refuges and a RXB2 Burn Boss. This does cause logistical problems and limits burning window opportunities.

The refuge has an approved Fire Management Plan (2001). Its aim is to burn on a 2–3 year rotation depending on vegetation responses; burns are conducted primarily in the winter, or in the fall in the case of fallow or old field habitats. Prescribed burning in impoundments is conducted in early spring. As the refuge staff gains additional experience, growing season burns in longleaf pine habitats will be conducted. Current challenges with the refuge's fire program revolve around smoke management, dependence upon a RXB 2 Burn boss, and the need for additional assistance from other refuges. Subdividing burn units into a series of 50–100 acre blocks and burning them separately will help reduce smoke management problems and fire complexity issues. The refuge's equipment needs include an improved fire plow and a fuel trailer. Permanent firebreaks are also needed in most areas.

Strategies:

- Use fire as a management tool in suitable habitats for species and habitat conservation.

- Establish prescribed fire burning rotations and plans for all refuge habitats.

- Update and revise Fire Management Plan as necessary.

- Prepare prescribed burn plans for the following units: Kennedy, Houston, Molnar, and Dirt Pit.

- Prepare prescribe burn plans for miscellaneous small areas, islands, and other locations.

- Incorporate periodic growing season burns into all forested areas.

Objective: Moist Soil Management – Intensify management of moist soil wetlands (approximately 1,200 acres) with emphasis on waterfowl and other aquatic birds foraging and life-history requirements.

Discussion: To be successful, moist soil wetland management requires excellent water control and intensive monitoring, plus a situation where the terrain is suitable for such management. Without water and moisture control provided by pumps, levees, gates, and ditches, as well as the equipment and manpower to set back succession, such management often becomes a hit-or-miss action that is as much art as science due to the vagaries of local weather and the uniqueness of moist soil sites in terms of hydrology, hydroperiod, seed banks, previous land use, etc. Intensive management can produce over 1,000 pounds of seed per acre, but most impoundments under fair management conditions should consider 400 pounds per acre as a factor for waterfowl forage production. Managing wetlands for moist soil plants, seeds, roots, and tubers that are beneficial to waterfowl is recommended as a means of diversifying wetland habitats and supplying foods with nutrients not generally available in agricultural grains.

Water depth, timing of inundation, and sustained/frequent monitoring and record-keeping are also needed to help assure adequate moist soil production on an annual basis. Moist soil management is labor- and equipment-intensive, and usually every 2–3 years sites will need to be disturbed (manipulated) to keep plant succession at the stages where desirable plant species dominate. Also, these sites need to be monitored weekly during spring/summer to fine-tune water levels/soil moisture and to execute vegetation control methods if undesirable plant species are the dominant germinators. Most refuges do not have the personnel, equipment, or funds to execute such intensive management on thousands of acres.

Strategies:

- Strive for more intensive management of moist soil wetlands (approximately 1,000 acres) with emphasis on waterfowl and other aquatic birds' foraging and life-history requirements.
- Maintain good dewatering and flooding capabilities at all impounded sites to enable more exact water level control.
- Employ additional biological personnel to intensively record all operations of each moist soil impoundment (Biological Science Technician).
- Improve capability to conduct more rigorous and repeatable inventory/monitoring/ evaluations of moist soil responses to different treatments.
- Utilize biologist/technicians to record all weekly operations, water evaluations, and treatment activities during early spring/summer drawdown periods.
- Sample moist soil sites to see if at least 50 percent of the plant composition in each unit is species of fair/good value for waterfowl (i.e., conduct moist soil plant composition surveys). Once the composition falls below 50 percent, the area needs to be treated.
- Strive for a mosaic of moist soil habitats throughout the refuge; do not dewater all impoundments at same time; have a rotational drawdown management scheme. Also, stagger drawdowns throughout the late spring and summer.
- Produce an annual Water Development Plan for each refuge impoundment; keep written records of management activities, plant responses, etc.

Objective: Nonnative and Invasive Plant Control – Aggressively control aquatic invasive plant species at approximately 25 shoreline miles (or as needed) and 1,250 acres annually and preventive and maintenance control of upland invasive species.

Discussion: Exotic and invasive species are the most serious threat to the conservation of natural resources at Eufaula NWR. A recent plant communities survey found 29 exotic species occurring in refuge habitats (Schotz 2002). Three aquatic plants (water hyacinth, hydrilla, and common waterweed), feral hogs, the Mediterranean gecko, and others should be added to the list. Hydrilla and water hyacinth in the Chattahoochee have severe implications for the management of aquatic resources. Native invasive and weedy upland plants including sicklepod, cocklebur, mourning glory, and sesbania are problems in agricultural fields and impoundments. Chinese privet, Chinaberry, and Japanese honeysuckle are pervasive along forest edges, invading deep into the stand interior. Plant diversity along shorelines has been adversely impacted by alligatorweed, water willow, maidencane, giant cutgrass, and primrose-willow. Treating areas infested with alligatorweed, maidencane, primrose-willow, sesbania, water smartweed or waterpepper, American lotus, and others occurs within the impoundment. Exotic and invasive plants form monotypic stands of very low food value to wintering waterfowl.

Management and control of invasive and exotics plants at Eufaula includes mechanical, biological, and chemical methods, or combinations of these. Mechanical methods include mowing, and disking or plowing using farm tractors. These methods are not effective, providing only temporary relief. The very high occurrence of invasive seeds in seed banks and their rhizomatous nature allows quick re-establishment and growth.

The primary biological method has been the release of alligatorweed beetles. These beetles are host-specific for alligatorweed. Beetles are obtained by the Corps of Engineers in Jacksonville, Florida, and shipped to the refuge each spring. The quantities released each year vary, normally between 2,000–3,000. The release of these beetles has had limited success in reducing alligatorweed. In 2004–2005, research comparing the herbicides Renovate and Habitat on controlling alligatorweed was conducted by a graduate student at Auburn University. The refuge provided full funding for this research. The use of herbicides has provided partial control of some invasive species. The primary herbicides used are Roundup (glyphosate) and 2,4-D amine (organo-phosphate). Others include Rodeo (glyphosate), Arsenal (imazapyr), and Tordon (picloram). Atrazine was previously used by the refuge's cooperative farmer for control of sicklepod in corn, but is now banned from use on all refuges. Refuges must now use Roundup or other herbicides approved by the Washington Office.

The refuge's management strategy for exotics focuses on drying up impoundments and using tractor-mounted boom sprayers to apply herbicides. The key is to apply herbicides before the plants become tall, dominant, and produce seed. This means treating as early as ground conditions allow equipment in the fields. Abundant spring and summer rains delay treatments, allowing for weeds to become established.

Most invasives are broadleaf weeds (dicots) and 2,4-D is used for selective control, allowing the grasses and sedges to become established, shading out invasives. 2,4-D is also an economical herbicide to apply. Other herbicides such as Roundup and Aresenal are nonselective and will kill both dicots and preferred monocot grasses and sedges. Roundup is applied in areas infested with maidencane in impoundments. Other application methods include backpack sprayers and an ATV-mounted boom sprayer. Helicopter applications may also be used in the future. They are more effective in working in smaller infested areas than fixed-wing aircraft. In agricultural fields, the cooperative farmer applies approved herbicides for weed control in corn, soybeans, winter wheat, oats, and rye. The loss of Atrazine now requires the farmer to rely upon planting Roundup Ready corn and soybeans.

Strategies:

- Identify and monitor distributions of pest species by means of annual surveys of species presence and distribution.
- Develop databases using GIS to map species distributions and changes over time. Map treatment areas and responses.
- Use public education and outreach methods to publicize impacts of nonnative and native pest species upon refuge resources.
- Partner with the Corps of Engineers to monitor the presence and distribution of cyanobacteria (blue-green algae) in hydrilla colonies on refuge waters.
- Control and eradicate nonnative species, by determining appropriate control method and application technique, applying selected control method, and evaluating and monitor results.
- Control distribution and impacts of native pest species by determining appropriate control method and application technique, applying selected control method, and evaluating and monitoring the results.
- Cooperate with the Corps of Engineers to install educational signage at boat ramps to inform the public about the spread of hydrilla and other exotics.

VISITOR SERVICES

Goal: Provide the public with quality wildlife-dependent recreation, environmental education, and interpretation that lead to greater understanding and enjoyment of fish, wildlife, and their habitats.

Discussion: The main public uses on the refuge are hunting and fishing and the refuge has active programs in these areas. Eufaula NWR is part of Lake Eufaula/Walter F. George Reservoir, which hosts more than 3.5 million visits annually, including large national fishing tournaments. Located on U.S. Highway 431, the primary route for the public driving from Atlanta to the Florida Panhandle, there is a huge potential for more visitation, since more than 5 million people travel through Eufaula NWR annually.

Objective: Hunting – In addition to maintaining all existing hunts and seasons, consider adding additional hunts.

Discussion: Eufaula NWR is open to hunting of waterfowl, deer, dove, squirrel, and rabbit. Hunting is permitted in designated areas only. The refuge staff participates in the Georgia and Alabama state hunt coordination meetings annually and coordinates the hunting seasons with both states when possible. The refuge is in the recreational fee demonstration program, and currently charges only for quota hunts. The staff manages 28 to 30 permitted hunts each year.

The refuge will evaluate the turkey population on the refuge over the next 15 years and work towards adding a youth turkey hunt in the future. Due to safety concerns and a small turkey population, this would be a limited entry quota hunt. The methods outlined in the current Feral Hog Management

Plan are sufficient to control feral hogs without expanding or adding any additional hunts at this time. The refuge is currently working with Dr. Bill Birkhead at Columbus State University to monitor the alligator population on the refuge. Once Dr. Birkhead and the refuge staff has collected three years of population data, the refuge will consider opening the open water portions of the refuge to alligator hunting following the state season and bag limits.

Camping and ATVs are prohibited. Retrieving dogs are allowed for waterfowl hunts only.

Refuge areas are open to disabled access, but no universally accessible routes are available between parking lots and the blinds for deer hunters with disabilities. There is no universally accessible blind for waterfowl hunters, although one is planned at the Bradley and Kennedy units.

The refuge does not have a full-time law enforcement officer. Instead, hunting laws are enforced by collateral duty law enforcement officers, and all of the refuge staff works the check stations. Other public use activities are prohibited in the hunting areas during quota gun hunts. However, during the dove gun hunt, the Wildlife Drive and observation tower and platform remain open, posing a possible safety hazard.

Strategies:

- Close areas to other public uses during hunts (e.g., Wildlife Drive during the dove hunt). Provide information on alternatives.
- Create a no-hunting zone around the Houston Observation Tower.
- Evaluate the benefits of participation in a fee demonstration program to include a permit for all hunts. Increase quota hunt fees by 2008 ($20 per hunter / $60 for adult waterfowl permits). Implement a $20 per year hunting fee for all hunting which includes archery deer and small game. Add a permanent Park Ranger to process permits and answer hunter inquiries.
- When the refuge modifies participation in the fee demonstration program, hire a 6-month intern to handle administration of the fee program and help at the check station.
- Evaluate the turkey population on the refuge over the next 15 years and work toward adding a youth turkey hunt in the future.
- Monitor the alligator population on the refuge for three years and use data to consider opening the open water portions of the refuge to alligator hunting following the state season and bag limits.
- As soon as funding becomes available, hire a full-time law enforcement officer (RONS 99002, Add Full-time LE Officer to Staff).

Objective: <u>Fishing</u> – By 2015, document impact of sport fishing and fishing tournaments on sensitive wildlife and habitat resources on the refuge to serve as a basis for discussions with the Army Corps of Engineers and Alabama and Georgia authorities on possibility of establishing no-wake zones in sensitive areas. Enhance boat launch facilities and bank fishing opportunities on the refuge by 2015.

Discussion: Approximately 4,000 of Eufaula NWR's 11,184 acres is open water. This is part of the 45,191-acre Lake Eufaula (Walter F. George Reservoir) operated by the Army Corps of Engineers. Three boat launches are maintained by partner agencies (Lakepoint State Park by the State of Alabama; Florence Marina State Park by the State of Georgia; and Rood Creek Landing by the Corps). Two boat launch areas are the responsibility of Eufaula NWR: the Houston Bottoms boat launch and the Gammage Road boat launch.

Since being impounded in the mid-1960s, Lake Eufaula has had a national reputation for its excellent largemouth bass fishing, and is often referred to as the "Bass Capital of the World." Lake Eufaula has hosted numerous major national fishing tournaments. Sport fishing within refuge boundaries is one of the major economic engines of the local economy.

Bank fishing is also popular, often by subsistence fishermen. The refuge allows fishermen to park at the gate and walk or ride a bicycle into each unit to find bank fishing opportunities. When the pumps are pumping water out of the impoundments, many fishermen will congregate around the pumps. In the Houston Unit, they often park their vehicles along the Wildlife Drive to access the bank fishing adjacent to the refuge pumps. These areas are a possible safety hazard. Littering is a problem in some heavily used bank fishing areas and a permanent law enforcement officer is needed to patrol these areas.

Special needs bank fishermen are not accommodated. The refuge would like to construct a universally accessible pier for both wildlife observation and bank fishing at the Houston Bottoms, which could accommodate special needs anglers.

The refuge has erected signs in the water as boaters traverse the river to let them know once they enter the refuge boundary. The refuge has also placed signs at non-refuge maintained boat launches (Lakepoint, Rood Creek, Florence Marina) to advise boaters that the waters are managed by the refuge. Small gravel parking areas are located at the refuge-maintained boat launches, but are not marked as such. For bank fishing, parking areas are located at the entrance gate to each of the units. No restroom facilities are available at any bank fishing areas.

State officers are primarily responsible for enforcement of fishing regulations on the open water. Fishing regulation brochures are available at the refuge headquarters, but not at the entrance to the bank fishing areas or at the boat launches.

There is concern that sport fishing and associated boat use in general, and large fishing tournaments in particular, may be disturbing sensitive wildlife and habitat resources on the refuge. However, firm documentation is lacking, and this will need to be provided if a case for no-wake zones is to be made to partnering agencies (Alabama, Georgia, and the ACE).

Strategies:

- Erect sign to indicate the boat launch at Houston Bottoms and include symbol on maps.
- Create more user-friendly bank fishing areas.
- Implement a plan for an accessible fishing/wildlife observation pier at Houston Bottoms.
- Erect sign and maintain Gammage Road to boat launch bank area (MMS 00016, Rehabilitate Houston and Gammage Road Boat Ramp).

- Design study to document potential impacts of boat traffic and wakes on wildlife and habitat within refuge with emphasis on threatened and endangered species. As appropriate, consider use of interns, students, volunteers, or outside researchers to make observations or collect data.

Objective: Wildlife Observation and Photography – Maintain all existing facilities and within 10 years of CCP approval (1) designate one-way loop in the Houston Bottoms, and add additional pull-offs to existing Wildlife Drive; (2) improve existing interpretive trail and add foot trails between Lakepoint State Park and refuge; (3) add one photo blind in Houston Impoundment or Goose Pen Impoundment; and (4) construct an observation platform adjacent to the Hour Glass Impoundment on the Wildlife Drive and assess the need for an additional viewing platform in the Houston Bottoms area.

Discussion: There is a 7-mile auto tour at the Upland and Houston units. The route on the Houston Unit is open year-round, and the route on the Upland Unit is open in the summer only (March 1 through November 14) to provide sanctuary for wintering waterfowl. There are no pull-outs along the Wildlife Drive, with the exception of the parking areas near the gates. There are currently no interpretive panels along the Wildlife Drive. The refuge maintains the Houston observation tower and an observation platform at the Upland Unit. Currently, there are no photography blinds. A 0.6-mile interpretive walking trail is located near the old refuge headquarters. The trail is currently not maintained.

The Eufaula Refuge is a designated site on the Georgia Southern Rivers Birding Trail and a birding trail in Alabama.

Strategies:

- Continue to work with the Southern Rivers Birding Trail in Georgia and the designated birding trail in Alabama.
- At the observation platform, do not plant corn in the area that will obstruct view of platform from parking lot.
- Erect “distance to” signs at trailhead at both the platform and tower.
- Promote Eufaula NWR to the birding community (e.g., Audubon Society, birding websites) and partner with the local Chamber of Commerce to “sell” Eufaula as a birding destination.
- Explore having Eufaula NWR listed as an Important Bird Area (IBA), a designation by the American Bird Conservancy.
- Rehabilitate interpretive trail at old office by providing hand rails and benches (MMS 43560, Replace Footbridge and Regravel Walking Trail).
- Extend interpretive trail at old office into a longer, seasonal trail that loops over to Sneads Pond.
- Develop interpretive panels for the Wildlife Drive.

- At the observation tower, build a universally accessible parking pad and pave the walkway to increase its accessibility for visitors with disabilities.

- Create observation pullout or viewing platform with interpretive signs on Wildlife Drive across from Bird Island (short term: pullout; long term: deck).

- Develop a canoe trail along Wylaunee Creek.

- Work with Lakepoint State Park to plan and develop one or more foot trails connecting the refuge and the park.

- Consider constructing a new observation platform in the Houston Bottoms area to provide visitors with a better view of refuge impoundments and the Chattahoochee River.

- Construct observation platform overlooking the Hour Glass Impoundment in a way that visitors accessing the platform would be screened from the birds to minimize disturbance.

Objective: Environmental Education and Interpretation – Maintain existing opportunities and facilities, and by 2022, establish a new visitor center on the refuge.

Discussion: Eufaula NWR does not have an environmental education (EE) plan. Refuge staff provides numerous EE programs throughout the year, responding to requests from teachers and the general public. This program consists primarily of in-class visits, although it also includes some field trips on the refuge. Since Lakepoint State Park no longer provides EE programs, the need in the surrounding community has grown.

The refuge plans to hire a refuge Ranger/Interpretive Specialist who will be responsible for developing an EE program (RONS 00003, Initiate Aggressive Outreach Program). Certain volunteers have been identified in the community to work with the staff to develop the EE program. Current materials include coloring books, posters, the refuge-specific video, and a presentation about the refuge.

The refuge offers interpretive panels at the wildlife observation tower, observation platform, and at an interpretive kiosk near the entrance sign. Exhibits and interpretive messages are also displayed in the refuge headquarters. Because the interpretive trail is currently not maintained, the directional signage at the trailhead to the interpretive trail has been temporarily removed.

The general refuge brochure is available at the kiosk near the entrance sign and at the headquarters, which offers additional interpretive information. Tear sheets are available at area hotels and other businesses.

The planned visitor center, in close proximity to U.S. Highway 431, will stimulate both the EE and interpretive programs at the Eufaula Refuge.

Strategies:

- Hire an Outreach and Interpretive Specialist (RONS 0003, Initiate Aggressive Outreach Program).

- Currently focus EE on in-class visits.

- Maintain database of groups/teachers that come to the refuge, and communicate regularly with them.
- Ensure that programs meet relevant state educational standards.
- Explore membership in Environmental Educational Association groups in Georgia and Alabama.
- Staff conducting EE should determine target audiences and plan a series of specific programs to offer and develop these presentations so that they are not dependent on a specific person. These programs should be adaptable to various grade levels.
- Identify and train a group of teachers to advise and help develop programs.
- Identify and train a group of volunteers to help provide the programs.
- Develop kits on topics that teachers can use.
- Partner with the Kirbo Environmental Learning Center.
- Plan interpretive programs and messages that coincide with the purposes of Eufaula NWR.
- Explain refuge farming at observation deck.
- For the short interpretive trail near the old office, develop an inspirational trail similar to the one on Black Bayou Lake.
- Replace and update existing interpretive panels on the refuge.
- Place interpretive panels on Wildlife Drive.
- Explain the levees and water management in interpretive literature and panels and at display(s) in new visitor center.
- Explain timber management and prescribed burning in interpretive literature and panels and at display(s) in new visitor center.
- Construct a kiosk with a map and interpretive panels at the Refuge Headquarters so that information is available to the public after hours.

REFUGE ADMINISTRATION

Goal: Provide for sufficient staffing, facilities and infrastructure to fulfill the refuge's purpose and the goals and objectives of its Comprehensive Conservation Plan.

Discussion: Implementation of this CCP will depend on sufficient staff, equipment, facilities, and infrastructure to follow through on objectives and strategies. At the present time, the refuge has six permanent full-time employees: Refuge Manager, Assistant Refuge Manager, Wildlife Biologist, Office Assistant, Engineering Equipment Operator, and Maintenance Worker. The refuge has a new

office headquarters (but no visitor center), a maintenance area and equipment storage facility located near the old office, and various types of infrastructure (e.g., dikes, levees, pumps, roads) that require ongoing maintenance if they are to function.

Objective: Refuge Staffing – Add Biological Science Technician, Maintenance Position, (2) Park Ranger non-LE, and Law Enforcement Officer; 5 FTE's added. Total staff = 11.

Discussion: Eufaula NWR currently has six permanent full-time employees: a Refuge Manager (GS-13), Assistant Refuge Manager (GS-11), Wildlife Biologist (GS-11), Office Assistant (GS-7), Engineering Equipment Operator (WG-10), and a Maintenance Worker (WG-8). For the past several years a temporary tractor operator (WG-6) has also been hired. The refuge does not have a full-time law enforcement officer but does have two collateral duty law enforcement officers, the Refuge Manager and Assistant Refuge Manager. The CCP planning team believes that five new positions are necessary to fully implement the CCP's objectives and strategies.

Strategies:

- The Biological Science Technician will be used to assist the Wildlife Biologist on projects related to habitat management, wildlife studies, wildlife and vegetation surveys, silviculture timber harvest (planning, mitigation, oversight, and analyzing effects) and miscellaneous tasks such as the proposed research on the possible impacts of boat traffic on the refuge.

- Maintenance position will be used in a variety of facility, equipment, and infrastructure repair, maintenance and management in the field, as well as in habitat management, such as mowing. This position will provide support for the new visitor center and assist with force account farming operations.

- The Supervisory Park Ranger will be used to help plan and execute environmental education and interpretive facilities and functions in the proposed visitor center and elsewhere on and off the refuge.

- The second Park Ranger position will staff the visitor center and provide support for the recreation fee program by collecting funds, processing hunt applications, conducting quota hunt drawings, and staffing hunter check stations.

- Law Enforcement Officer will supply full-time law enforcement function to the refuge, replacing collateral duty officers. The officer will be involved in providing security for refuge resources, visitors and staff, preventing and solving crimes, and enforcing hunting and fishing regulations on the refuge, in close coordination and cooperation with Eufaula's many partners.

Objective: Cultural Resources – Within 15 years of CCP approval, develop and begin to implement a Cultural Resources Management Plan (CRMP).

Discussion: Eufaula NWR follows standard National Historic Preservation Act Section 106 procedures to protect the public's interest in preserving its cultural/historic legacy that may potentially occur on the refuge. Whenever construction work is undertaken that involves any excavation with heavy earth-moving equipment like tractors, graders and bulldozers, such as for the development of new moist soil units or levees, or the construction of the recently completed office headquarters, the refuge contracts with a qualified archaeologist/cultural resources expert to conduct an archaeological survey of the subject

property. The results of this survey are submitted to the Service's Regional Historic Preservation Officer (RHPO) as well as Alabama's State Historic Preservation Office (SHPO), which in Alabama is the Alabama Historical Commission. The SHPO reviews the surveys and determines whether cultural resources will be impacted, that is, whether any properties listed in or eligible for listing in the National Register of Historic Places (NRHP) will be affected. If cultural resources are actually encountered during construction activities, the refuge is to notify the SHPO immediately. To date, no properties on the refuge have been determined to be eligible for listing on the NRHP.

Strategies:

- Within 10 years of plan approval, conduct a Phase I archeological survey of the non-flooded areas of the refuge, by qualified personnel, as a necessary first step in cultural resources management.

- Conduct a Phase II investigation if archeological resources are identified during the Phase I survey. In this, the eligibility of identified resources for listing on the National Register of Historic Places (NRHP) is evaluated prior to any disturbance.

- Conduct a Phase III data recovery if resources identified in Phases I and II are determined to be eligible. This will recover data and mitigate adverse effects of any undertaking.

- Within 15 years of plan approval, prepare a Cultural Resources Management Plan (CRMP) for the refuge.

- Follow procedures outlined in CRMP for consultation with RHPO, SHPO, and potentially interested American Indian tribes.

- Follow procedures detailed in CRMP for inadvertent discoveries of human remains.

- Ensure that archeological and cultural values are described, identified, and taken into consideration prior to implementing undertakings.

- Develop a step-down plan for surveying lands to identify archeological resources and for developing a preservation program.

Objective: <u>Partnerships</u> – Increase cooperation with Corps and state agencies on invasive species management, and with Alabama/Georgia authorities on overall refuge management, including restoration of longleaf pine forest. Increase partnership opportunities with nonprofit organizations like Ducks Unlimited and the National Wild Turkey Federation. Work to establish a refuge Friends group (support group) by 2022.

<u>Discussion</u>: The refuge has a number of partnerships with agencies, institutions and individuals, including the Army Corps of Engineers, U.S. Department of Agriculture - Wildlife Services, Alabama Department of Conservation and Natural Resources, Lakepoint State Park, Georgia Wildlife Resources Division, Eufaula Chamber of Commerce, Barbour County Chamber of Commerce, Ducks Unlimited, Natural Resources Conservation Service, Auburn and other universities, and private landowners in the area. The Nature Conservancy, a national, nonprofit, nongovernmental conservation organization with chapters in both states, cooperates with the refuge on resource management issues.
Eufaula also has an active and growing volunteer program. Volunteers contributed 1,477 hours in

2004 conducting wildlife surveys, assisting with the hunter check stations, performing general maintenance, monitoring and maintaining bluebird and wood duck boxes, rehabilitating walking trails, and helping with the Fall Festival activities. In other years, volunteers have worked on the construction of a new asphalt shingle roof at the nature trail kiosk, built brochure racks for refuge kiosks, installed shelves in the maintenance building carpentry shop, built duck blinds, and many other projects. Currently, the refuge does not have an official Friends group.

The refuge has two camper pads. Two to three couples come to the refuge annually and spend a few months volunteering. There are also a few local, skilled individuals that volunteer doing environmental education and maintenance work.

Strategies:

- Hire Park Ranger to assist with visitor service-related volunteer activities.
- Prepare a brochure listing potential volunteer activities such as those cited in the discussion above and thus listed in the strategy below.
- Prepare a list of potential activities, projects and programs amenable to participation or assistance by volunteers, with or without immediate supervision, such as habitat restoration projects, plantings, weed removal/control, construction and signing of nature trails, construction and maintenance of visitor-related facilities and interpretive exhibits, leading tours, and onsite and offsite environmental education.
- Via the news media, local organizations, and personal contacts, inform the public in surrounding communities of various opportunities for volunteering on the refuge.
- Investigate opportunities for additional partnering with national, regional, and local nongovernmental organizations (NGOs) such as The Nature Conservancy, National Wildlife Federation, Ducks Unlimited, Wild Turkey Federation, Audubon Society, Boy Scouts, and Girl Scouts.
- Once a loyal corps of volunteers exists, encourage the establishment of a Friends group that could raise awareness of the refuge and seek its own funding to carry out projects. Offer to provide assistance in this formation drawing on the Service's experience with Friends groups at other refuges in the Southeast Region.
- Encourage the Eufaula Refuge staff to actively collaborate with other government agencies, NGOs, and private organizations in the area on projects conferring mutual benefits.
- Consider developing a volunteer plan that would identify things that volunteers can do (per lists above), develop job descriptions, and specify who supervises any given type of volunteer.
- Assign a staff member to be a volunteer coordinator, preferably the Park Ranger, if hired, or other professional staff, if lacking a Park Ranger.
- Recruit volunteers at campground.
- Tie in to Take Pride in America.

- Use newspaper articles to recruit by (for example) publishing different job descriptions weekly in local newspapers.

- Use existing volunteer materials from other refuges.

- Produce and provide a volunteer packet.

- Develop a series of volunteer-led interpretation/EE programs (i.e., nature walks, bird walk, etc.) that do not require specialized expertise.

Objective: Visitor Center – By 2022, or within 15 years of CCP approval, construct and begin to operate a visitor center. This would include adequate staff to operate and maintain the facility.

Discussion: A visitor center for Eufaula NWR is on the Service's top 20 national list of planned visitor centers. However, it is unknown when funding will become available for construction.

Strategies:

- One location for the proposed visitor center is at the Kennedy Impoundment, although this location is several miles from the new refuge headquarters. (MMS 00001, 0200001A, and 020001B - Visitor Center/Office - Centennial Legacy Project - Phases I, II, and III).

- Be clear on talking points, what is going to be offered through the visitor center that is new or different.

- In discussing the visitor center with local interests, emphasize the potential economic impact.

- Develop a fact sheet highlighting what the visitor center will bring to the refuge, the City of Eufaula, and the Lake Eufaula community.

- Host tours for the Congressional delegation.

- Procure an artist's rendering of the visitor center.

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 Eufaula National Wildlife Refuge, this chapter identifies the projects, funding and personnel needs, volunteers, partnerships opportunities, step-down management plans, a monitoring and adaptive management plan, and plan review and revision.

PROPOSED PROJECTS

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

FISH AND WILDLIFE POPULATION MANAGEMENT

Project # 00001, Station Rank #2 – $128,000

Provide a Biological Technician to conduct important wildlife surveys and habitat management activities (such as invasive exotic plant control measures), and manage growing public hunting programs. This position will help improve habitats to benefit a host of wildlife species and the many visitors who enjoy them. The position would also assist with conducting conservation easement compliance checks and wildlife management practices. Eufaula NWR is responsible for overseeing 21 easements and 3 fee title tracts in southeast Alabama and southwest Georgia, ranging in distance from the Eufaula NWR office 120 miles west, 150 east, 60 miles north, and 70 miles south. Annual compliance checks by ground are difficult to complete. Aerial flights will be scheduled semiannually. Potential violations will then be ground-truthed. Boundary lines will be inspected annually and corrected. Other potential biological activities such as reforestation, prescribed burning, and needed surveys cannot be pursued due to inadequate funding. Some of these activities would be contracted and supervised by the station biologist. The project would benefit pitcher plant bogs, endangered gopher tortoises, and longleaf pine habitat. Reforestation efforts would consist of longleaf pine habitat restoration.

HABITAT MANAGEMENT

Project # 99003, Station Rank #3 – $50,000

Reforest 100 acres of agricultural fields to a diverse native forest of hardwood species on Eufaula Refuge, and reforest 2,000 acres of off-refuge agricultural fields on willing private landowner's property through an established partnership with the Georgia Natural Resource Conservation Service. Hardwood habitats are one of the Fish and Wildlife Service's priority habitats for this area of the country. This project would be accomplished with a contract planter preparing sites, securing quality seedlings, and planting specified species.

Project # 99001, Station Rank # 1 – $200,000

Proposal is to restore managed wetlands to native species by reducing dense stands of invasive and undesirable plant species. Invasion of pest plants is the greatest threat to wetland habitat on Eufaula NWR. The invasive plants out-compete native species unless controlled; these include Hydrilla, American lotus, alligator-weed, cattail, primrose, black willow, sesbania, maiden cane, giant cut grass, water hyacinth and potentially Salvinia. Failure to control these species will result in the refuge's inability to provide the natural foods for waterfowl species, which is the main purpose for refuge establishment. The refuge will work in cooperation with Corps of Engineer personnel to establish a maintenance program including spraying, burning, disking, flooding and mowing that would allow the wetland plant communities to function as natural communities and not as monoculture stands of invasive plants. We plan to develop a model program that other resource managers would benefit from.

Project # 97003, Station Rank # 5 – $30,000

Project would provide the operational expenses to conduct the annual water management program. This station depends on the ability to flood impoundments in the fall and then dewater them in the spring to manage 1,100 acres (14 subunits) of wetland habitat. Pumping is essential to support the refuge's waterfowl hunts, which provide opportunities for over 500 hunters annually to enjoy a quality outdoor experience. Pumping during the growing season provides for an alternate means of controlling invasive plants by drowning plants, but declining operating margins have prevented this management activity in recent years. Without this management tool, the refuge would be unable to meet critical program obligations for waterfowl, shorebirds, other migratory birds, and the endangered wood stork and would have to reduce or eliminate public hunting. This project is an annual need for Eufaula NWR to effectively manage moist soil habitat.

VISITOR SERVICES

Project # 00003, Station Rank #4 – $154,000

Initiate and maintain an aggressive outreach program at the Eufaula Refuge by providing a supervisory outreach specialist (Supervisory Park Ranger) to lead education and recreational programs for tens of thousands of visitors and school children. As part of that mission, this position will manage the 10,000-square-foot visitor and education center which is in the preliminary design phase at Eufaula NWR. The Eufaula Visitor Learning Center is currently one of 20 centers nationwide planned under the Centennial Legacy Plan. Eufaula NWR is uniquely located in an area of the southeastern U.S. where wildlife-related recreation is the major source of income in the local economy. Lake Eufaula and the surrounding vicinity attracts more than three million visitors annually, including hunters, fishermen, and wildlife viewers, and it has been designated three years running by *Sports Afield* magazine as the number one destination in Alabama for families to enjoy outdoor recreation.

Project # 00004, Station Rank #4 – $118,000

This project would establish a Park Ranger position to staff the visitor center and provide support for the recreation fee program by collecting funds, processing hunt applications, conducting quota hunt drawings, and staffing hunter check stations.

REFUGE ADMINISTRATION

Project # 00005, Station Rank #5 – $129,000

Provide a maintenance worker to properly care for newly developed grounds and facilities as part of a 10,000-square-foot visitor and education center in the preliminary design phase at Eufaula NWR. This position would also assist with maintenance of facilities, grounds, trails, signs, and other visitor-related facilities throughout the refuge. The position will also assist with the refuge's force-account farming operations.

Project # 99002, Station Rank # 1 – $140,000

Add a full-time refuge Law Enforcement Officer to provide resource protection and public safety for refuge visitors. Eufaula NWR is located on Lake Eufaula, where station visitation exceeds 300,000 annually. Law enforcement is needed to support visitor activities such as hunting, fishing, boating, and skiing; provide archaeological protection and search and rescue; and prevent controlled substances use and marijuana cultivation on the refuge. Cooperation is required with multiple law enforcement offices, including state agencies from Georgia and Alabama, two counties in both states, two municipal police forces, and the Corps of Engineers. The refuge conducts extensive hunting and fishing programs and attracts visitors to two wildlife observation points and a wildlife drive. Twenty-four conservation easements in southeast Alabama and southwest Georgia will also receive added protection.

MMS 00001, 0200001A, and 020001B - Visitor Center/Office Construction

This project is not included among the other existing RONS list of projects (although it was on the MMS—now SAMMS—list) but is a high priority of the refuge and Region 4. By 2022 or within 15 years of CCP approval, the Eufaula Refuge aims to construct and begin to operate a visitor center. This would include adequate staff to operate and maintain the facility. A visitor center for Eufaula NWR is on the Service's top 20 national list of planned refuge visitor centers. However, it is unknown when funding will become available for construction. One potential location for the proposed visitor center is at the Kennedy Impoundment, although this location is several miles from the new refuge headquarters. (MMS 00001, 0200001A, and 020001B - Visitor Center/Office - Centennial Legacy Project - Phases I, II, and III).

Project # 00006, Station Rank # 3 – $80,000

This project would provide the annual costs of operating this new visitor center facility. Costs would include janitorial services, building and grounds upkeep, pest control, utility costs, educational materials, computers, and other supplies for the visitors. This would be an annual need to operate the public use facility.

Project # 98012, Station Rank # 9 – $30,000

Project would fund an archaeological survey of Eufaula NWR which would facilitate the clearance process for future construction projects identified by the CCP process and help joint law enforcement efforts with the Corps of Engineers and state agencies in Alabama and Georgia to protect identified sites. Eufaula NWR is rich in archaeological history. The refuge and the adjacent Corps properties have two areas currently identified and protected, with many more inadequately documented or suspected. A refuge-wide reconnaissance would provide compliance with the several laws and legal mandates as management, construction, and law enforcement activities are conducted. The reconnaissance would be completed by a contractor in coordination with the Region 4 archaeologist.

FUNDING AND PERSONNEL

The current staff at Eufaula National Wildlife Refuge consists of nine positions (Figure 8), although two of these positions are currently vacant. Implementing the CCP generally and the above projects specifically will necessitate commitments of funding and personnel outlined in Table 8. Figure 9 depicts a proposed staffing chart that adds those positions needed to fully implement the CCP.

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 or enhance partnerships with Lakepoint State Park; Eufaula Chamber of Commerce; Barbour County Chamber of Commerce; the Army Corps of Engineers; U.S. Department of Agriculture - Wildlife Services; and private landowners. At regional and state levels, partnerships may be established or enhanced with organizations such as the Alabama Division of Wildlife and Freshwater Fisheries; Alabama Department of Conservation and Natural Resources; Georgia Wildlife Resources Division; Georgia State Parks and Historic Sites; Auburn University; and The Nature Conservancy.

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 9) 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.

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.

Figure 8. Current organization and staffing chart for Eufaula National Wildlife Refuge.

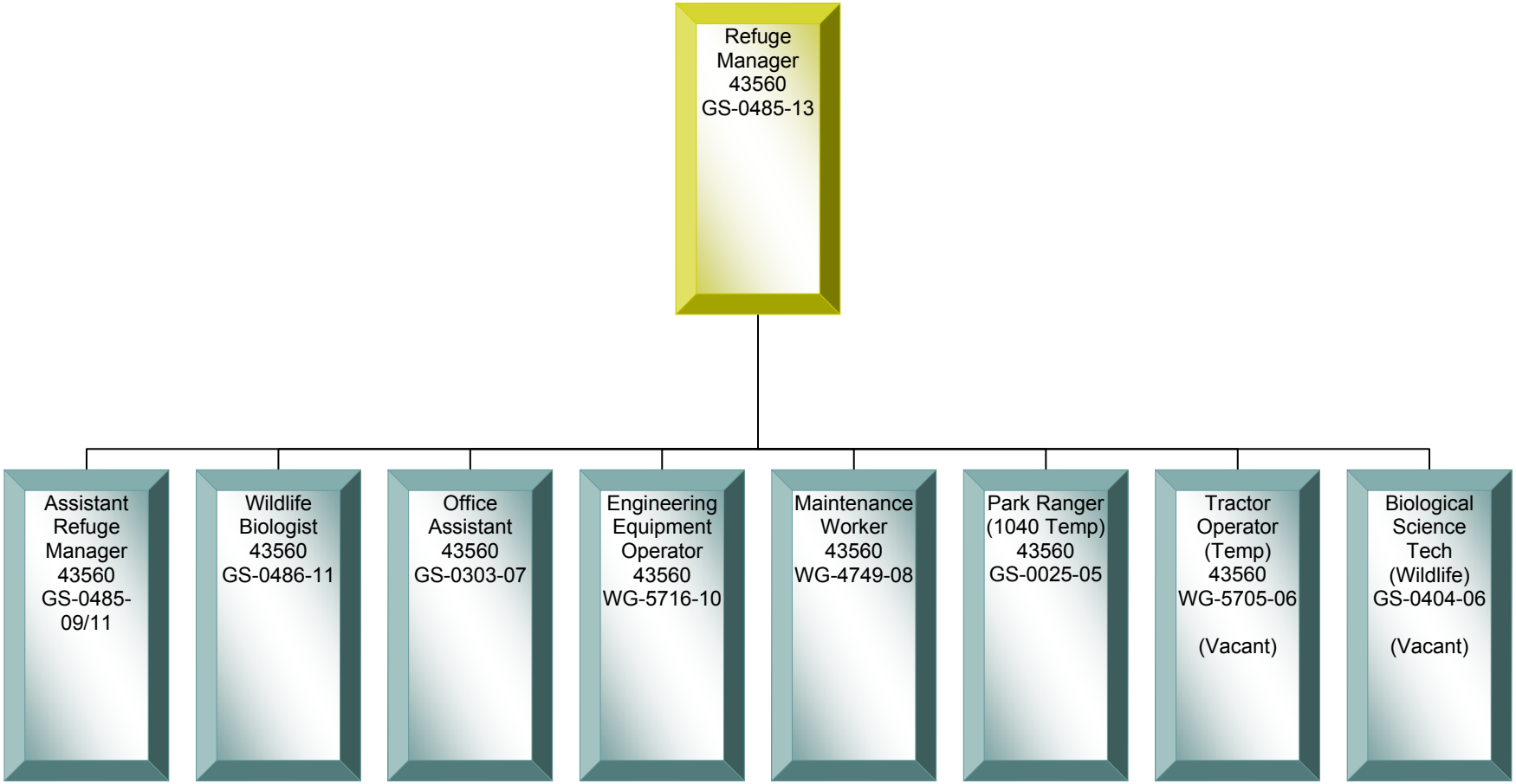


Figure 9. Proposed future organization and staffing chart for Eufaula National Wildlife Refuge.

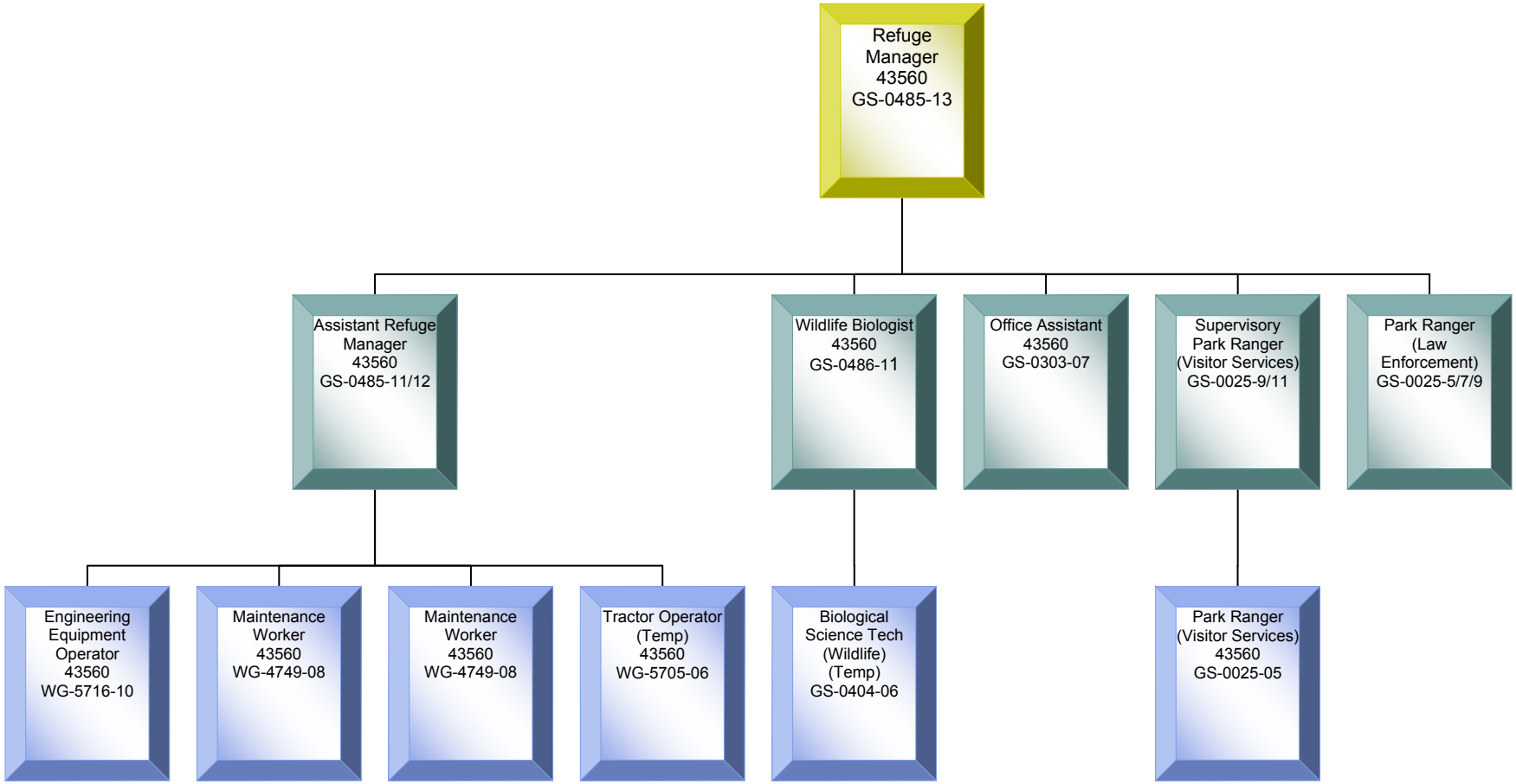


Table 8. Summary of projects.

PROJECT NUMBER	PROJECT TITLE	FIRST YEAR COST	RECURRING ANNUAL COST	NEW STAFF (FTEs)
# 00001	Provide Biological Technician position to conduct wildlife surveys and habitat management activities	$128,000	$128,000	1.0
#99003	Reforest 100 acres of agricultural fields to a diverse native forest and reforest 2,000 acres of off-refuge agricultural fields	$50,000	$2,000	---
#99001	Restore managed wetlands to native species by reducing dense stands of invasive and undesirable plant species	$200,000	$30,000	---
#97003	Conduct annual water management program	$30,000	$25,000	---
#00003	Initiate and maintain outreach program at Eufaula by providing a supervisory outreach specialist	$154,000	$154,000	1.0
#00004	Establish Park Ranger position to greet visitors, provide educational programs, conduct recreation fee program, and staff hunter check stations.	$118,000	$118,000	1.0
#00005	Provide Maintenance Worker position to properly care for newly developed grounds and facilities and assist with force account farming	$129,000	$129,000	1.0
#99002	Add a full-time refuge Law Enforcement Officer to provide resource protection and public safety for refuge visitors	$140,000	$140,000	1.0
#00006	Operate and maintain new visitor center/office	$80,000	$80,000	---
#98012	Fund an archaeological survey of Eufaula NWR	$30,000	---	---

Table 9. Eufaula National Wildlife Refuge step-down management plans related to the goals and objectives of the comprehensive conservation plan.

Step-down Plan / Completion date	Revision Date
Forest Management Plan completed 1971	2010
Feral Hog Management Plan completed 2006	2015
Pest Control Plan N/A need IPM	2015
Croplands Management Plan completed 1988	2015
Fire Management Plan completed 2001	2011
Water Development Plan for each impoundment 2007	annually
Cultural Resources Management Plan N/A	2022
Habitat Management Plan to be completed by 2010	2015
Fishing Plan completed 1983	2022
Hunting Plan completed 1983	2022
Visitor Services Plan completed 1985 and updated in 1993	2015
Law Enforcement Plan completed 1988	2010
Hurricane and Disaster Plan completed 2007	2008

SECTION B. ENVIRONMENTAL ASSESSMENT

I. Background

INTRODUCTION

This Environmental Assessment (EA) for Eufaula National Wildlife Refuge has been prepared in compliance with the National Environmental Policy Act. It discusses the purpose and need for the Comprehensive Conservation Plan (CCP) for the refuge, which is located in Barbour and Russell counties, Alabama, and Stewart and Quitman counties, Georgia, and provides an analysis of the environmental impacts that could be expected from each of the management proposals outlined in the plan. This analysis assists the 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 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 more than 540 national wildlife refuges embracing 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/EA is to establish and implement management direction for Eufaula National Wildlife Refuge 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 Fish and Wildlife Service will select an alternative to be fully developed for this refuge.

The Service identified issues, concerns, and needs through discussions with the public, agency managers, conservation partners, and others. In particular, the Service's planning team identified a range of alternatives, evaluated the possible consequences of implementing each, and selected Alternative D (Balanced Wildlife/Habitat Management and Public Use Activities) as the proposed management action. In the opinion of the Service and the planning team, Alternative D 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 have a CCP in place within 15 years.

DECISION FRAMEWORK

Based on the assessment described in this document, the Fish and Wildlife Service will select an alternative to implement the Comprehensive Conservation Plan for Eufaula National Wildlife Refuge. The finalized CCP will include a Finding of No Significant Impact (FONSI), which is a statement explaining 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 National Wildlife 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 after the FONSI is signed, and the plan will be monitored annually and revised when necessary.

PLANNING STUDY AREA

Eufaula National Wildlife Refuge (NWR) is located on both banks of the Chattahoochee River in southeast Alabama and southwest Georgia. The refuge is superimposed on the Walter F. George Reservoir (also referred to as Lake Eufaula), a river and harbor project of the U.S. Army Corps of Engineers. The reservoir resulted from the impoundment of the Chattahoochee River between Alabama and Georgia. Named after the city of Eufaula, Alabama, the refuge provides 11,184 acres of land and water for public enjoyment in a wide range of outdoor activities. The refuge contains 7,953 acres in Barbour and Russell counties, Alabama, and 3,231 acres in Stewart and Quitman counties, Georgia. The refuge also administers a conservation easement program covering 44 counties in Georgia and Alabama. Eighteen of these counties are located in Alabama and 26 in Georgia. There are 21 conservation easements in 11 counties (Alabama and Georgia) totaling 1,360 acres, and three fee title tracts in three counties (Georgia) totaling 591 acres. The refuge is crossed by U.S. Highway 431, Gammage Road, and Georgia Route 39.

This environmental assessment will identify management on refuge lands.

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 (NEPA) of 1969. The refuge staff 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 Eufaula National Wildlife Refuge.

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 Pee Dee National Wildlife Refuge. This plan has been written with input and assistance from interested citizens; conservation organizations; and local, state, and federal agencies. The participation of these stakeholders and their ideas has been of great value in setting the management direction for Eufaula National Wildlife Refuge.

Preplanning activities began in 2003. A biological review was conducted at the refuge in August 2003. This was later followed by a visitor services review conducted in the same year. Preplanning continued with information gathering and the identification of data gaps. A Notice of Intent to prepare a comprehensive conservation plan for the refuge was published in the *Federal Register* on January 26, 2006. The refuge then held a public scoping meeting on January 31, 2006. Approximately 30 citizens attended this meeting. In addition to the comments that were collected at the public scoping meeting, other comments were received through e-mail and standard mail. A total of 23 comment forms and letters were received during the public scoping period.

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 this planning process, and has developed a plan that attempts to balance the refuge's management priorities based on best management practices, best available information, and the competing opinions regarding important issues.

A complete summary of these issues and concerns is provided in Appendix IV, Public Involvement. For more detailed information about the planning process and the identification of issues, please refer to Chapter III, Plan Development, in the Draft Comprehensive Conservation Plan (Section A).

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 and the goals identified in the CCP; the priorities and goals of the Northeast Gulf Ecosystem Team; 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 public scoping.

The four 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 assessed the biological conditions and analyzed the external relationships affecting the refuge. This information contributed to the development of refuge goals and, in turn, helped to formulate the alternatives. As a result, each alternative presents different sets of objectives for reaching refuge goals. Each alternative was evaluated based on how much progress it would make and how it would address the identified issues related to fish and wildlife populations, habitat management, resource protection and conservation, visitor services, and refuge administration. Please refer to Chapter III, Plan Development, in the Draft CCP (Section A) for summaries of the priority issues.

DESCRIPTION OF ALTERNATIVES

Serving as a basis for each alternative, a number of goals and sets of objectives were developed to help achieve the purposes of the refuge 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 four 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 four alternatives are summarized below.

ALTERNATIVE A: CURRENT MANAGEMENT (NO ACTION)

In general, Alternative A, the no action alternative, would maintain the refuge's current management direction, that is, the refuge's habitats and wildlife populations would continue to be managed as they have been in recent years. Public use patterns would remain relatively unchanged from those that exist at present. This alternative would pursue the same four broad refuge goals as each of the other alternatives.

Goal A concerns wildlife. It calls for Eufaula NWR to conserve, protect and enhance native wildlife populations representative of the middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species. Under Alternative A, the refuge would work toward achieving a number of objectives in pursuit of the wildlife goal.

Eufaula would provide a complex of habitats, both moist soil and grain crops, to meet the foraging needs of 15,000 wintering ducks. This would assist the North American Waterfowl Management Plan. The refuge would also provide adequate open space (upland crop fields) for winter utilization and feeding of at least 350 geese and cranes. In addition, staff and/or volunteers would maintain 100 wood duck boxes on the refuge.

Under Alternative A, forest management would continue at current levels and intensity. The refuge would maintain 175 acres of grassland habitat for the benefit of grassland birds. In addition, it would use various tools to maintain tall emergent vegetation sufficient to support a population of 10 king rails and to benefit other species of marsh birds.

For the benefit of wading birds, known rookeries would be protected but there would continue to be no active management of foraging habitat for herons and egrets. Likewise, no active management for shorebirds would take place. However, Eufaula Refuge would provide protective conservation measures for federally or state listed species and habitats for future ecological existence.

Refuge staff would employ sound scientific principles to manage healthy populations of resident wildlife species. They would control domestic, feral, or pest animals, especially feral hogs, removing an average of 65 hogs annually.

Goal B concerns habitat. It calls for Eufaula NWR to provide suitable habitats for native wildlife populations representative of the middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species. Under Alternative A, the refuge would work toward achieving several objectives in pursuit of the habitat goal.

Eufaula would utilize farming on 500 acres to provide food, cover, and sanctuary areas for wildlife and other species as well as manage approximately 2,600 acres of the refuge that are forestland to provide benefits to forest-dependent wildlife.

The refuge would use fire as a management tool on approximately 300 acres annually in suitable habitats for species and habitat conservation. It would also continue management of moist soil wetlands (approximately 1,175 acres), with emphasis on providing for waterfowl and other aquatic birds foraging and life-history requirements

Eufaula NWR would continue to control invasive plant species at current levels of approximately 25 shoreline miles and 750 acres annually (aquatic plants) and preventive and maintenance control of upland invasive species (500 acres annually in croplands).

Goal C concerns public use. It calls for Eufaula NWR to provide the public with quality wildlife-dependent recreation, environmental education and interpretation that lead to greater understanding and enjoyment of fish, wildlife and their habitats. Under Alternative A, the refuge would work toward achieving several objectives in pursuit of the public use goal.

The refuge's hunting program would continue to be carried out in accordance with National Wildlife Refuge System (NWRS) policy and state and federal laws, including seasons for deer, waterfowl, squirrels, rabbits, and mourning doves. Incidental management and enforcement of fishing regulations on the refuge would occur. Eufaula would maintain existing wildlife observation facilities for visitors, including two observation platforms, the Wildlife Drive, and the interpretive trail. Current staff would also continue to provide the existing environmental education program on and off the refuge, without a public use specialist, and with limited interpretation provided at the headquarters and on the interpretive trail.

Goal D concerns refuge administration. It calls for Eufaula NWR to provide for sufficient staffing, facilities and infrastructure to fulfill the refuge's purpose and the goals and objectives of its Comprehensive Conservation Plan. Under Alternative A, the refuge would maintain its current staff of six, including the Refuge Manager, Assistant Refuge Manager, Biologist, Office Assistant, and two equipment operators.

There would continue to be limited management of cultural resources based on known locations of identified cultural, historical, and archeological resources. The refuge would follow standard procedures to protect cultural resources whenever projects involving excavation are undertaken. Refuge staff would cooperate with the Corps of Engineers and both states on the management of invasive species, and with the Corps and Alabama/Georgia authorities on overall refuge management.

Under Alternative A, the Eufaula Refuge would continue to plan but not build a new visitor center. Visitor contact would take place at the new refuge office/headquarters.

ALTERNATIVE B: ENHANCED WILDLIFE AND HABITAT MANAGEMENT

Alternative B aims to intensify and expand wildlife and habitat management at the Eufaula Refuge, thereby increasing benefits for wildlife species and thus, fulfilling the refuge's purposes and goals. Public use opportunities, and the refuge's efforts to provide these, would remain approximately the same as they are now. This alternative would pursue the same four broad refuge goals as each of the other alternatives.

Goal A concerns wildlife. It calls for Eufaula NWR to conserve, protect and enhance native wildlife populations representative of the middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species. Under Alternative B, the refuge would work toward achieving a number of objectives in pursuit of the wildlife goal.

Eufaula would provide a complex of habitats, both moist soil and grain crops, to meet the foraging needs of 25,000 wintering ducks. This would assist the North American Waterfowl Management Plan. The refuge would also provide adequate open space (upland crop fields) for winter utilization and feeding of at least 500 geese and cranes. In addition, staff and/or volunteers would maintain 200 wood duck boxes on the refuge.

Under Alternative B, Eufaula would provide forest habitat conditions conducive to supporting both priority pine and hardwood associated bird species by 2010. The refuge would provide high quality grassland habitat to support grassland bird species on as many acres as possible, while achieving priority waterfowl objectives, by 2008. In addition, by 2010, it would promote tall emergent vegetation sufficient to support a population of 10–40 king rails and to benefit other species of marsh birds.

For the benefit of wading birds, by 2010, the refuge would provide for both secure nesting sites and ample foraging habitat. Also by 2010, Eufaula would furnish at least two areas of up to 20 acres each for shorebirds, during both northbound and southbound movements. The refuge would provide protective conservation measures for federally or state listed species and habitats for future ecological existence.

Refuge staff would expand their capability and effort to implement sound scientific principles to better manage healthy populations of resident wildlife species. They would control domestic, feral, or pest animals, especially feral hogs, removing an average of 100-plus hogs annually, or as needed.

Goal B concerns habitat. It calls for Eufaula NWR to provide suitable habitats for native wildlife populations representative of the middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species. Under Alternative B, the refuge would work toward achieving several objectives to fulfill this habitat goal.

Eufaula would gradually reduce cooperative farmer cropland acreage to 300 acres (from 500 acres at present) over the 15-year life of the CCP. Additionally, the refuge itself would cultivate crops on 100 acres to provide food, cover, and sanctuary areas for wildlife and other species.

The refuge would employ silvicultural treatments to improve 2,800 acres of refuge forestland to provide benefits to forest-dependent wildlife. It would also use fire as a management tool on approximately 800–1,000 acres annually in suitable habitats for species and habitat conservation. Management of moist soil wetlands (approximately 1,200 acres) would be intensified, with emphasis on waterfowl and other aquatic birds foraging and life-history requirements.

Eufaula NWR would aggressively control aquatic invasive plant species at approximately 25 shoreline miles (or as needed) and 1,250 acres annually. It would also conduct preventive and maintenance control of upland invasive plant species.

Goal C concerns public use. It calls for Eufaula NWR to provide the public with quality wildlife-dependent recreation, environmental education and interpretation that lead to greater understanding and enjoyment of fish, wildlife and their habitats. Under Alternative B, the refuge would work toward achieving several objectives in pursuit of the public use goal. Because Alternative B emphasizes expanded habitat and wildlife management, on public use matters Alternative B is very similar to Alternative A.

The refuge's hunting program would continue to be carried out in accordance with NWRS policy and state and federal laws, including seasons for deer, waterfowl, squirrels, rabbits, and mourning doves. By 2010, refuge staff would document the impact of sport fishing and fishing tournaments on sensitive wildlife and habitat resources on the refuge to serve as a basis for discussions with the Army Corps of Engineers and Alabama and Georgia authorities on the possibility of establishing no-wake zones in sensitive areas. Eufaula would maintain existing wildlife observation facilities for visitors, including two observation platforms, the Wildlife Drive, and the interpretive trail. Current staff would also continue to provide the existing environmental education program on and off-refuge, without a public use specialist, and limited interpretation at the headquarters and on the interpretive trail.

Goal D concerns refuge administration. It calls for Eufaula NWR to provide for sufficient staffing, facilities and infrastructure to fulfill the refuge's purpose and the goals and objectives of its Comprehensive Conservation Plan. Under Alternative B, the refuge would enlarge its current staff of six by adding three full-time equivalent (FTE) positions: a Biological Science Technician, a Maintenance position, and a Law Enforcement Officer. The total staff would then be nine.

Within 15 years of CCP approval, Eufaula NWR would develop and begin to implement a Cultural Resources Management Plan (CRMP). In the meantime, there would continue to be limited management of cultural resources based on known locations of identified cultural, historical, and archeological resources. The refuge would follow standard procedures to protect cultural resources whenever projects involving excavation are undertaken.

Refuge staff would increase cooperation with the Corps and both states on invasives management, and with Alabama and Georgia authorities on overall refuge management, including restoration of longleaf pine forest. Eufaula would work to establish a refuge Friends group (support group) by 2022.

Under Alternative B, the Eufaula Refuge would continue to plan but not build a new visitor center. Visitor contact would take place at the new refuge office/headquarters.

ALTERNATIVE C: ENHANCED WILDLIFE-DEPENDENT PUBLIC USE

Alternative C would emphasize enhanced wildlife-dependent public use at Eufaula National Wildlife Refuge. Additional efforts and expenditures would be made to expand the public use program, visitor facilities, and the overall level of wildlife-dependent recreational opportunities available to the public. Special emphasis would be accorded to promoting the "Big Six" public uses identified in the National Wildlife Refuge System Improvement Act of 1997: hunting, fishing, wildlife observation and photography, environmental education, and interpretation. Alternative C would pursue the same four broad refuge goals as each of the other alternatives.

Goal A concerns wildlife. It calls for Eufaula NWR to conserve, protect and enhance native wildlife populations representative of the middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species. Under Alternative C, the refuge would work toward achieving a number of objectives in pursuit of the wildlife goal.

Eufaula would provide a complex of habitats, both moist soil and grain crops, to meet the foraging needs of 25,000 wintering ducks. This would assist the North American Waterfowl Management Plan. The refuge would also provide adequate open space (upland crop fields) for winter utilization and feeding of at least 500 geese and cranes. In addition, staff and/or volunteers would maintain 200 wood duck boxes on the refuge.

Under Alternative C, Eufaula would provide forest habitat conditions conducive to supporting both priority pine and hardwood associated bird species by 2010. The refuge would provide high quality grassland habitat to support grassland bird species on as many acres as possible, while achieving priority waterfowl objectives, by 2008. In addition, by 2010, it would promote tall emergent vegetation sufficient to support a population of 10–40 king rails and to benefit other species of marsh birds.

For the benefit of wading birds, by 2010, the refuge would provide for both secure nesting sites and ample foraging habitat. Also by 2010, Eufaula would furnish at least two areas of up to 20 acres each for shorebirds, during both northbound and southbound movements. The refuge would provide protective conservation measures for federally or state listed species and habitats for future ecological existence.

Refuge staff would expand their capability and effort to implement sound scientific principles to better manage healthy populations of resident wildlife species. They would control domestic, feral, or pest animals, especially feral hogs, removing an average of 100-plus hogs annually, or as needed, by considering implementation of a feral hog season on the refuge.

Goal B concerns habitat. It calls for Eufaula NWR to provide suitable habitats for native wildlife populations representative of the middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species. Under Alternative C, the refuge would work toward achieving several objectives in pursuit of the habitat goal.

Eufaula would gradually reduce cooperative farmer cropland acreage to 300 acres (from 500 acres at present) over the 15-year life of the CCP. Additionally, the refuge itself would cultivate crops on 100 acres to provide food, cover, and sanctuary areas for wildlife and other species.

The refuge would manage approximately 2,600 acres of the refuge that is forestland to provide benefits to forest-dependent wildlife. It would also use fire as a management tool on approximately 300 acres annually in suitable habitats for species and habitat conservation. Management of moist soil wetlands (approximately 1,200 acres) would be intensified, with emphasis on waterfowl and other aquatic birds foraging and life-history requirements.

Eufaula NWR would aggressively control aquatic invasive plant species at approximately 25 shoreline miles (or as needed) and 1,250 acres annually. It would also conduct preventive and maintenance control of upland invasive plant species.

Goal C concerns public use. It calls for Eufaula NWR to provide the public with quality wildlife-dependent recreation, environmental education and interpretation that lead to greater understanding and enjoyment of fish, wildlife and their habitats. Under Alternative C, staff would work toward expanding overall public use opportunities available on the refuge.

In addition to maintaining all existing hunts and seasons, Eufaula would consider adding a youth wild turkey quota hunt and an alligator hunt on open water areas of the refuge by 2012. Boat launch facilities and bank fishing opportunities on the refuge would be expanded by 2010. All existing wildlife observation and photography facilities would be maintained, and within 10 years of CCP approval, Eufaula would: (1) designate a one-way loop in the Houston Bottoms and add additional pull-offs to the existing Wildlife Drive; (2) improve the existing interpretive trail and add foot trails between Lakepoint State Park and the refuge; and (3) add one photo blind in the Houston Impoundment or Goose Pen Impoundment.

In terms of environmental education and interpretation, the refuge would maintain its existing opportunities and facilities, and by 2022, establish a new visitor center on the peninsula near the Kennedy Unit.

Goal D concerns refuge administration. It calls for Eufaula NWR to provide for sufficient staffing, facilities and infrastructure to fulfill the refuge's purpose and the goals and objectives of its Comprehensive Conservation Plan. Under Alternative C, the refuge would enlarge its current staff of six by adding four FTE positions: a Biological Science Technician, a Maintenance position, a non-law enforcement Park Ranger, and a Law Enforcement Officer. The total staff would then be ten.

There would continue to be limited management of Eufaula's cultural resources based on known locations of identified cultural, historical, and archeological resources. The refuge would follow standard procedures to protect cultural resources whenever projects involving excavation are undertaken. Refuge staff would cooperate with the Corps of Engineers and both states on management of invasive species, and with the Corps and Alabama and Georgia authorities on overall refuge management.

Under Alternative C, by 2022 or within 15 years of CCP approval, Eufaula National Wildlife Refuge would construct and begin to operate a visitor center east of U.S. 431 adjacent to the Kennedy Unit. This center would serve as a focal point of public use opportunities on the refuge.

ALTERNATIVE D: BALANCED WILDLIFE/HABITAT MANAGEMENT AND PUBLIC USE ACTIVITIES (PROPOSED ALTERNATIVE)

Under Alternative D, the proposed action alternative, Eufaula National Wildlife Refuge would expand both wildlife and habitat management efforts as well as public use opportunities in a balanced fashion. In so doing, Alternative D would seek to fulfill the same four broad refuge goals as each of the other alternatives.

Goal A concerns wildlife. It calls for Eufaula NWR to conserve, protect and enhance native wildlife populations representative of the middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species. Under Alternative D, the refuge would work toward achieving a number of objectives in pursuit of the wildlife goal.

Eufaula would provide a complex of habitats, both moist soil and grain crops, to meet the foraging needs of 25,000 wintering ducks. This would assist the North American Waterfowl Management Plan. The refuge would also provide adequate open space (upland crop fields) for winter utilization and feeding of at least 500 geese and cranes. In addition, staff and/or volunteers would maintain 200 wood duck boxes on the refuge.

Under Alternative D, Eufaula would provide forest habitat conditions conducive to supporting both priority pine and hardwood associated bird species by 2010. The refuge would provide high quality grassland habitat to support grassland bird species on 220 to 300 acres, while achieving priority waterfowl objectives, by 2008. This would include planting native warm season grass species on old farm fields. In addition, by 2010, it would promote tall emergent vegetation sufficient to support a population of 10-20 king rails and to benefit other species of marsh birds.

For the benefit of wading birds, by 2010, the refuge would provide for both secure nesting sites and ample foraging habitat. Also by 2010, Eufaula would furnish at least two areas of up to 20 acres each for shorebirds, during both northbound and southbound movements. In addition, the refuge would provide protective conservation measures for federally or state listed species and habitats for future ecological existence.

Refuge staff would expand their capability and effort to implement sound scientific principles to better manage healthy populations of resident wildlife species. Staff would also control domestic, feral, or pest animals, especially feral hogs, removing an average of 100-plus hogs annually, or as needed.

Goal B concerns habitat. It calls for Eufaula NWR to provide suitable habitats for native wildlife populations representative of the middle Chattahoochee River Valley, including waterfowl, other migratory birds, and threatened and endangered species. Under Alternative D, the refuge would work toward achieving several objectives to fulfill this habitat goal.

Eufaula would gradually reduce cooperative farmer cropland acreage to 300 acres (from 500 acres at present) over the 15-year life of the CCP. Additionally, the refuge itself would cultivate crops on 100 to 300 acres to provide food, cover, and sanctuary areas for wildlife and other species. This would provide adequate habitat for wintering waterfowl and provide quality dove hunting opportunities.

The refuge would employ silvicultural treatments to improve 2,800 acres of refuge forestland to provide benefits to forest-dependent wildlife. It would also use fire as a management tool on approximately 800–1,000 acres annually in suitable habitats for species and habitat conservation. Management of moist soil wetlands (approximately 1,200 acres) would be intensified, with emphasis on waterfowl and other aquatic birds foraging and life-history requirements.

Under Alternative D, Eufaula NWR would aggressively control aquatic invasive plant species on approximately 25 shoreline miles (or as needed) and 1,250 acres annually. It would also conduct preventive and maintenance control of upland invasive plant species.

Goal C concerns public use. It calls for Eufaula NWR to provide the public with quality wildlife-dependent recreation, environmental education and interpretation that lead to greater understanding and enjoyment of fish, wildlife and their habitats. Under Alternative D, the refuge would work toward expanding overall public use opportunities available on the refuge.

In addition to maintaining all existing hunts and seasons, Eufaula would consider adding a youth wild turkey quota hunt by 2015. Boat launch facilities and bank fishing opportunities on the refuge would

be expanded by 2015. Also by 2015, Eufaula would document the impact of sport fishing and fishing tournaments on sensitive wildlife and habitat resources on the refuge to serve as basis for discussions with the Army Corps of Engineers and Alabama and Georgia authorities on the possibility of establishing no-wake zones in sensitive areas.

All existing wildlife observation and photography facilities would be maintained, and within 10 years of CCP approval, Eufaula would: (1) designate a one-way loop in the Houston Bottoms and add additional pull-offs to the existing Wildlife Drive; (2) improve the existing interpretive trail and add foot trails between Lakepoint State Park and the refuge; (3) add one photo blind in the Houston Impoundment or Goose Pen Impoundment; and (4) construct an observation platform adjacent to the Hour Glass Impoundment on the Wildlife Drive and assess the need for an additional viewing platform in the Houston Bottoms area.

In terms of environmental education and interpretation, the Eufaula Refuge would maintain its existing opportunities and facilities, and by 2022, establish a new visitor center.

Goal D concerns refuge administration. It calls for Eufaula NWR to provide for sufficient staffing, facilities and infrastructure to fulfill the refuge's purpose and the goals and objectives of its Comprehensive Conservation Plan. Under Alternative D, the refuge would enlarge its current staff of six by adding five FTE positions: a Biological Science Technician, a Maintenance position, two non-law enforcement Park Rangers, and a Law Enforcement Officer. The total staffing level would then be eleven.

Within 15 years of CCP approval, Eufaula NWR would develop and begin to implement a Cultural Resources Management Plan (CRMP). In the meantime, there would continue to be limited management of cultural resources based on known locations of identified cultural, historical, and archeological resources. The refuge would follow standard procedures to protect cultural resources whenever projects involving excavation are undertaken.

Refuge staff would increase cooperation with the Corps and both states on invasives management, and with Alabama and Georgia authorities on overall refuge management, including restoration of longleaf pine forest. Eufaula would work to establish a refuge Friends group (support group) by 2022.

Under Alternative D, by 2022 or within 15 years of CCP approval, Eufaula National Wildlife Refuge would construct and begin to operate a visitor center east of U.S. 431 adjacent to the Kennedy Unit. This center would serve as a focal point of public use opportunities on the refuge.

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.

- Migratory birds – Each of the alternatives would manage for migratory birds, including wintering ducks, wintering geese and cranes, breeding waterfowl (primarily wood ducks), forest birds, neotropical migrants, shorebirds, and grassland birds.

- Marsh birds and wading birds – Each alternative would provide foraging habitat for marsh birds such as the king rail and wading birds (herons and egrets); rookeries would also be protected.

- Threatened and endangered species – Each alternative would provide protective conservation measures for federally or state listed species and habitats to ensure their continued existence.

- Resident wildlife – Each alternative would utilize sound scientific principles to manage healthy populations of resident wildlife species such as deer, turkey, and quail.

- Non-native species control – Each alternative would provide for some level of non-native species control, particularly of feral hogs.

- Farming – Each alternative would maintain some level of farming on the refuge.

- Forest and fire management – Each alternative would attempt to enhance forests on the refuge to improve their habitat value to wildlife and each would utilize wildland and prescribed fire as an important habitat management tool.

- Moil soil management – Each alternative includes management of moist soil wetlands to help waterfowl and other aquatic birds meet their foraging and life-history requirements.

- Non-native and invasive plant control – Each alternative includes efforts to control both aquatic and upland invasive species.

- Public use opportunities – Each alternative includes the “Big Six” public uses, namely hunting, fishing, wildlife observation and photography, environmental education and interpretation.

COMPARISON OF ALTERNATIVES

Table 10 compares each of the four alternatives by management issues for Eufaula National Wildlife Refuge.

Table 10. Comparison of alternatives by management issues for Eufaula National Wildlife Refuge.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Wintering Waterfowl Management	Provide a complex of habitats, both moist soil and grain crops, to meet the foraging needs of 15,000 wintering ducks.	Provide a complex of habitats, both moist soil and grain crops, to meet the foraging needs of 25,000 wintering ducks.	Same as Alternative B.	Same as Alternative B.
Geese/Cranes	Provide adequate open space (upland crop fields) for winter utilization and feeding of at least 350 geese/cranes	Provide adequate open space (upland crop fields) for winter utilization and feeding of at least 500 geese/cranes	Same as Alternative B.	Same as Alternative B.
Wood Ducks	Maintain 100 wood duck boxes on the refuge.	Maintain 200 wood duck boxes on the refuge.	Same as Alternative B.	Same as Alternative B.
Forest Birds	Continue forest management at current levels.	Provide forest habitat conditions conducive to supporting both priority pine and hardwood associated bird species by 2010.	Same as Alternative B.	Same as Alternative B.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Grassland Birds	Maintain 175 acres of grassland habitat on the refuge for the benefit of grassland birds.	Provide high quality grassland habitat to support grassland bird species on 220 to 300 acres while achieving priority waterfowl objectives, by 2008. This includes planting native warm season grass species on old farm fields.	Same as Alternative B.	Same as Alternative B.
Marsh Birds	Maintain tall emergent vegetation sufficient to support a population of 10 king rails and to benefit other species of marsh birds.	By 2010, promote tall emergent vegetation sufficient to support a population of 10-40 king rails and to benefit other species of marsh birds.	Same as Alternative B.	By 2010, promote tall emergent vegetation sufficient to support a population of 10-20 king rails and to benefit other species of marsh birds.
Wading Birds	Protection of known rookeries but no active management of foraging habitat.	By 2010, provide for both secure nesting sites and ample foraging habitat.	Same as Alternative B.	Same as Alternative B.
Shorebirds	No active management for shorebirds.	By 2010, provide for at least two areas of up to 20 acres each for shorebirds, during both northbound and southbound movements.	Same as Alternative B.	Same as Alternative B.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Threatened and Endangered Species	Provide protective conservation measures for federally or state listed species and habitats for future ecological existence.	Same as Alternative A.	Same as Alternative A.	Same as Alternative A.
Resident Wildlife	Employ sound scientific principles to manage healthy populations of resident wildlife species.	Expand capability and effort to implement sound scientific principles to better manage healthy populations of resident wildlife species.	Same as Alternative B.	Same as Alternative B.
Pest and Non-Native Species Control	Control domestic, feral, or pest animals, especially feral hogs, removing an average of 65 hogs annually.	Control domestic, feral, or pest animals, especially feral hogs, removing 100-plus hogs annually, or as needed.	Control domestic, feral, or pest animals, especially feral hogs, removing 100-plus hogs annually, or as needed, by considering implementation of a feral hog season on the refuge .	Same as Alternative B.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Farming	Utilize farming on 500 acres to provide food, cover, and sanctuary areas for wildlife and other species.	Gradually reduce cropland acreage to 300 acres over 15-year life of the CCP. Cultivate crops on 100 acres (refuge maintained) to provide food, cover, and sanctuary areas for wildlife and other species.	Gradually reduce cropland acreage to 300 acres over 15-year life of the CCP. Cultivate crops on 100 to 300 acres (refuge maintained) to provide food, cover, and sanctuary areas for wildlife and other species. This will provide adequate habitat for wintering waterfowl and provide quality dove hunting opportunities.	Same as Alternative C.
Forest Management	Manage approximately 2,600 acres of the refuge that is forestland to provide benefits to forest-dependent wildlife.	Use silvicultural treatments to improve 2,800 acres of refuge forestland to provide benefits to forest-dependent wildlife.	Same as Alternative A.	Same as Alternative B.
Fire Management	Use fire as a management tool on approximately 300 acres annually in suitable habitats for species and habitat conservation.	Use fire as a management tool on approximately 800-1,000 acres annually in suitable habitats for species and habitat conservation.	Same as Alternative A.	Same as Alternative B.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Moist Soil Management	Continue management of moist soil wetlands (approximately 1,175 acres) with emphasis on waterfowl and other aquatic birds foraging and life-history requirements.	Intensify management of moist soil wetlands (approximately 1,200 acres) with emphasis on waterfowl and other aquatic birds foraging and life-history requirements.	Same as Alternative B.	Same as Alternative B.
Non-Native and Invasive Plant Control	Continue to control invasive plant species at current levels of approximately 25 shoreline miles and 750 acres annually (aquatic plants) and preventive and maintenance control of upland invasive species (500 acres annually in croplands).	Aggressively control aquatic invasive plant species at approximately 25 shoreline miles (or as needed) and 1,250 acres annually and preventive and maintenance control of upland invasive species.	Same as Alternative B.	Same as Alternative B.
Hunting	Conduct refuge hunting program in accordance with NWRS policy and state and federal laws, including seasons for deer, waterfowl, squirrels, rabbits, and mourning doves.	Same as Alternative A.	In addition to maintaining all existing hunts and seasons, consider adding a youth wild turkey quota hunt and possibly an alligator hunt on open water areas of the refuge by 2015.	In addition to maintaining all existing hunts and seasons, consider adding a youth wild turkey quota hunt by 2015.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Fishing	Incidental management and enforcement of fishing regulations on the refuge.	By 2015, document impact of sport fishing and fishing tournaments on sensitive wildlife and habitat resources on the refuge to serve as basis for discussions with ACE and AL and GA authorities on possibility of establishing no-wake zones in sensitive areas.	Enhance boat launch facilities and bank fishing opportunities on the refuge by 2015.	Combination of Alternatives B and C.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Wildlife Observation and Photography	Maintain existing facilities, including two observation platforms, Wildlife Drive, and interpretive trail.	Same as Alternative A.	Maintain all existing facilities and within 10 years of CCP approval, 1) designate one-way loop in the Houston Bottoms, and add additional pull-offs to existing Wildlife Drive; 2) improve existing interpretive trail and add foot trails between Lakepoint State Park and refuge; 3) add one photo blind in Houston Impoundment or Goose Pen Impoundment; and 4) construct an observation platform adjacent to the Hour Glass Impoundment on the Wildlife Drive and assess the need for an additional viewing platform in the Houston Bottoms area.	Same as Alternative C.
Environmental Education and Interpretation	EE program on and off-refuge provided by current staff, without public use specialist, and limited interpretation at HQ and on interpretive trail.	Same as Alternative A.	Maintain existing opportunities and facilities, and by 2022, establish new visitor center on the refuge.	Same as Alternative C.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Refuge Staffing	Maintain current staff of six, including Refuge Manager, Assistant Refuge Manager, Biologist, Office Assistant, and two equipment operators. Total Staff = 6	Add Biological Science Technician, Maintenance Position, and Law Enforcement Officer; 3 FTE's added. Total Staff = 9	Add Biological Science Technician, Maintenance Position, Supervisory Park Ranger non-LE, Park Ranger non-LE and Law Enforcement Officer; 5 FTE's added. Total Staff = 11	Same as Alternative C. Total Staff = 11
Cultural Resources	Limited management based on known locations of resources.	Within 15 years of CCP approval, develop and begin to implement a Cultural Resources Management Plan (CRMP).	Same as Alternative A.	Same as Alternative B.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Partnerships	Cooperate with Corps and state on invasive species management, and with Corps and AL/GA authorities on overall refuge management.	Increase cooperation with Corps and state agencies on invasive species management, and with AL/GA authorities on overall refuge management, including restoration of longleaf pine forest. Increase partnership opportunities with non profit organizations like DU and the NWTF.	Increase cooperation with Corps and state agencies on invasive species management, and with AL/GA authorities on overall refuge management, including restoration of longleaf pine forest. Increase partnership opportunities with non-profit organizations like DU and the NWTF. Work to establish a refuge Friends group (support group) by 2022.	Same as Alternative B.
Visitor Center	Refuge continues to plan but not build visitor center.	Same as Alternative A.	By 2022, or within 15 years of CCP approval, construct and begin to operate a visitor center. This would include adequate staff to operate and maintain the facility.	Same as Alternative C.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

The alternatives development process under NEPA and the Refuge System Improvement Act is designed to allow consideration of the widest possible range of issues and potential management approaches. During the alternatives development process, many different solutions were considered. The following alternative components were considered but not selected for detailed study in this Draft CCP/EA for the reason(s) described.

PRE-SETTLEMENT CONDITIONS

This alternative is often used as a baseline in the development of CCP alternatives. Pre-settlement conditions typically refer to extant habitat conditions that existed prior to significant Euro-American settlement of North America over the last several centuries. In the case of Eufaula NWR, most upland sites would be covered by hardwood forests, pine forests, and mixed forests. There would be no cropland or grassy fields. The Walter F. George Reservoir would not exist and the Chattahoochee River would flow unimpeded through the refuge, bordered on both sides by bottomland hardwood forests.

This alternative was considered by the planning team but rejected on the basis of its impracticability. In particular, removal of the Corps of Engineer's Walter F. George Reservoir (Lake Eufaula) is unfeasible politically because of its significant adverse effects on navigation, recreation, and flood control. In addition, the potential environmental impacts of such an action would be significant enough as to require a full-blown Environmental Impact Statement and supporting technical analyses.

CUSTODIAL MANAGEMENT OF UPLAND AND WETLAND HABITAT

Under this alternative scenario, the refuge staff would cease all management of both upland and wetland habitat at Eufaula NWR. Staff would allow natural succession to proceed unhindered on upland sites and not control invasive emergent vegetation on Lake Eufaula. Fire management would be limited to fire suppression rather than use of prescribed fire to manipulate habitats and set back succession. No upland invasive plant species control would be carried out and no forest thinning would take place. Moist soil units would cease to be actively managed. The refuge staff would focus their efforts on research and data collection related to successional trends and on management of public visitation to Eufaula.

This alternative was considered and abandoned from detailed consideration because of the unsatisfactory outcomes it would lead to in all probability for both wildlife and habitat. In particular, if the refuge were to implement this alternative, it would be ignoring its purposes and goals, such as providing for the needs of wintering migratory waterfowl. Permitting the uncontrolled proliferation of invasive aquatic species would not only reduce the habitat value, but also the recreational value (fishing) of Lake Eufaula. Furthermore, the refuge's partnering agencies—including the Corps of Engineers, Alabama Division of Wildlife and Freshwater Fisheries, Alabama Department of Conservation and Natural Resources, Georgia Wildlife Resources Division, and Georgia State Parks and Historic Sites—would never agree to what they would see as an abdication of their management responsibilities.

CONTROL OF LAKE EUFAULA WATER LEVELS

Under this alternative, Eufaula National Wildlife Refuge would manage the water levels in Lake Eufaula for the benefit of nesting and wintering bird populations in the refuge. The current management of those water levels by the Army Corps of Engineers is sub-optimal for wildlife.

This alternative was considered but dismissed because the Corps has the legal right and obligation to manipulate reservoir water levels to meet a variety of competing and sometimes conflicting needs, of which wildlife is but one. The Corps would not and could not relinquish this responsibility to the Service.

SUBSTANTIAL EXPANSION OF RECREATIONAL OPPORTUNITIES

Under this alternative, Eufaula NWR would undertake a large increase of recreational opportunities on the refuge, including the development of more trails, boat ramps, docks, wildlife observation decks and platforms, an expanded Wildlife Drive, canoe trails, increased hunting opportunities, and camping.

This alternative was considered but rejected because for several reasons, including staffing and budgetary constraints, conflicts between excessive recreational presence/visitation and sanctuary/rest for wildlife, as well as the fact that ample recreational opportunities are available in the non-refuge portions of Lake Eufaula and at Lakepoint State Park.

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 four 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, other 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 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 would 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 potential climate change impacts as part of 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.

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 Eufaula National Wildlife Refuge would come from the Land and Water Conservation Fund; the Migratory Bird Conservation Fund; Corps of Engineers mitigation programs; 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's approved 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.

Eufaula NWR does not have an approved refuge boundary expansion program. Expanding the refuge or purchasing new land is not a priority at this time. Acquisition is not contemplated under any of the four alternatives assessed in this environmental assessment.

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 logging, construction of new trails or facilities such as the proposed visitor center, and development or major maintenance of water impoundments. In most cases, these management actions would require review by the Service's Regional Archaeologist in consultation with the Alabama and Georgia Historic Preservation Offices, 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

The majority of the refuge is Corps of Engineers overlay, but revenue-sharing payments are made to the counties where the refuge holds fee title lands. Annual refuge revenue-sharing payments to Barbour County, Alabama; Colquitt County, Georgia; Taliaferro County, Georgia; and Miller County, Georgia, 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; air quality; noise; transportation; human health and safety; children; environmental justice (minority and low-income populations); hazardous materials; waste management; aesthetics and visual resources; and utilities and public services.

SUMMARY OF EFFECTS BY ALTERNATIVE

The following sections describe the environmental consequences of adopting each of the four refuge management alternatives.

ALTERNATIVE A: CURRENT MANAGEMENT (NO ACTION)

Alternative A would maintain current management direction, that is, the refuge's habitats, wildlife populations, and public use would continue to be managed as they have in recent years. As a result, waterfowl populations would not be expected to change substantially, and this would partially contribute to the habitat and population objectives of the North American Waterfowl Management Plan (NAWMP). The number of geese and cranes is likely to remain the same. Numbers of nesting wood ducks on the refuge are also likely to remain the same as at present; wood duck production in artificial nest boxes and overall would is expected to stay constant.

In general, populations of other migratory birds are not expected to increase or decrease under Alternative A. Forest bird numbers would tend to be unchanged, as would grassland birds, marsh birds, wading birds, and shorebirds. Those neotropical migrants which breed on the refuge now, many of which are forest birds such as warblers, would be expected to remain as abundant as they are at present, unless other factors beyond the control of the refuge, such as the quality and quantity of their wintering habitat in the Caribbean, Central and South America, were to change.

Bald eagles and the federally listed wood stork are occasional visitors at the Eufaula Refuge. Neither currently nests at the refuge. They are likely to remain occasional visitors, although with bald eagles increasing nationally and regionally and currently nesting within several miles of the refuge, there is a chance that one or more nests of this raptor will become established over the 15-year life of the CCP.

Populations of resident wildlife species, including mammals, reptiles, and amphibians, are expected to remain healthy and unchanged under Alternative A. Numbers of game species would not change appreciably. Removing an average of 65 hogs annually would likely control but not eliminate this invasive species from the refuge, limiting its spread, habitat damage and competition with native fauna. There would be no mosquito control to reduce the numbers of this noxious and potentially dangerous vector.

Under Alternative A, the comparative areas of habitat would remain largely unchanged from what they are at present. The area of cropland would remain at 500 acres, all of which would be force-account farmed. While artificial "habitat," this acreage would benefit a number of wildlife species by providing food and forage. The refuge would manage the current 2,600 acres of forest on the refuge as forestland to provide benefits to forest-dependent wildlife, both native and migratory. Use of prescribed fire on approximately 300 acres annually in suitable habitats for species and habitat conservation would furnish both habitat and wildlife benefits. Eufaula would also keep 1,175 acres of moist soil wetlands, which would provide foraging for waterfowl and other aquatic birds.

Proposed control efforts (25 shoreline miles and 750 acres annually) of aquatic plants and preventive and maintenance control of upland invasive species (500 acres annually in croplands) would help keep invasive species in check, but would not eliminate the problem.

Each of the refuge's public use activities would be supported at the same level of visitor services as at present. Existing hunting opportunities for deer, waterfowl, squirrels, rabbits, and mourning doves satisfies much but not all of the hunting demand. Fishing opportunities on the refuge would continue to be available at current levels.

The refuge's existing wildlife observation and photography facilities and opportunities would be maintained under Alternative A. Current environmental education and interpretive programs on and off the refuge are limited, and these would continue at the same limited level under this alternative.

Cultural resources at the Eufaula Refuge would continue to be preserved but management would be limited. There would be no Cultural Resources Management Plan, and no additional efforts (e.g., surveys) at discovery of archeological sites, data recovery, or interpretation, except as necessary. In the case of construction projects involving excavation, a cultural resources survey would be conducted to comply with the National Historic Preservation Act and Service cultural resource protection procedures, as described earlier in this CCP.

Implementing Alternative A would entail continued substantial economic and social benefits to local communities in Alabama and Georgia. Economic benefits flow from the use of the refuge, the nearby state park, and Lake Eufaula by recreational anglers, boaters, hunters, wildlife watchers, and other outdoor recreationists. Expenditures of these visitors, from both local and distant communities, on purchases ranging from equipment and supplies to food and lodging, inject money into the local economy, supporting local businesses, jobs, and sales tax revenues.

ALTERNATIVE B: ENHANCED WILDLIFE AND HABITAT MANAGEMENT

Alternative B aims to intensify and expand wildlife and habitat management at the Eufaula Refuge, thereby increasing benefits for wildlife species and thus, fulfilling the refuge's purposes and goals. Public use opportunities, and the refuge's efforts to provide these, would remain approximately the same as they are now.

Under Alternative B, waterfowl populations would likely increase in response to the proposed increases in habitat quality that would occur with this alternative. Alternative B would contribute more to the NAWMP's habitat and population objectives for wintering waterfowl than the No Action alternative (A). Geese and crane numbers are likely to increase somewhat. Given the proposed increase in maintained nest boxes, the numbers of nesting wood ducks are likely to increase. There would be an expected increase in wood duck production as well.

In general, populations of other migratory birds are expected to increase modestly from current levels under Alternative B. Priority pine- and hardwood-associated bird species are likely to increase somewhat with improved and increased habitat that is suitable for these species. The population of grassland birds would also tend to increase somewhat. Promotion of tall emergent vegetation is likely to increase the population of king rails and benefit other marsh birds. The modest increase in nesting sites and foraging habitat likely to occur would probably increase wading bird numbers somewhat. Providing at least two areas of up to 20 acres each for shorebirds is likely to increase their numbers during both northbound and southbound migrations.

With regard to management of threatened and endangered species, Alternative B would be essentially the same as Alternative A. The occurrence of bald eagles and the federally listed wood stork on the refuge is likely to remain occasional. With the overall increase in bald eagle numbers, it is possible that these raptors may nest on the refuge during the 15-year life of the CCP.

Modest increases in resident wildlife populations are anticipated. Intensified control of feral hogs is likely to reduce but not eliminate their population on the refuge. There would be no mosquito control, and the abundant seasonal numbers of this nuisance insect would probably not change.

Alternative B would gradually reduce cropland acreage to 200 acres over the 15-year life of the CCP. This remaining acreage would provide food, cover, and sanctuary areas for wildlife and other species. However, the conversion or restoration of about 200 acres of cropland to more natural habitats would be considered beneficial.

Reforestation of 200 acres would take place under Alternative B, increasing the total forested area to 2,800 acres from 2,600 acres at present. Refuge forests would be treated silviculturally to provide benefits to forest-dependent wildlife. The use of prescribed fire would be stepped up; it would be applied to approximately 800–1,000 acres annually in suitable habitats for species and habitat conservation. Prescribed fire would reduce the density of the understory and midstory in Eufaula's forests, achieving a more natural forest composition and structure; more open forests would promote the growth of grasses and forbs beneficial to native wildlife. Alternative B would maintain 1,200 acres of moist soil wetlands, 25 acres more than in Alternative A. This habitat would provide foraging for waterfowl and other aquatic birds.

Proposed control efforts (25 shoreline miles and 1,250 acres annually) of aquatic plants and preventive and maintenance control of upland invasive species (500 acres annually in croplands) would probably keep invasive plants in check but would not eliminate the problem they pose.

Alternative B would provide the same level of visitor service support for each of the public use activities on the refuge as at present. Thus, the impacts of this alternative on public uses would be very similar to those of Alternative A. Existing hunting opportunities for deer, waterfowl, squirrels, rabbits, and mourning doves would continue to satisfy much but not all of the hunting demand. Fishing opportunities on refuge would continue to be available but with access possibly restricted by establishing no-wake zones in sensitive areas. While such restrictions would not affect fishing access per se, by slowing down boat traffic and increasing travel times, they might still be opposed by boaters and fishermen who believe them to be unduly restrictive, unfair, or ineffective at what they purport to achieve.

The refuge's existing wildlife observation and photography facilities and opportunities would be maintained under the Alternative B. Environmental education and interpretive programs on and off the refuge would remain limited.

Preparation and implementation of a Cultural Resources Management Plan under this alternative would promote enhanced preservation of cultural resources on the refuge.

As in the case of Alternative A, implementing Alternative B would continue yielding substantial economic and social benefits to local communities in Alabama and Georgia.

ALTERNATIVE C: ENHANCED WILDLIFE-DEPENDENT PUBLIC USE

Alternative C would emphasize enhanced wildlife-dependent public use at Eufaula National Wildlife Refuge. Additional efforts and expenditures would be made to expand the public use program, visitor facilities, and the overall level of wildlife-dependent recreational opportunities available to the public.

Under Alternative C, as in Alternative B, waterfowl populations would likely increase in response to the proposed increases in habitat quality that would occur with this alternative. Alternative C would contribute more to the NAWMP's habitat and population objectives for wintering waterfowl than the No Action alternative. Geese and crane numbers are likely to increase somewhat. Given the proposed increase in maintained nest boxes, numbers of nesting wood ducks are likely to increase. There would be an expected increase in wood duck production as well.

In general, populations of other migratory birds are expected to increase modestly from current levels under Alternative C. Priority pine- and hardwood-associated bird species are likely to increase somewhat with improved and increased habitat that is suitable for these species. The population of grassland birds would also tend to increase somewhat. Promotion of tall emergent vegetation is likely to increase the population of king rails and benefit other marsh birds. The modest increase in nesting sites and foraging habitat likely to occur would probably increase wading bird numbers somewhat. Providing at least two areas of up to 20 acres each for shorebirds is likely to increase their numbers during both northbound and southbound migrations.

With regard to management of threatened and endangered species, Alternative C would be essentially the same as Alternative A. The occurrence of bald eagles and the federally listed wood stork on the refuge is likely to remain occasional. With the overall increase in bald eagle numbers, it is possible that these raptors may nest on the refuge during the 15-year life of the CCP.

Alternative C is expected to result in modest increases in resident wildlife populations. Implementing a hunting season on feral hogs would likely reduce their numbers more than Alternatives A or B. There would be no mosquito control, and the abundant seasonal numbers of this nuisance insect are expected to continue.

Like Alternative B, Alternative C would gradually reduce cropland acreage to 300 acres over the 15-year life of the CCP. The remaining acreage would provide food, cover, and sanctuary areas for wildlife and other species. However, the conversion or restoration of about 200 acres of cropland to more natural habitats would be considered beneficial.

Under Alternative C, the refuge would continue to manage the current 2,600 acres of forest on the refuge as forestland to provide benefits to forest-dependent wildlife, both native and migratory. Use of prescribed fire on approximately 300 acres annually in suitable habitats for species and habitat conservation would furnish both habitat and wildlife benefits. Eufaula would increase the area of moist soil units by 25 acres to 1,200 acres, which would provide foraging for waterfowl and other aquatic birds.

Proposed control efforts (25 shoreline miles and 1,250 acres annually) of aquatic plants and preventive and maintenance control of upland invasive species (500 acres annually in croplands) would likely keep invasive plants in check but would not eliminate the problem. Control efforts would probably be required in perpetuity.

Alternative C's emphasis on expanding visitor services would have beneficial impacts on the various public uses that occur at the Eufaula Refuge. Adding a youth wild turkey quota hunt and an alligator hunt on open water areas of the refuge would expand existing hunting opportunities. Boat launch facilities and bank fishing opportunities would both be enhanced, leading to greater public benefits.

Wildlife observation and photography facilities and opportunities would be expanded and enhanced, which would be a positive impact. Environmental education and interpretive facilities and programs would also be expanded and enhanced by establishing a new visitor center on the peninsula near the Kennedy Unit.

Cultural resource impacts at the Eufaula Refuge under Alternative C would be comparable to those from Alternative A. Cultural resources would continue to be preserved but management would be limited. There would be no Cultural Resources Management Plan, and no additional efforts (e.g., surveys) at discovery of archeological sites, data recovery, or interpretation, except as necessary. In the case of construction projects involving excavation, a cultural resources survey would be conducted to comply with the National Historic Preservation Act and Service cultural resource protection procedures, as described earlier in this CCP.

Under Alternative C, the already substantial economic and social benefits of Eufaula National Wildlife Refuge are likely to increase, because of the proposed new visitor center and the overall increased visitation that may occur under this alternative. Thus, Alternative C would have beneficial socioeconomic effects on the surrounding communities, especially the nearby town of Eufaula itself.

ALTERNATIVE D: BALANCED WILDLIFE/HABITAT MANAGEMENT AND PUBLIC USE ACTIVITIES (PROPOSED ALTERNATIVE)

Under Alternative D, the proposed action alternative, Eufaula National Wildlife Refuge would expand both wildlife and habitat management efforts as well as public use opportunities in a balanced fashion.

Waterfowl populations would likely increase in response to the proposed increases in habitat quality that would occur with this alternative. Alternative D would contribute more to the NAWMP's habitat and population objectives for wintering waterfowl than the No Action alternative. Geese and crane numbers are likely to increase somewhat. Given the proposed increase in maintained nest boxes, numbers of nesting wood ducks are likely to increase. There would be an expected increase in wood duck production as well.

In general, populations of other migratory birds are expected to increase modestly from current levels under Alternative D. Priority pine- and hardwood-associated bird species are likely to increase somewhat with improved and increased habitat that is suitable for these species. The population of grassland birds would also tend to increase somewhat. Promotion of tall emergent vegetation is likely to increase the population of king rails and benefit other marsh birds. King rail and other marsh bird numbers would probably increase to a level between the levels of Alternative A and Alternative B. The modest increase in nesting sites and foraging habitat likely to occur would probably increase wading bird numbers somewhat. Providing at least two areas of up to 20 acres each for shorebirds is likely to increase their numbers during both northbound and southbound migrations.

With regard to management of threatened and endangered species, Alternative D would be essentially the same as Alternative A and indeed each of the other alternatives. The occurrence of bald eagles and the federally listed wood stork on the refuge is likely to remain occasional. With the overall increase in bald eagle numbers, it is possible that these raptors may nest on the refuge during the 15-year life of the CCP.

Modest increases in resident wildlife populations are anticipated under Alternative D. Intensified control of feral hogs is likely to reduce but not eliminate their population on the refuge. There would be no mosquito control, and the abundant seasonal numbers of this nuisance insect would probably not change.

Like Alternative B, Alternative D would gradually reduce cropland acreage to 300 acres over the 15-year life of the CCP. This remaining acreage would provide food, cover, and sanctuary areas for wildlife and other species. However, the conversion or restoration of about 200 acres of cropland to more natural habitats would be considered beneficial.

Reforestation of 200 acres would take place under Alternative D, increasing the total forested area to 2,800 acres from 2,600 acres at present. Refuge forests would be treated silviculturally to provide benefits to forest-dependent wildlife. The use of prescribed fire would be stepped up; it would be applied to approximately 800–1,000 acres annually in suitable habitats for species and habitat conservation. Prescribed fire would reduce the density of the understory and midstory in Eufaula's forests, achieving a more natural forest composition and structure; more open forests would promote the growth of grasses and forbs beneficial to native wildlife.

Alternative D would maintain 1,200 acres of moist soil wetlands, 25 acres more than in Alternative A. This habitat would provide foraging for waterfowl and other aquatic birds.

Alternative D's proposed control efforts (25 shoreline miles and 1,250 acres annually) of aquatic plants and preventive and maintenance control of upland invasive species (500 acres annually in croplands) would probably keep invasive plants in check but would not eliminate the problem they pose.

Alternative D's emphasis on expanding visitor services is similar to Alternative C's, and would also have beneficial impacts on the various public uses that occur at the Eufaula Refuge. Adding a youth wild turkey quota hunt would expand existing hunting opportunities.

Fishing opportunities on the refuge would continue to be available but with access possibly restricted by establishing no-wake zones in sensitive areas. Boat launch facilities and bank fishing opportunities would be enhanced under Alternative D.

Under Alternative D, as in Alternative C, wildlife observation and photography facilities and opportunities would be expanded and enhanced, which would constitute a positive impact. Environmental education and interpretive facilities and programs would also be expanded and enhanced by establishing a new visitor center under Alternative D. This would be an additional beneficial impact of the alternative.

Cultural resource impacts at the Eufaula Refuge under Alternative D would be comparable to those from Alternative B. Cultural resources would continue to be preserved and management would be increased somewhat. Preparation and implementation of a Cultural Resources Management Plan under this alternative would promote enhanced preservation of the cultural resources on the refuge. This could encourage eventual efforts (e.g., surveys) at discovery of archeological sites, data recovery, and cultural resources interpretation and education. As with each alternative, in the case of construction projects involving excavation, a cultural resources survey would be conducted to comply with the National Historic Preservation Act and Service cultural resource protection procedures, as described earlier in this CCP.

Implementing Alternative D would entail continued substantial economic and social benefits to local communities in Alabama and Georgia. Economic benefits accrue from the use of the refuge, the nearby state park, and Lake Eufaula by recreational anglers, boaters, hunters, wildlife watchers, and other outdoor recreationists. Expenditures of these visitors, from both local and distant communities, on purchases ranging from equipment and supplies to food and lodging, inject money into the local economy, supporting local businesses, jobs, and sales tax revenues.

These already considerable economic and social benefits of the refuge are likely to increase further because of the proposed new visitor center and the overall increased visitation that would be associated with Alternative D.

Table 11 summarizes and compares the environmental consequences of each of the four alternatives, and is organized by broad issue categories.

Table 11. Summary of environmental effects by alternative, Eufaula National Wildlife Refuge.

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Wintering Waterfowl	Waterfowl populations would not change substantially, partially contributing to NAWMP habitat and population objectives	Waterfowl populations would likely increase in response to increases in habitat quality; would contribute more to NAWMP habitat and population objectives	Same as Alternative B	Same as Alternative B
Geese/Cranes	Number of geese and cranes likely to remain the same	Geese and crane numbers likely to increase somewhat	Same as Alternative B	Same as Alternative B
Wood Ducks	Numbers of nesting wood ducks likely to remain the same as at present; production stays constant	Numbers of nesting wood ducks likely to increase; production likely to increase as well	Same as Alternative B	Same as Alternative B
Forest Birds	Population of forest birds would tend to be unchanged	Priority pine and hardwood associated bird species likely to increase somewhat with improved and increased habitat	Same as Alternative B	Same as Alternative B
Grassland Birds	Population of grassland birds would tend to be unchanged	Population of grassland birds would tend to increase due to the establishment of warm season grasses on old farm fields.	Same as Alternative B	Same as Alternative B

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Marsh Birds	Marsh bird population likely to remain constant	Promotion of tall emergent vegetation likely to increase population of king rails and benefit other marsh birds	Same as Alternative B	King rail and other marsh bird numbers would probably increase to a level between levels of Alternative A and Alternative B
Wading Birds	Wading bird population likely to remain constant	Modest increase in nesting sites and foraging habitat likely to increase wading bird numbers somewhat	Same as Alternative B	Same as Alternative B
Shorebirds	Population of migrating and resident shorebirds unlikely to change	Providing at least two areas of up to 20 acres each for shorebirds is likely to increase their numbers during both northbound and southbound migrations	Same as Alternative B	Same as Alternative B
Threatened and Endangered Species	Occurrence of federally listed wood stork on refuge likely to remain occasional	Same as Alternative A	Same as Alternative A	Same as Alternative A
Resident Wildlife	Populations of resident wildlife species expected to remain healthy and unchanged	Modest increases in resident wildlife populations	Same as Alternative B	Same as Alternative B

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Pest and Non-Native Species	Removing an average of 65 hogs annually likely to control but not eliminate this invasive species; no mosquito control	Intensified control of feral hogs likely to reduce but not eliminate population on refuge; no mosquito control	Implementing a hunting season on feral hogs would likely reduce their numbers more than Alternative B	Same as Alternative B
Farming	Continue to farm on 500 acres	Gradually reduce cropland acreage to 300 acres over 15-year life of the CCP to provide food, cover, and sanctuary areas for wildlife and other species	Same as Alternative B	Adding a youth wild turkey quota hunt expands existing hunting opportunities
Forests	2,600 acres of refuge managed as forestland to provide benefits to forest-dependent wildlife.	2,800 acres of refuge forests treated silviculturally to provide benefits to forest-dependent wildlife	Same as Alternative A	Same as Alternative B
Wildland Fire	Prescribed fire used on approximately 300 acres annually in suitable habitats for species and habitat conservation	Prescribed fire used on approximately 800-1,000 acres annually in suitable habitats for species and habitat conservation	Same as Alternative A	Same as Alternative B
Moist Soils	1,175 acres of moist soil wetlands provide foraging for waterfowl and other aquatic birds	1,200 acres of moist soil wetlands provide foraging for waterfowl and other aquatic birds	Same as Alternative B	Same as Alternative B

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Non-Native and Invasive Plants	Proposed control efforts (25 shoreline miles and 750 acres annually) of aquatic plants and preventive and maintenance control of upland invasive species (500 acres annually in croplands) keeps invasives in check but do not eliminate problem	Proposed control efforts (25 shoreline miles and 1,250 acres annually) of aquatic plants and preventive and maintenance control of upland invasive species (500 acres annually in croplands) keeps invasives in check but do not eliminate problem	Same as Alternative B	Same as Alternative B
Hunting	Existing hunting opportunities for deer, waterfowl, squirrels, rabbits, and mourning doves satisfies much but not all of the hunting demand	Same as Alternative A	Adding a youth wild turkey quota hunt and an alligator hunt on open water areas of the refuge expands existing hunting opportunities	Adding a youth wild turkey quota hunt expands existing hunting opportunities
Fishing	Fishing opportunities on refuge continue to be available at current levels	Fishing opportunities on refuge continue to be available but with access possibly restricted by establishing no-wake zones in sensitive areas	Boat launch facilities and bank fishing opportunities enhanced	Fishing opportunities on refuge continue to be available but with access possibly restricted by establishing no-wake zones in sensitive areas; boat launch facilities and bank fishing opportunities enhanced
Wildlife Observation and Photography	Existing facilities and opportunities maintained	Same as Alternative A	Facilities and opportunities expanded and enhanced	Same as Alternative C

Issues	Alternative A: Current Management (No Action)	Alternative B: Enhanced Wildlife and Habitat Management	Alternative C: Enhanced Wildlife-Dependent Public Use	Alternative D: Balanced Wildlife/ Habitat Management and Public Use Activities (Proposed Alternative)
Environmental Education and Interpretation	Limited EE and interpretive programs on and off-refuge continue	Same as Alternative A	EE and interpretive facilities and programs would be expanded and enhanced by establishing new visitor center on peninsula near the Kennedy Unit	Same as Alternative C
Cultural Resources	Continue to be preserved but management is limited	Preparation and implementation of a CRMP leads to enhanced preservation	Same as Alternative A	Same as Alternative B
Socioeconomics	Refuge continues to provide substantial economic and social benefits to local communities in Alabama and Georgia	Same as Alternative A	Already substantial economic and social benefits of refuge likely to increase further because of visitor center and overall increased visitation	Same as Alternative C

UNAVOIDABLE IMPACTS AND MITIGATION MEASURES

Under Alternative A, the No Action alternative, there are a number of unavoidable impacts, including law enforcement that is not adequate for protecting significant visitor uses; insufficient visitor services to support most public uses; continued degradation of the biological functions of native plant communities and wildlife habitat due to the invasion of exotic plants (especially aquatic plants on Lake Eufaula) and nuisance animals, principally the feral hog; and a continued decrease in biodiversity. Over time, if these issues are not addressed, they are likely to further compromise the refuge's resources and its ability to meet its purpose, vision, and goals.

Unavoidable impacts of Alternative B—enhanced wildlife and habitat management—would be fewer than those of Alternative A, at least in regards to habitat and wildlife. The major unavoidable impacts of this alternative would all pertain to public uses, which would be inadequately supported. In particular, wildlife observation, photography, environmental education, and interpretation would all be shortchanged.

Alternative C emphasizes enhanced wildlife-dependent public use. Its unavoidable impacts stem from less active habitat management and restoration, which would result in habitat of overall lower quality. Both terrestrial and aquatic biodiversity would be reduced in this alternative compared to alternatives B and D.

Alternative D, 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 water management activities; road and levee maintenance; and the construction of observation towers, boat ramps, and a headquarters and visitor center are expected to be localized in extent, of minor intensity, 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 and extended foot trails is expected to have a negligible impact on soil erosion. 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 may 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. As noted, the refuge would work to implement one or more no-wake zones if indicated. Hunting would also be managed with restrictions that ensure minimal impact on other resources. General wildlife observation may potentially result in minimal disturbance to wildlife. If the refuge determines that impacts from the expected additional visitor uses are above the levels that are anticipated, those uses would be discontinued, restricted, or rerouted to other less sensitive areas.

VEGETATION DISTURBANCE

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

Increased visitor use may increase the potential for the introduction of new exotic and invasive 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, conflicts between competing user groups could potentially 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 on this and other refuges and parks. 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

Except for temporary inconvenience from such management actions as prescribed fire, 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 at the visitor center.

LAND OWNERSHIP AND SITE DEVELOPMENT

Land acquisition efforts by the Service could lead to changes in land use and recreational use patterns. However, most of the non-Service-owned lands within the refuge's approved acquisition boundary are currently undeveloped. If these lands are acquired as additions to the refuge, they 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 adverse impacts on plants, soils, and some wildlife species. When building the visitor center and other facilities, efforts would be made to use recycled products and environmentally-sensitive treated lumber. The visitor center would be constructed to be aesthetically pleasing to the community and to avoid any additional impacts to native plant communities. 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 would affect it in the reasonably foreseeable future. Thus, 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 would likely happen to it.

The refuge is unaware of any past, present or future planned actions that would result in a significant cumulative adverse impact when added to the refuge's proposed actions, as outlined in the proposed alternative.

Nevertheless, because of concerns expressed about the cumulative effects of hunting in particular, this section analyzes and discusses in some detail the cumulative impacts of the hunting program of each alternative on a variety of resources at Eufaula National Wildlife Refuge.

ANTICIPATED IMPACTS ON WILDLIFE SPECIES

Migratory Birds

The U.S. Fish and Wildlife Service annually prescribes frameworks, or outer limits, for dates and times when hunting may occur and the number of birds that may be taken and possessed. These frameworks are necessary to allow state selections of season and limits for recreation and sustenance; aid federal, state, and tribal governments in the management of migratory game birds; and permit harvests at levels compatible with population status and habitat conditions. Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the Service annually promulgates regulations (50 CFR Part 20) establishing the frameworks from which the states may select season dates, bag limits, shooting hours, and other

options for the each migratory bird hunting season. The frameworks are essentially permissive in that hunting of migratory birds would not be permitted without them. Thus, in effect, federal annual regulations both allow and limit the hunting of migratory birds.

Migratory game birds are those bird species so designated in conventions between the United States and several foreign nations for the protection and management of these birds. Under the Migratory Bird Treaty Act (16 U.S.C. 703-712), the Secretary of the Interior is authorized to determine when "hunting, taking, capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any ... bird, or any part, nest, or egg" of migratory game birds can take place, and to adopt regulations for this purpose. These regulations are written after giving due regard to "the zones of temperature and to the distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds," and are updated annually (16 U.S.C. 704(a)). This responsibility has been delegated to the U.S. Fish and Wildlife Service as the lead federal agency for managing and conserving migratory birds in the United States. Acknowledging regional differences in hunting conditions, the Service has administratively divided the nation into four flyways for the primary purpose of managing migratory game birds. Each flyway (Atlantic, Mississippi, Central, and Pacific) has a Flyway Council, a formal organization generally composed of one member from each state and province in that flyway. Eufaula NWR is within the Atlantic Flyway.

The process for adopting migratory game bird hunting regulations, located in 50 CFR Part 20, is constrained by three primary factors. Legal and administrative considerations dictate how long the rule making process will last. Most importantly, however, the biological cycle of migratory game birds controls the timing of data-gathering activities and thus the dates on which these results are available for consideration and deliberation. The process of adopting migratory game bird hunting regulations includes two separate regulations-development schedules, based on "early" and "late" hunting season regulations. Early hunting seasons pertain to all migratory game bird species in Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands; migratory game birds other than waterfowl (e.g., dove, woodcock, etc.); and special early waterfowl seasons, such as teal or resident Canada geese. Early hunting seasons generally begin prior to October 1. Late hunting seasons generally start on or after October 1 and include most waterfowl seasons not already established. There are basically no differences in the processes for establishing either early or late hunting seasons. For each cycle, Service biologists and others gather, analyze, and interpret biological survey data and provide this information to all those involved in the process through a series of published status reports and presentations to Flyway Councils and other interested parties (USFWS 2006).

Under each of the four alternatives, including the proposed action, there would be no significant increase in the annual harvest of approximately 1,000 to 2,000 ducks on the refuge; thus, there would be no additional cumulative impact of this action on duck populations in Alabama, Georgia, and the Atlantic Flyway. Overall, the populations of ducks in the Atlantic Flyway are reasonably healthy, while fluctuating up and down in response to a number of natural and human factors. Peak wintering populations of ducks at the Eufaula Refuge reached over 40,000 in the mid-1970s, while in recent years, populations have peaked at 12,000–20,000. This decline is believed to be largely a function of weather patterns, not local hunting pressure.

Because the Service is required to take the abundance of migratory birds and other factors into consideration, the Service undertakes a number of surveys throughout the year in conjunction with the Canadian Wildlife Service, state and provincial wildlife management agencies, and others. To determine the appropriate frameworks for each species, the Service considers factors such as population size and trend; geographical distribution; annual breeding effort; the condition of breeding and wintering habitats; the number of hunters; and the anticipated harvest. After frameworks are established for season lengths, bag limits, and areas for migratory game bird hunting, migratory game

bird management becomes a cooperative effort of state and federal governments. After the Service's establishment of final frameworks for hunting seasons, the states may select season dates, bag limits, and other regulatory options for the hunting seasons. States may always be more conservative in their selections than the federal frameworks, but never more liberal. Season dates and bag limits for national wildlife refuges open to hunting are never longer or larger than the state regulations. In fact, based upon the findings of an environmental assessment developed when a national wildlife refuge opens a new hunting activity, the season dates and bag limits may be more restrictive than the state allows. At Eufaula NWR, the season length is the same as Alabama and Georgia allow. The refuge further limits the number of waterfowl hunters by means of a quota system and restricts waterfowl hunting to the Bradley and Kennedy units only. Quota hunts are conducted on these units no more than one day per week during the season, from legal shooting hours until 12:00 noon.

NEPA considerations by the Service for hunted migratory game bird species are addressed by the programmatic document, ''Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds (FSES 88– 14),'' filed with the Environmental Protection Agency on June 9, 1988. The Service published a Notice of Availability in the *Federal Register* on June 16, 1988 (53 FR 22582), and a Record of Decision on August 18, 1988 (53 FR 31341). Annual NEPA considerations for waterfowl hunting frameworks are covered under a separate environmental assessment entitled, "Duck Hunting Regulations for 2006-07," and an August 24, 2006, Finding of No Significant Impact. Further, in a notice published in the September 8, 2005, *Federal Register* (70 FR 53376), the Service announced its intent to develop a new Supplemental EIS for the migratory bird hunting program. Public scoping meetings were held in the spring of 2006, as announced in a March 9, 2006, *Federal Register* notice (71 FR 12216). More information may be obtained from: Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, Department of the Interior, MS MBSP-4107-ARLSQ, 1849 C Street, NWR, Washington, DC 20240.

Resident Big Game

Deer

Eufaula NWR conducts an annual non-quota, archery deer hunt requiring a refuge permit and state hunting license. Approximately 2,800 use days (25 hunters/day for 115 days) for archery hunting occurred in 2002–2003 (USFWS 2003a). Each of the alternatives would continue to allow deer hunting at approximately the current levels. Deer hunting does not have regional population impacts due to the restricted home ranges of white-tailed deer. In spite of the hunting pressure experienced at Eufaula, white-tailed deer continue to be present in high numbers on the refuge. Therefore, continuation of deer hunting on refuge lands should not have negative cumulative impacts on the area's and state's deer herd.

Feral Hogs

Feral hogs are an extremely invasive, nonnative species that degrades habitat and displaces native species like deer and wild turkey. They are already a severe problem in the Bradley Impoundment in Georgia and are quickly becoming a problem in the Houston Unit in Alabama. Currently the refuge has no organized hunt for feral hogs. Live trapping has been conducted in recent years but has not proved effective. Alternative methods including contract hunters or trappers must be pursued to limit the impacts of these highly destructive animals. A Feral Hog Management Plan has been recently prepared by the refuge describing guidelines for approved control methods.

One of the four alternatives (Alternative C) would consider implementing a feral hog season on the refuge, while the other three alternatives would continue or step up other means of controlling this species. Thus, there could be a cumulative impact on local feral hog numbers, and if such a reduction were to occur, this would be considered beneficial.

Wild Turkey

Presently there is no hunt for wild turkey on Eufaula NWR. Alternatives A and B would maintain this closure, while Alternatives C and D would consider implementing a youth quota hunt for wild turkey by 2015. Wild turkey numbers are predicted to increase at Eufaula in the near future due to expected habitat changes in response to forest management. Thus, staff biologists believe the turkey population could support modest, controlled hunting pressure. If the refuge proceeds with such a hunt, it would be managed in such a manner as to avoid cumulative adverse effects on turkey numbers. Before a hunt would be instituted, brood counts and or call counts would need to be conducted to provide accurate population estimates. Prescribed burning will need to continue at its current level or increase as recommended in Alternatives B and D to sustain turkey populations.

Resident Small Game

Small game hunted on the refuge includes mourning dove, gray squirrel, and cottontail rabbit. None of the alternatives would increase hunting opportunities for small game. Relatively few hunters participate and populations of these species appear to be stable both on the refuge and in both states. If there were indications that numbers of one or more of these species were in decline, the refuge would implement measures to restrict the harvest.

Nongame Wildlife

Nongame or nonhunted wildlife would include nonhunted migratory birds such as songbirds, wading birds, raptors, and woodpeckers; small mammals such as voles, moles, mice, shrews, and bats; reptiles and amphibians such as snakes, skinks, turtles, lizards, salamanders, frogs and toads; and invertebrates such as butterflies, moths, other insects and spiders. Except for migratory birds and some species of migratory bats, butterflies and moths, these species have very limited home ranges and hunting could not affect their populations regionally; thus, only local effects will be discussed.

Disturbance to nonhunted migratory birds could have regional, local, and flyway effects. Regional and flyway effects would not be applicable to species that do not migrate, such as most woodpeckers and some songbirds including cardinals, titmice, wrens, chickadees, etc. The cumulative effects of disturbance to nonhunted migratory birds under the proposed action are expected to be negligible for the following reasons. The hunting season would not coincide with the nesting season. Long-term future impacts that could occur if reproduction was reduced by hunting are not relevant for this reason. Disturbance to the daily wintering activities of birds, such as feeding and resting, might occur. Disturbance to birds by hunters would probably be commensurate with that caused by nonconsumptive users. The cumulative effects of disturbance to nonhunted migratory birds under the proposed action are expected to be negligible for the above reasons.

With regard to other wildlife, disturbance would be unlikely for the following reasons. Small mammals, including bats, are inactive during the winter when the hunting season occurs. These species are also nocturnal. Both of these qualities make hunter interactions with small mammals very rare. Hibernation or torpor by cold-blood reptiles and amphibians also limits their activity during the hunting season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Encounters with reptiles and amphibians in the early fall are few

and should not have cumulative negative effects on reptile and amphibian populations. Invertebrates are also not active during cold weather and would have few interactions with hunters during the hunting season. Refuge regulations further mitigate possible disturbance by hunters to nonhunted wildlife. Vehicles are restricted to roads and the harassment or taking of any wildlife other than the game species that is legal for the season is not permitted.

Although the ingestion of lead shot by nonhunted wildlife could be a cumulative impact, it is not relevant to Eufaula NWR because the use of lead shot is not and will not be permitted on the refuge for small game, dove, or waterfowl hunting. If the refuge opens a youth turkey season, lead shot would be permitted for this activity per 50 CFR 32.2 (k).

Some species of bats, butterflies and moths are migratory. Cumulative effects to these species at the "flyway" level should be negligible. These species are in torpor or have completely passed through Alabama and Georgia by the peak hunting season in November–January. Some hunting occurs during September and October when these species are migrating; however, hunter interaction would be commensurate with that of nonconsumptive users.

Threatened and Endangered Species

The endangered wood stork is commonly seen on the refuge between May and October, especially when the lake levels and impoundment water levels are low enough to provide isolated pools for foraging.

An Intra-Service Section 7 Evaluation under the Endangered Species Act is included as Appendix VII in this Draft CCP. It concludes that the proposed action would have no effect on the wood stork. While this species does occur regularly on the refuge, hunters are unlikely to mistake wood storks for ducks, deer, doves, squirrels, or rabbits. The cumulative adverse impact on listed species would be nil to negligible, and would be comparable to that caused by anglers, boaters, and nonconsumptive users.

ANTICIPATED IMPACTS ON REFUGE PROGRAMS, FACILITIES, CULTURAL RESOURCES, ENVIRONMENTAL JUSTICE, ENVIRONMENTAL RESOURCES, AND SURROUNDING COMMUNITIES

Wildlife-dependent Recreation

As public use levels expand as projected over time, unanticipated conflicts between user groups may occur at Eufaula NWR. The refuge's visitor use programs would be adjusted as needed to eliminate or minimize each problem and provide quality wildlife-dependent recreational opportunities. Experience on many national wildlife refuges has proven that time and space zoning (e.g., establishment of separate use areas, use periods, and restrictions on the number of users) is an effective tool in eliminating conflicts between user groups. In the context of the present proposed action, one of the strategies under the hunting objective would be to close areas to other public uses during hunts (e.g., Wildlife Drive during the dove hunt) and to provide information on alternative sites to motorists.

Overall, the cumulative impact of hunting on other wildlife-dependent recreation at the Eufaula Refuge would be negligible to minor.

Refuge Facilities

The Service defines facilities as: "Real property that serves a particular function(s) such as buildings, roads, utilities, water control structures, raceways, etc." Those facilities most utilized by hunters are roads, parking lots, trails and boat launching ramps. Maintenance or improvement of existing

facilities (i.e., parking areas, roads, trails, and boat ramps) would cause minimal short-term impacts to localized soils and waters and may cause some wildlife disturbances and damage to vegetation. The facility maintenance and improvement activities described are periodically conducted to accommodate daily refuge management operations and general public uses such as wildlife observation and photography. These activities would be conducted at times (seasonal and/or daily) to cause the least amount of disturbance to wildlife. Siltation barriers will be used to minimize soil erosion, and all disturbed sites will be restored to as natural a condition as possible. During times when roads are impassible due to flood events or other natural causes, those roads, parking lots, trails and boat ramps impacted by the event would be closed to vehicular use.

Overall, the cumulative impact of hunting on the refuge's facilities would be negligible.

Cultural Resources

Hunting, regardless of method or species targeted, is a consumptive activity that does not pose any threat to historic properties on or near the refuge. In fact, hunting meets only one of the two criteria used to identify an "undertaking" that triggers a federal agency's need to comply with Section 106 of the National Historic Preservation Act. These criteria, which are delineated in 36 CFR Part 800, state:

1. An undertaking is any project, activity, or program that can alter the character or use of an archaeological or historic site located within the "area of potential effect;" and
2. the project, activity, or program must also be either funded, sponsored, performed, licensed, or have received assistance from the agency.

Consultation with the pertinent State Historic Preservation Offices and federally recognized tribes are, therefore, not required.

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 to achieve environmental protection of all communities. In part, the order is intended to promote nondiscrimination in federal programs substantially affecting human health and the environment and to provide minority and low-income communities access to public information and participation in matters relating to human health or the environment.

There are low-income and minority populations in the area, but there is no evidence of adverse disproportionate environmental justice issues associated with the refuge's existing hunting program or proposed expansion. Any affected populations would generally be affected in the same ways as the regional population as a whole.

Environmental Resources

The refuge expects no appreciable adverse impacts of the proposed action on the Eufaula Refuge environment, which consists of soils, vegetation, air quality, water quality and solitude. Some disturbance to surface soils and vegetation would occur in areas selected for hunting; however, the impacts would be minimal. Litter left behind by hunters would also be expected, although unlike the litter associated with fishing, which often concentrates near or at certain heavily fished locations, litter from hunters is likely to be more widely scattered and therefore less conspicuous. Hunting would be expected to benefit vegetation, since it is used to maintain many resident wildlife populations,

particularly deer, in balance with the habitat's carrying capacity. When and where necessary, the refuge would also control access or close areas to minimize habitat degradation.

The refuge expects impacts to air and water quality to be minimal and only due to refuge visitors' automobile and outboard motor emissions. The effect of these refuge-related activities, as well as other management activities, on overall air and water quality in the region are anticipated to be negligible, compared to the contributions of industrial centers, power plants, and non-refuge vehicle traffic in this portion of Cameron Parish. Existing state water quality criteria and use classifications are adequate to achieve desired on-refuge conditions; thus, implementation of the proposed action and alternatives would not impact adjacent landowners or users beyond the constraints already implemented under existing state standards and laws.

Impacts associated with solitude are expected to be minimal given time and space zone management techniques, such as seasonal access and area closures, used to avoid conflicts among user groups.

Surrounding Communities

The refuge would work closely with state, federal, and private partners to minimize adverse cumulative impacts to adjacent lands and its associated natural resources; however, no cumulative impacts are anticipated. The newly opened hunt(s) would result in a net gain of public hunting opportunities, which are expected to positively impact the general public, nearby residents, and refuge visitors. Residents in the area and neighboring communities are likely to view continued hunting opportunities favorably. The refuge expects continuing visitation and tourism, some of it due to hunting, to generate revenues to local communities, but this spending would be very small in comparison with the size of the local economy.

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 the water control structures, as well as expanding or creating new foot trails; construction of the accessible fishing/ wildlife observation pier and visitor center; and providing greater visitor access through improvements to the boat launch areas.

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 and a visitor center, 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

OVERVIEW

This chapter summarizes the consultation and coordination that has occurred to date in identifying the issues, alternatives, and proposed alternative which are presented in this Draft CCP. It lists the meetings that have been held with the various agencies, organizations and individuals who were consulted in the preparation of the Draft CCP.

The following meetings, contacts, and presentations were undertaken by the Service during the preparation of the Draft CCP.

The planning team gathered input from a variety of internal and external sources to identify the key issues, concerns, and opportunities that needed to be addressed in the CCP. Sources of internal scoping included the refuge staff itself and other Service biologists and professionals in the region. External scoping sources included concerned private citizens; research and educational institutions; members of conservation, sportsmen and civic groups; refuge neighbors; members of the local community; and state, tribal, and local agencies. These various interests are sometimes referred to collectively as stakeholders, that is, those individuals and groups that have a stake in how the refuge is managed. In developing the CCP for Eufaula NWR, the planning team conducted both internal and external scoping.

The first step in developing the refuge's CCP was a biological review that took place during the week of August 11–15, 2003. The biological review team included 15 Service biologists, managers, foresters and non-Service managers and biologists. The review involved onsite evaluations to help the refuge meet its purpose and determine the role(s) the refuge could play regarding wildlife needs and objectives at various geographical scales (i.e., local, ecosystem, regional, and national). The approach was to take a holistic look at achieving refuge and landscape-level conservation needs, while still giving priority to accomplishing the original purpose of refuge establishment.

A visitor services review was also conducted in 2003 in preparation for the upcoming CCP. The five-member visitor services review team consisted of Service personnel from the Visitor Services and Outreach Division, Southeast Regional Office, Atlanta, Georgia; a representative of Eufaula National Wildlife Refuge; and a representative of the Piedmont and Bond Swamp national wildlife refuges. The review team met with the refuge staff to discuss the visitor services program. The staff explained the refuge's current visitor services program and the recreational, educational and interpretive opportunities on the refuge. The Refuge Manager and Biological Technician took the review team to all the different public use areas on the refuge. After discussions with some of the staff and the refuge tour, the review team met to discuss the current status of the programs and to make recommendations.

The CCP planning team, composed of the Refuge Manager, Assistant Refuge Manager, and Wildlife Biologist; a natural resources planner from the Service's Jackson, Mississippi, Field Office; and an outside professional consultant, met for the first time on November 16–17, 2005, for a tour of the refuge and an overview of its habitat and wildlife resources and public use programs, facilities, and opportunities. At that time, the planning team also conducted additional internal scoping and prepared a preliminary schedule and plans for public involvement.

The planning team then held an open house and public scoping meeting on January 31, 2006, at the Bevill Center on the campus of Wallace Community College in Eufaula, Alabama. Approximately 30 citizens attended the open house and scoping meeting. The attendees were able to meet with the refuge staff and view the exhibits and maps on hand. Refuge Manager Troy Littrell opened the meeting with a brief slide show and overview of the refuge, followed by a presentation on the comprehensive conservation planning process by Natural Resources Planner Mike Dawson. Contractor Leon Kolankiewicz, a consultant with the Mangi Environmental Group, then facilitated an open-floor question and comment period. During this period, the attendees were given the opportunity to express their concerns about the refuge and their ideas and suggestions for its future management. In addition, a comment form was distributed for the attendees and other interested parties to submit written comments. The written comments could either be submitted at the meeting or sent subsequently via mail or e-mail. A total of 23 comment forms and letters were received during this public scoping process.

CORE PLANNING TEAM MEMBERS

The core planning team consisted of the following members:

- Troy Littrell, Refuge Manager, Eufaula National Wildlife Refuge, USFWS
- Danny Moss, Assistant Refuge Manager, Eufaula National Wildlife Refuge, USFWS
- Milton Hubbard, Biologist, Eufaula National Wildlife Refuge, USFWS
- Mike Dawson, Natural Resources Planner, USFWS, Jackson, Mississippi Field Office
- Leon Kolankiewicz, Wildlife Biologist/Planner, Mangi Environmental Group

EXTENDED PLANNING TEAM MEMBERS

The following individuals participated in a two-day workshop to develop a vision, goals, management alternatives, and objectives for the Eufaula National Wildlife Refuge CCP in May 2006:

- Don Burdette, State Parks Forester, Alabama Department of Conservation and Natural Resources
- Roger Clay, Alabama Division of Wildlife and Freshwater Fisheries
- Bill Gray, Supervising Wildlife Biologist – District 6, Alabama Division of Wildlife and Freshwater Fisheries
- Gary Hepp, Professor, School of Forestry and Wildlife Science, Auburn University
- Adam Pritchett, Wildlife Biologist, Barbour Wildlife Management Area, Alabama Division of Wildlife and Freshwater Fisheries
- Julie Robbins, Senior Wildlife Biologist, Wildlife Resources Division, Georgia Department of Natural Resources
- Jim Royal, Superintendent, Lakepoint State Park
- Jody Timmons, Park Ranger, U.S. Army Corps of Engineers

Appendix I. Glossary

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

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

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

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

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

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

Categorical Exclusion (CE,CX, CATEX, CATX): A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4).

CFR: Code of Federal Regulations.

Compatible Use: A proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose(s) of the national wildlife refuge (50 CFR 25.12 (a)). A compatibility determination supports the selection of compatible uses and identifies stipulations or limits necessary to ensure compatibility.

Comprehensive Conservation Plan (CCP):	A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates (Service Manual 602 FW 1.6 E).
Concern:	See Issue
Cover Type:	The present vegetation of an area.
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 non-living environment.
Ecosystem Management:	Management of natural resources using system-wide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and basic ecosystem processes are perpetuated indefinitely.

Endangered Species (Federal):	A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.
Endangered Species (State):	A plant or animal species in danger of becoming extinct or extirpated in the state within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.
Environmental Assessment (EA):	A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).
Environmental Impact Statement (EIS):	A detailed written statement required by section 102(2)(C) of the National Environmental Policy Act, analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).
Estuary:	The wide lower course of a river into which the tides flow. The area where the tide meets a river current.
Finding of No Significant Impact (FONSI):	A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a Federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared (40 CFR 1508.13).
Goal:	Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (Service Manual 620 FW 1.6J).
Habitat:	Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.
Habitat Restoration:	Management emphasis designed to move ecosystems to desired conditions and processes, and/or to healthy ecosystems.
Habitat Type:	See Vegetation Type.
Improvement Act.:	The National Wildlife Refuge System Improvement Act of 1997.
Informed Consent:	The grudging willingness of opponents to “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 non-native, new, or not common to the United States, according to the Federal Noxious Weed Act (PL 93-639), a noxious weed is one that causes disease or had adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the 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 Plan: Broad long-term guidance for involving the public in the comprehensive planning process.

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

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

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

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

Record of Decision (ROD): A concise public record of decision prepared by the Federal agency, pursuant to NEPA, that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).

Refuge Goal: See Goal.

Refuge Purposes:	See Purposes of the Refuge
Songbirds: (Also Passerines)	A category of birds that are medium to small, perching landbirds. Most are territorial singers and migratory.
Step-down Management Plan:	A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, safety) or groups of related subjects. It describes strategies and implementation schedules for meeting CCP goals and objectives (Service Manual 602 FW 1.6 U).
Strategy:	A specific action, tool, technique, or combination of actions, tools, and techniques used to meet unit objectives (Service Manual 602 FW 1.6 U).
Study Area:	The area reviewed in detail for wildlife, habitat, and public use potential. For purposes of this CCP/EIS the study area includes the lands within the currently approved Refuge boundary and potential Refuge expansion areas.
Threatened Species (Federal):	Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
Threatened Species (State):	A plant or animal species likely to become endangered in the state within the near future if factors contributing to population decline or habitat degradation or loss continue.
Tiering:	The coverage of general matters in broader environmental impact statements with subsequent narrower statements of environmental analysis, incorporating by reference, the general discussions and concentrating on specific issues (40 CFR 1508.28).
U.S. Fish and Wildlife Service Mission:	The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.
Unit Objective:	See Objective
Vegetation Type, Habitat Type, Forest Cover Type:	A land classification system based upon the concept of distinct plant associations.
Vision Statement:	A concise statement of what the planning unit should be, or what we hope to do, based primarily upon the Refuge System Mission and specific refuge purposes, and other mandates. We will tie the vision statement for the refuge to the mission of the Refuge System; the purpose(s) of the refuge; the maintenance or restoration of the ecological integrity of each refuge and the Refuge System; and other mandates (Service Manual 602 FW 1.6 Z).

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

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

Wilderness: See Designated Wilderness

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

Wildland Fire: Every wildland fire is either a wildfire or a prescribed fire (Service Manual 621 FW 1.3

ACRONYMS AND ABBREVIATIONS

BCC Birds of Conservation Concern
BRT Biological Review Team
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
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 or USFWS)
TFT Temporary Full Time
USC United States Code
USFWS U.S. Fish and Wildlife Service

Appendix II. References and Literature Cited

Alabama Department of Conservation and Natural Resources. n.d. *Alabama Comprehensive Wildlife Conservation Strategy.* Accessed on 7 April 2006 at: http://www.outdooralabama.com/research-mgmt/cwcs/ .

Caudill, J. and E. Henderson. 2003. *Banking on Nature 2002: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation.* Division of Economics, U.S. Fish and Wildlife Service, Washington, D.C. 119 pp. Accessed online at: http://caddodefense.org/download/BankingOnNature2002.pdf .

Caudill, J. and E. Henderson. 2005. *Banking on Nature 2004: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation.* Division of Economics, U.S. Fish and Wildlife Service, Washington, D.C. 119 pp. Accessed online at: http://www.fws.gov/Refuges/policyMakers/pdfs/BankingOnNature_2004_finalt.pdf .

Caudill, James and Andrew Laughland. 2003. *Banking on Nature 2002*. Division of Economics, U.S. Fish and Wildlife Service, Washington, D.C. 118 pp.

Ducks Unlimited. N.d. *Southeastern Coastal Plain.* Web page. Accessed on 7 April, 2006 at: http://southern.ducks.org/SECoastal.php.

Dupree, A. Hunter. 1957. *Science in the Federal Government: A History of Policies and Activities to 1940.* Harvard University Press, Cambridge, Massachusetts. 460 pp.

Georgia Department of Natural Resources. n.d. *A Comprehensive Wildlife Conservation Strategy for Georgia.* Web page. Accessed on 7 April 2006 at: http://www.gadnr.org/cwcs/index.html .

Guyer, C. and M. Greene. 1992. *A Herpetofaunal Survey of the Eufaula National Wildlife Refuge.* Department of Biological Sciences, Auburn University.

Kucher, A.W. 1964. *Potential Natural Vegetation of the Conterminous United States.* New York: American Geographical Society, Special Publication 36.

Environment Canada. 2006. *North American Waterfowl Management Plan (NAWMP).* Accessed online at: http://www.qc.ec.gc.ca/faune/sauvagine/html/nawmp.html .

Gabrielson, Ira N. 1943. *Wildlife Conservation.* The Macmillan Company, New York, New York. 250 pp.

Laughland, A. and J. Caudill. 1997. *Banking on Nature: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation.* Division of Economics. U.S. Fish and Wildlife Service, Washington, DC. 118 pp.

Laycock, George. 1965. *The Sign of the Flying Goose: A Guide to the National Wildlife Refuges.* The Natural History Press, Garden City, New York. 299 pp.

McAuley, Daniel and David A. Clugston. n.d. *American Woodcock.* Web page. Accessed on 6 April 2006 at: http://biology.usgs.gov/s+t/SNT/noframe/ne122.htm .

North American Bird Conservation Initiative. 2005. *Bird Conservation Regions.* May, 2005. Accessed online at: http://www.nabci-us.org/bcrs.html .

New Employee Handbook. n.d. U.S. Fish and Wildlife Service, Washington, D.C.

National Oceanic and Atmospheric Administration. 2006. *Weather/Climate Events.* NOAA Satellite and Information Service. Accessed at: http://lwf.ncdc.noaa.gov/oa/climateresearch.html#dandp .

Partners in Amphibian and Reptile Conservation. 2004. *About PARC.* Accessed online at: http://www.parcplace.org/about.html .

Partners in Flight. 2006. *What is Partners in Flight (PIF)?* Accessed online at: http://www.partnersinflight.org/description.cfm .

Schnell, Frank T., Jr. and Vernon J. Knight. 1978. *A Cultural Resources Background Survey and Archeological Reconnaissance at Eufaula National Wildlife Refuge, Georgia and Alabama.* Volume I: Text. Heritage Conservation and Recreation Service, Columbus Museum of Arts and Sciences, Inc., Columbus, Georgia. May 1978.

Schotz, Alfred R. 2002. *Eufaula National Wildlife Refuge Natural Community and Rare Plant Survey.* Report submitted to the U.S. Fish and Wildlife Service, Eufaula National Wildlife Refuge. The Nature Conservancy, Alabama Natural Heritage Program, Montgomery, Alabama.

Scorecard. 2005. *Rankings: Health Risks, Exposures, and Emissions, Russell County, Alabama.* Scorecard, the Pollution Information Site, accessed online at: http://www.scorecard.org/env-releases/cap/ranking.tcl?fips_county_code=01113 .

STATS Indiana. 2006. *USA Counties In Profile.* Indiana Department of Commerce, accessed at: http://www.stats.indiana.edu/uspr/a/us_profile_frame.html .

Stein, B.A., L.S. Kutner and J.A. Adams, eds. 2000. *Precious Heritage: The Status of Biodiversity in the United States.* The Nature Conservancy and Association for Biodiversity Information. Oxford University Press. 399 pp.

University of Alabama. 2006. Climate maps. Accessed online at: http://alabamamaps.ua.edu/contemporarymaps/alabama/climate/index.html .

U.S. Army Corps of Engineers, Mobile District. 2007. *Apalachicola, Chattahoochee, Flint Rivers Project, Walter F. George, Hydrilla History.* 14 pp.

U.S. Census Bureau. 2006. State and County Quick Facts. Accessed online at: http://quickfacts.census.gov/qfd/.

U.S. Fish and Wildlife Service. n.d.a. *Overview of the U.S. Shorebird Conservation Plan and Council.* Accessed on 6 April 2006 at: http://www.fws.gov/shorebirdplan/USShorebird/overview.htm

U.S. Fish and Wildlife Service. n.d.b. *Ecosystem Units*. Accessed on 13 April 2006 at: http://www.fws.gov/offices/ecounits.html

U.S. Fish and Wildlife Service. 1964. *Narrative Report, Eufaula National Wildlife Refuge.* Eufaula NWR, Eufaula, Alabama.

U.S. Fish and Wildlife Service. 1971. *Forest Management Plan, Eufaula National Wildlife Refuge.* Eufaula NWR, Eufaula, Alabama.

U.S. Fish and Wildlife Service. 1988. *Croplands Management Plan, Eufaula National Wildlife Refuge.* Eufaula NWR, Eufaula, Alabama.

U.S. Fish and Wildlife Service. 2001. *Fire Management Plan, Eufaula National Wildlife Refuge.* Eufaula NWR, Eufaula, Alabama.

U.S. Fish and Wildlife Service. 2003a. *Biological Review Handbook, Eufaula National Wildlife Refuge.* August, 2003. Eufaula NWR, Eufaula, Alabama.

U.S. Fish and Wildlife Service. 2003b. *Annual Narrative Report, Calendar Year 2002, Eufaula National Wildlife Refuge.* May, 2002. Eufaula NWR, Eufaula, Alabama.

U.S. Fish and Wildlife Service. 2003c. *Public Use Review Report , Eufaula National Wildlife Refuge* (Draft, unpublished). July, 2003. Eufaula NWR, Eufaula, Alabama.

U.S. Fish and Wildlife Service. 2005. *Annual Narrative Report, Calendar Year 2004, Eufaula National Wildlife Refuge.* Eufaula NWR, Eufaula, Alabama.

U.S. Fish and Wildlife Service. 2006a. *Final Biological Review Report, Eufaula National Wildlife Refuge.* April 2006. Eufaula NWR, Eufaula, Alabama.

U.S. Fish and Wildlife Service. 2006b. *Final Public Use Review Report, Eufaula National Wildlife Refuge.* January 2006. Eufaula NWR, Eufaula, Alabama.

Appendix III. 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
Bankhead-Jones Farm Tenant Act of 1937	Directs the Secretary of Agriculture to develop a program of land conservation and utilization in order to correct maladjustments in land use and thus assist in such things as control of soil erosion, reforestation, preservation of natural resources and protection of fish and wildlife. Some early refuges and hatcheries were established under authority of this Act.
Cave Resources Protection Act of 1988	Established requirements for the management and protection of caves and their resources on Federal lands, including allowing the land managing agencies to withhold the location of caves from the public, and requiring permits for any removal or collecting activities in caves on Federal lands.
Clean Air Act of 1970	Regulates air emissions from area, stationary, and mobile sources. This Act and its amendments charge Federal land managers with direct responsibility to protect the “sir quality and related values” of land under their control. These values include fish, wildlife, and their habitats.
Clean Water Act of 1974, as amended	This Act and its amendments have as its objective the restoration and maintenance of the chemical, physical, and biological integrity of the Nation’s waters. Section 401 of the Act requires that Federally permitted activities comply with the Clean Water Act standards, state water quality laws, and any other appropriate state laws. Section 404 charges the U.S. Army Corps of Engineers with regulating discharge of dredge or fill materials into waters of the United States, including wetlands.
Coastal Barrier Resources Act of 1982 (CBRA)	Identifies undeveloped coastal barriers along the Atlantic and Gulf coasts and included them in the John H. Chafee Coastal Barrier Resources System (CBRS). The objectives of the act are to minimize loss of human life, reduce wasteful Federal expenditures, and minimize the damage to natural resources by restricting most Federal expenditures that encourage development within the CBRS.
Coastal Barrier Improvement Act of 1990	Reauthorized the CBRA, expanded the CBRS to include undeveloped coastal barriers along the Great Lakes and in the Caribbean, and established “Otherwise Protected Areas (OPAs)”. The Service is responsible for maintaining official maps, consulting with Federal agencies that propose spending Federal funds within the CBRS and OPAs, and making recommendations to Congress about proposed boundary revisions.
Coastal Wetlands Planning, Protection, and Restoration (1990)	Authorizes the Director of the Fish and Wildlife Service to participate in the development of a Louisiana coastal wetlands restoration program, participate in the development and oversight of a coastal wetlands conservation program, and lead in the implementation and administration of a National coastal wetlands grant program.

STATUE	DESCRIPTION
Coastal Zone Management Act of 1972, as amended	Established a voluntary national program within the Department of Commerce to encourage coastal States to develop and implement coastal zone management plans and requires that “any Federal activity within or outside of the coastal zone that affects any land or water use or natural resource of the coastal zone” shall be “consistent to the maximum extent practicable with the enforceable policies” of a State’s coastal zone management plan. The law includes an Enhancement Grants Program for protecting, restoring or enhancing existing coastal wetlands or creating new coastal wetlands. It also established the National Estuarine Reserve Research System, guidelines for estuarine research, and financial assistance for land acquisition.
Emergency Wetlands Resources Act of 1986	This Act authorized the purchase of wetlands from Land and Water Conservation Fund moneys, removing a prior prohibition on such acquisitions. The Act requires the Secretary to establish a National Wetlands Priority Conservation Plan, required the States to include wetlands in their Comprehensive Outdoor Recreation Plans, and transfers to the Migratory Bird Conservation Fund amounts equal to import duties on arms and ammunition. It also established entrance fees at National Wildlife Refuges.
Endangered Species Act of 1973, as amended	Provides for the conservation of threatened and endangered species of fish, wildlife, and plants by Federal action and by encouraging the establishment of state programs. It provides for the determination and listing of endangered and threatened species and the designation of critical habitats. Section 7 requires refuge managers to perform internal consultation before initiating projects that affect or may affect endangered species.
Environmental Education Act of 1990	This act established the Office of Environmental Education within the Environmental Protection Agency to develop and administer a Federal environmental education program in consultation with other Federal natural resource management agencies, including the Fish and Wildlife Service.
Estuary Protection Act of 1968	Authorized the Secretary of the Interior, in cooperation with other Federal agencies and the States, to study and inventory estuaries of the United States, including land and water of the Great Lakes, and to determine whether such areas should be acquired for protection. The Secretary is also required to encourage State and local governments to consider the importance of estuaries in their planning activities relates to Federal natural resource grants. In approving any state grants for acquisition of estuaries, the Secretary was required to establish conditions to ensure the permanent protection of estuaries.

STATUE	DESCRIPTION
Estuaries and Clean Waters Act of 2000	This law creates a Federal interagency council that includes the Director of the Fish and Wildlife Service, the Secretary of the Army for Civil Works, the Secretary of Agriculture, the Administrator of the Environmental Protection Agency and the Administrator for the National Oceanic and Atmospheric Administration. The Council is charged with developing a national estuary habitat restoration strategy and providing grants to entities to restore and protect estuary habitat to promote the strategy.
Food Security Act of 1985, as amended (Farm Bill)	The Act contains several provisions that contribute to wetland conservation. The Swampbuster provisions state that farmers who convert wetlands for the purpose of planting after enactment of the law are ineligible for most farmer program subsidies. It also established the Wetland Reserve Program to restore and protect wetlands through easements and restoration of the functions and values of wetlands on such easement areas.
Farmland Protection Policy Act of 1981, as amended	The purpose of this law is to minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. Federal programs include construction projects and the management of federal lands.
Federal Advisory Committee Act (1972), as amended	Governs the establishment of and procedures for committees that provide advice to the federal government. Advisory committees may be established only if they will serve a necessary, nonduplicative function. Committees must be strictly advisory unless otherwise specified and meetings must be open to the public.
Federal Coal Leasing Amendment Act of 1976	Provided that nothing in the Mining Act, the Mineral Leasing Act, or the Mineral Leasing Act for Acquired Lands authorized mining coal on refuges.
Federal-Aid Highways Act of 1968	Established requirements for approval of Federal highways through wildlife refuges and other designated areas to preserve the natural beauty of such areas. The Secretary of Transportation is directed to consult with the Secretary of the Interior and other Federal agencies before approving any program or project requiring the use of land under their jurisdiction.
Federal Noxious Weed Act of 1990, as amended	The Secretary of Agriculture was given the authority to designate plants as noxious weeds and to cooperate with other Federal, State and local agencies, farmers associations, and private individuals in measures to control, eradicate, prevent, or retard the spread of such weeds. The Act requires each Federal land-managing agency including the Fish and Wildlife Service to designate an office or person to coordinate a program to control such plants on the agency's land and implement cooperative agreements with the States including integrated management systems to control undesirable plants.

STATUE	DESCRIPTION
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.
Improvement Act of 1978	This act was passed to improve the administration of fish and wildlife programs and amends several earlier laws, including the Refuge Recreation Act, the National Wildlife Refuge Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out volunteer programs.
Fish and Wildlife Programs Improvement and National Wildlife Refuge System Centennial Act of 2000	Recognizes the vital importance of the Refuge System and the fact that the System will celebrate its centennial anniversary in the year 2003. Established the National Wildlife Refuge System Centennial Commission to prepare a plan to commemorate the 100th anniversary of the System, coordinate activities to celebrate that event, and host a conference on the National Wildlife Refuge System. The commission is also responsible for developing a long-term plan to meet the priority operations; maintenance and construction needs for the System, and improve public use programs and facilities.
Fishery (Magnuson) Conservation and Management Act of 1976	Established Regional Fishery Management Councils comprised of Federal and State officials including the Fish and Wildlife Service. It provides for regulation of foreign fishing and vessel fishing permits.

STATUE	DESCRIPTION
Freedom of Information Act, 1966	Requires all Federal agencies to make available to the public for inspection and copying administrative staff manuals and staff instructions, official, published and unpublished policy statements, final orders deciding case adjudication, and other documents. Special exemptions have been reserved for nine categories of privileged material. The Act requires the party seeking the information to pay reasonable search and duplication costs.
Geothermal Steam Act of 1970, as amended	Authorizes and governs the lease of geothermal steam and related resources on public lands. Section 15 c of the Act prohibits issuing geothermal leases on virtually all Service-administrative lands.
Lacey Act of 1900, as amended	Originally designed to help states protect their native game animals and to safeguard U.S. crop production from harmful foreign species. This Act prohibits interstate and international transport and commerce of fish, wildlife or plant taken in violation of domestic or foreign laws. It regulates the introduction to America of foreign species into new locations.
Land and Water Conservation Fund Act of 1948	This act provides funding through receipts from the sale of surplus federal land, appropriations from oil and gas receipts from the outer continental shelf, and other sources for land acquisition under several authorities. Appropriations from the fund may be used for matching grants to states for outdoor recreation projects and for land acquisition by various federal agencies including the Fish and Wildlife Service.
Marine Mammal Protection Act of 1972, as amended	The 1972 Marine Mammal Protection Act established a Federal responsibility to conserve marine mammals with management vested in the Department of Interior for sea otter, walrus, polar bear, dugong, and manatee. The Department of Commerce is responsible for cetaceans and pinnipeds, other than the walrus. With certain specified exceptions, the Act establishes a moratorium on the taking and importation of marine mammals as well as products taken from them.
Migratory Bird Conservation Act of 1929	Established a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds. The role of the Commission was expanded by the North American Wetland Conservation Act to include approving wetlands acquisition, restoration, and enhancement proposals recommended by the North American Wetlands Conservation Council.
Migratory Bird Hunting and Conservation Stamp Act of 1934	Also commonly referred to as the Duck Stamp Act”, requires waterfowl hunters 16 years of age or older to possess a valid Federal hunting stamp. Receipts from the sale of the stamp are deposited into the Migratory Bird Conservation Fund for the acquisition of migratory bird refuges.

STATUE	DESCRIPTION
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.
Mineral Leasing Act for Acquired Lands (1947), as amended	Authorizes and governs mineral leasing on acquired public lands.
Minerals Leasing Act of 1920, as amended	Authorizes and governs leasing of public lands for development of deposits of coal, oil, gas and other hydrocarbons, sulphur, phosphate, potassium and sodium. Section 185 of this title contains provisions relating to granting rights-of-ways over Federal lands for pipelines.
Mining Act of 1872, as amended	Authorizes and governs prospecting and mining for the so-called “hardrock” minerals (such as gold and silver) on public lands.
National and Community Service Act of 1990	Authorizes several programs to engage citizens of the U.S. in full- and/or part-time projects designed to combat illiteracy and poverty, provide job skills, enhance educational skills, and fulfill environmental needs. Among other things, this law establishes the American Conservation and Youth Service Corps to engage young adults in approved human and natural resource projects, which will benefit the public or are carried out on Federal or Indian lands.
National Environmental Policy Act of 1969	Requires analysis, public comment, and reporting for environmental impacts of Federal actions. It stipulates the factors to be considered in environmental impact statements, and requires that Federal agencies employ an interdisciplinary approach in related decision-making and develop means to ensure that unqualified environmental values are given appropriate consideration, along with economic and technical considerations.
National Historic Preservation Act of 1966, as amended	It establishes a National Register of Historic Places and a program of matching grants for preservation of significant historical features. Federal agencies are directed to take into account the effects of their actions on items or sites listed or eligible for listing in the National Register.
National Trails System Act (1968), as amended	Established the National Trails System to protect the recreational, scenic and historic values of some important trails. National Recreation Trails may be established by the Secretaries of Interior or Agriculture on land wholly or partly within their jurisdiction, with the consent of the involved State(s), and other land managing agencies, if any. National Scenic and National Historic Trails may only be designated by an Act of Congress. Several National Trails cross units of the National Wildlife Refuge System.

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

STATUE	DESCRIPTION
Partnerships for Wildlife Act of 1992	Establishes a Wildlife Conservation and Appreciation Fund, to receive appropriated funds and donations from the National Fish and Wildlife Foundation and other private sources to assist the State fish and game agencies in carrying out their responsibilities for conservation of non-game species. The funding formula is no more that 1/3 Federal funds, at least 1/3 Foundation funds, and at least 1/3 State funds.
Refuge Revenue Sharing Act of 1935, as amended	Provided for payments to counties in lieu of taxes from areas administered by the Fish and Wildlife Service. Counties are required to pass payments along to other units of local government within the county, which suffer losses in tax revenues due to the establishment of Service areas.
Rehabilitation Act of 1973	Requires nondiscrimination in the employment practices of Federal agencies of the executive branch and contractors. It also requires all federally assisted programs, services, and activities to be available to people with disabilities.
Rivers and Harbors Appropriations Act of 1899, as amended	Requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States. The Fish and Wildlife Coordination Act provides authority for the Service to review and comment on the effects on fish and wildlife activities proposed to be undertaken or permitted by the Corps of Engineers. Service concerns include contaminated sediments associated with dredge or fill projects in navigable waters.
Sikes Act (1960), as amended	Provides for the cooperation by the Department of the Interior and Defense with State agencies in planning, development, and maintenance of fish and wildlife resources and outdoor recreation facilities on military reservations throughout the U.S. It requires the Secretary of each military department to use trained professionals to manage the wildlife and fishery resource under his jurisdiction, and requires Federal and State fish and wildlife agencies be given priority in management of fish and wildlife activities on military reservations.
Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948	This Act provides that upon determination by the Administrator of the General Services Administration, real property no longer needed by a Federal agency can be transferred, without reimbursement, to the Secretary of the Interior if the land has particular value for migratory birds, or to a State agency for other wildlife conservation purposes.
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.

STATUE	DESCRIPTION
Uniform Relocation and Assistance and Real Property Acquisition Policies Act (1970), as amended	Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the Service. The Act requires that any purchase offer be no less than the fair market value of the property.
Water Resources Planning Act of 1965	Established Water Resources Council to be composed of Cabinet representatives including the Secretary of the Interior. The Council reviews river basin plans with respect to agricultural, urban, energy, industrial, recreational and fish and wildlife needs. The act also established a grant program to assist States in participating in the development of related comprehensive water and land use plans.
Wild and Scenic Rivers Act of 1968, as amended	This act selects certain rivers of the nation possessing remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values; preserves them in a free-flowing condition; and protects their local environments.
Wilderness Act of 1964, as amended	The Wilderness Act of 1964 directs the Secretary of the Interior to review every roadless area of 5,000 acres or more and every roadless island regardless of size within the National Wildlife Refuge System and to recommend suitability of each such area. The Act permits certain activities within designated Wilderness Areas that do not alter natural processes. Wilderness values are preserved through a “minimum tool” management approach, which requires refuge managers to use the least intrusive methods, equipment and facilities necessary for administering the areas.
Youth Conservation Corps Act of 1970	Established a permanent Youth Conservation Corps (YCC) programs within the Department of Interior and Agriculture. Within the Service, YCC participants perform many tasks on refuges, fish hatcheries, and research stations.

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

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

SUMMARY OF PUBLIC SCOPING COMMENTS

Wildlife and Habitat Management

Attendees at the public scoping meeting and others who submitted written comments made the following points with regard to wildlife and habitat management at Eufaula NWR:

- Exotic and invasive species pose a very serious threat to the conservation of natural resources on the refuge.
- Prescribed burning and smoke management in the urban interface is a concern.
- Longleaf pine and hardwood reforestation are needed to increase habitat diversity.
- It is important to manage fallow fields and buffer strips.
- Maintenance and improvement of wildlife habitat is an important issue.
- There is a lack of attention provided to boundary lands along borders of refuge – for example, the problem with beetle infestation on South Fork Cowickee in an area that has been completely ignored by refuge management.
- Balance prohibiting waterfowl disturbance with providing public access.
- Help educate Lakepoint administration so that they can become more conservation minded. Birds and other wildlife don't recognize man made boundaries. It would be great if Lakepoint would do a conservation/environmental plan that reflects & enhances refuge philosophies.
- Assist in development of waterfowl habitat on private lands.
- Consider alternative crops for wildlife, such as rice/ plant millet and other crops which attract waterfowl.
- Mosquito control is needed.
- Mammal conservation should be made a priority, incorporating both a deer hunting program and beaver control.
- Suitable habitat should be maintained for mammals such as woodrats, several species of mice, spotted and striped skunks, and cottontail and swamp rabbits.
- Because the refuge is not on a main flyway, more emphasis should be focused on attracting and holding waterfowl. Have more flooded impoundments with food and resting areas. Eliminate farming leases because they do nothing for waterfowl, since all the crops are gathered before most of the wintering waterfowl arrive. Nothing is left in the field after harvest.

- Eufaula NWR is a refuge, and should be a place of peace, with a place for birds to rest, not be hunted.

Resource Protection

Attendees at the public scoping meeting and others who submitted written comments made the following points with regard to resource protection at Eufaula NWR:

- Hire a full-time law enforcement officer.

- Litter control is needed.

Visitor Services

Attendees at the public scoping meeting and others who submitted written comments made the following points with regard to visitor services at Eufaula NWR:

- There are safety concerns about the nonconsumptive public use activities occurring too close to hunting activities. Close hunting areas to other public uses during hunts to ensure public safety, and create a no-hunting zone around the Houston Observation Tower.

- Eufaula NWR is located on U.S. 431, the primary route for the public driving from Atlanta to the Florida Panhandle. More than 5 million people travel through Eufaula NWR annually, providing huge potential for visitation.

- Evaluate current environmental education and outreach program, including audience, message, and outreach tools (website, events, field trips, presentations) used to reach those audiences. Revise environmental education and outreach programs to target primary audiences more efficiently.

- Promote Eufaula NWR to the birding community by opening a portion of the Bradley Unit as a birding drive, working with birding trail organizers in Georgia and Alabama, and partnering with the Chamber, Audubon and others to promote Eufaula NWR as a birding destination.

- Develop an up-to-date Visitor Services Plan that reflects current legislation, director's orders, initiatives, policy, and the mission of Eufaula NWR, the NWR System and the U.S. Fish and Wildlife Service. The plan should also address the current and future visitor services and recreation needs of refuge visitors.

- Develop Sneads Pond Road for public use, including signage, culvert, road maintenance, and parking.

- Implement a plan for an accessible fishing/wildlife observation pier at Houston Bottoms.

- Open a portion of the Bradley Unit as a birding drive.

- Develop a canoe trail along Wylaunee Creek.

- Give seniors a better chance to hunt. Applicants for the waterfowl hunt should be sorted into two groups: one 16 years and up to 59 years of age, and the other 60 years and older.

- There should be more public school involvement with education programs and more programs to educate the public about the refuge. Family programs should be created and presented on a regular schedule.

- Observation areas need to be located where people can really see a lot of species.

- The quota system for duck hunting should be revised to provide the public with a greater opportunity to be selected by taking into account prior year rejections. A rejection notice system would give those who have not had an opportunity to hunt in recent years a greater chance at being selected for a given year's duck hunt.

- Continue to include hunting as a priority recreational use; put more emphasis on providing quality dove and waterfowl hunts.

Refuge Administration

Attendees at the public scoping meeting and others who submitted written comments made the following points with regard to refuge administration at Eufaula NWR:

- Increase the volunteer program by defining volunteer needs and strategically recruiting volunteers.

- Develop a Friends group. A Friends group could do volunteer work that would benefit the refuge. It would also serve as a tax-deductible fund for donations by businesses and individual contributors that would be used on behalf of habitat improvements, birds, waterfowl, etc.

- Hire an Outreach and Interpretive Specialist.

- Acquire additional lands for refuge expansion.

- Build a new Visitor Center which provides interpretation and an education/nature center with classrooms.

- Continue to enhance partnerships.

Appendix V. Appropriate Use Determinations

Eufaula 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 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 we find a proposed use is not appropriate, we will not allow the use and will not prepare a compatibility determination.

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 (Improvement Act), the six wildlife-dependent recreational uses (hunting, fishing, wildlife observation and 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. We consider 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 (Administration Act). This law provides the authority for establishing policies and regulations governing refuge uses, including the authority to prohibit certain harmful activities. The Administration 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 "[i]n administering the System, the Secretary is authorized to take the following actions: . . . [i]ssue regulations to carry out this Act." This policy implements the standards set in the Administration 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 (Recreation Act). This law authorizes the Secretary of the Interior to ". . . administer such areas [of the System] or parts thereof for public recreation when in his judgment public recreation can be an appropriate incidental or secondary use." While the Recreation Act authorizes us to allow public recreation in areas of the Refuge System when the use is an "appropriate incidental or secondary use," the Improvement Act provides the Refuge System mission and includes specific directives and a clear hierarchy of public uses on the Refuge System.

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. We must comply with Executive Order (E.O.) 11644 when allowing use of off-highway vehicles on refuges. This order requires that we: 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, E.O. 11989 requires us to close areas to off highway vehicles when we determine 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 and photography, or 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 our 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 and photography, or environmental education and interpretation.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Eufaula NWR _____

Use: Bicycling _____

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

DECISION CRITERIA:	YES	NO
(A) DO WE HAVE JURISDICTION OVER THE USE?	**X**	
(B) DOES THE USE COMPLY WITH APPLICABLE LAWS AND REGULATIONS (FEDERAL, STATE, TRIBAL, AND LOCAL)?	**X**	
(C) IS THE USE CONSISTENT WITH APPLICABLE EXECUTIVE ORDERS AND DEPARTMENT AND 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: Eufaula NWR _____

Use: Canoeing _____

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: Eufaula NWR_____

Use: Farming / Haying _____

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: Eufaula NWR _____

Use: Feral Hog Management _____

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

DECISION CRITERIA:	YES	NO
(A) DO WE HAVE JURISDICTION OVER THE USE?	**X**	
(B) DOES THE USE COMPLY WITH APPLICABLE LAWS AND REGULATIONS (FEDERAL, STATE, TRIBAL, AND LOCAL)?	**X**	
(C) IS THE USE CONSISTENT WITH APPLICABLE EXECUTIVE ORDERS AND DEPARTMENT AND 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: Eufaula NWR_____

Use: Horseback Riding _____

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: Eufaula NWR_____

Use: Jogging Walking _____

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: Eufaula NWR _____

Use: Scientific Field Studies _____

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: Eufaula NWR _____

Use: Forest Management _____

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

DECISION CRITERIA:	YES	NO
(A) DO WE HAVE JURISDICTION OVER THE USE?	**X**	
(B) DOES THE USE COMPLY WITH APPLICABLE LAWS AND REGULATIONS (FEDERAL, STATE, TRIBAL, AND LOCAL)?	**X**	
(C) IS THE USE CONSISTENT WITH APPLICABLE EXECUTIVE ORDERS AND DEPARTMENT AND 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 VI. Compatibility Determinations

EUFAULA NATIONAL WILDLIFE REFUGE COMPATIBILITY DETERMINATIONS

Introduction: The Fish and Wildlife Service reviewed several uses for compatibility during the comprehensive conservation planning process for Eufaula National Wildlife Refuge. The descriptions and anticipated impacts of each of these uses are addressed separately. However, the Uses through Public Review and Comment sections and the Approval of Compatibility Determinations section apply to each use. If one of these uses is considered outside of the Comprehensive Conservation Plan for Eufaula National Wildlife Refuge, then those sections become part of that compatibility determination.

Uses: The following uses were evaluated and found to be compatible with the mission of the National Wildlife Refuge System and the purposes of Eufaula National Wildlife: (1) hunting; (2) fishing; (3) wildlife observation and photography; (4) environmental education and interpretation; (5) bicycling; (6) canoeing; (7) farming and haying; (8) feral hog control; (9) forest management; (10) horseback riding; (11) walking and jogging; and (12) scientific research.

Refuge Name: Eufaula National Wildlife Refuge.

Date Established: 1964.

Establishing and Acquisition Authorities: U.S. Fish and Wildlife Service Coordination Act (16 U.S.C. 661-667-E); and Refuge Recreation Act (76 Stat. 1195; 16 U.S.C. 460d).

Refuge Purposes:

> "... shall be administered by him [Secretary of the Interior] directly or in accordance with cooperative agreements ... and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon, ..." 16 U.S.C. § 664 (Fish and Wildlife Coordination Act)
>
> "... 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. § 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. § 460k-2; 16 U.S.C. § 460k-460k-4, as amended (Refuge Recreation Act)

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

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

Other Applicable Laws, Regulations, and Policies:

Antiquities Act of 1906 (34 Stat. 225)
Migratory Bird Treaty Act of 1918 (15 U.S.C. 703-711; 40 Stat. 755)
Migratory Bird Conservation Act of 1929 (16 U.S.C. 715r; 45 Stat. 1222)

Migratory Bird Hunting Stamp Act of 1934 (16 U.S.C. 718-178h; 48 Stat. 451)
Criminal Code Provisions of 1940 (18 U.S.C. 41)
Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; 54 Stat. 250)
Refuge Trespass Act of June 25, 1948 (18 U.S.C. 41; 62 Stat. 686)
Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat.1119)
Refuge Recreation Act of 1962 (16 U.S.C. 460k-460k-4; 76 Stat. 653)
Wilderness Act (16 U.S.C. 1131; 78 Stat. 890)
Land and Water Conservation Fund Act of 1965
National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.; 80 Stat. 915)
National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd, 668ee; 80 Stat. 927)
National Environmental Policy Act of 1969, NEPA (42 U.S.C. 4321, et. seq; 83 Stat. 852)
Use of Off-Road Vehicles on Public Lands (Executive Order 11644, as amended by Executive Order 10989)
Endangered Species Act of 1973 (16 U.S.C. 1531 et. seq; 87 Stat. 884)
Refuge Revenue Sharing Act of 1935, as amended in 1978 (16 U.S.C. 715s; 92 Stat. 1319)
National Wildlife Refuge Regulations for the Most Recent Fiscal Year (50 CFR Subchapter C; 43 CFR 3101.3-3)
Emergency Wetlands Resources Act of 1986 (S.B. 740)
North American Wetlands Conservation Act of 1990
Food Security Act (Farm Bill) of 1990 as amended (HR 2100)
The Property Clause of The U.S. Constitution Article IV 3, Clause 2
The Commerce Clause of The U.S. Constitution Article 1, Section 8
The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57, USC 668dd)
Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System, March 25, 1996
Title 50, Code of Federal Regulations, Parts 25-33
Archaeological Resources Protection Act of 1979
Native American Graves Protection and Repatriation Act of 1990

Public Review and Comment:

Eufaula National Wildlife Refuge's compatibility determinations are being made available for public review and comment in conjunction with the public comment period for the refuge's Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA). Public comments on these compatibility determinations are invited and are due by the deadline stated on the cover of the Draft CCP/EA.

The methods being used to solicit public review and comment include a Notice of Availability for public review of the Draft CCP/EA published in the *Federal Register;* notices posted at the refuge headquarters and area locations; news releases sent to area newspapers; public service announcements sent to local radio stations; and copies of the Draft CCP/EA distributed to adjacent landowners, the general public, and local, state, and federal agencies.

Description of Use: *Hunting – Big Game, Upland Game, Mourning Dove, and Waterfowl*

Under Eufaula NWR's current approved hunting plan and comprehensive conservation plan, hunting for white-tailed deer, feral hogs, gray and fox squirrels, mourning dove, and waterfowl (ducks and geese) is permitted. Hunting for these species would occur in designated areas of the refuge during specially designated times, as noted in the refuge's annual Hunting and Fishing Regulations. Hunting is a priority public use.

Big Game: White-tailed deer and feral hog hunting would be permitted on the majority of the refuge, with the exception of no hunt zones that are established around administrative facilities and adjacent to Lakepoint Resort State Park. Significant archeological sites would be closed to entry. Some refuge impoundments in the Houston Unit would be off-limits to all public entry from November 15 through March 1 to provide waterfowl sanctuary.

Upland Game: Only the Alabama side of the refuge would be open for rabbit and squirrel hunting, with the exception of no hunt zones that are established around administrative facilities and adjacent to Lakepoint Resort State Park. Significant archeological sites would be closed to entry. Some refuge impoundments would be off-limits to all public entry from November 15 through March 1 to provide waterfowl sanctuary.

Mourning Dove: Hunting for mourning dove would only be permitted in the Houston Unit on designated upland fields.

Waterfowl: Waterfowl hunting would be permitted in the Kennedy Unit in Alabama and the Bradley Unit in Georgia.

Big Game: White-tailed deer and feral hog hunting would occur from September through January in Georgia and October through January in Alabama. The area between Rood Creek and Bustahatchee Creek in Georgia would not open for archery deer hunting until November 1 each year. This area is off-limits for archery hunters due to the youth gun deer hunts during the month of October. Archery deer hunting would not be allowed in the Kennedy and Bradley units on the days when waterfowl hunting occurs. On these days archery hunters would not be allowed to enter the Kennedy and Bradley units until after 12:00 noon.

Upland Game: Rabbit and squirrel hunting would be allowed on the Alabama portion of the refuge during the month of February. The refuge would be closed to this activity prior to February due to the archery deer season.

Mourning Dove: Dove hunting would occur during the south zone season in Alabama. A limited number of hunts would be allowed prior to the start of the archery deer season in October. Hunting would occur from 12:00 noon until sunset each day.

Waterfowl: Waterfowl hunting would occur no more than one day a week during the Alabama and Georgia seasons, respectively. Hunts would be held on Wednesdays and Saturdays throughout the season. The hunt days would alternate each year. Hunting would occur in Alabama on Saturday and Georgia on Wednesday one year, and the days would swap the following year. Hunting hours would be from legal shooting time until 12:00 noon each day.

Big Game: White-tailed deer hunting and feral hog hunting would be done with archery equipment. State regulations for the state the hunter is in would apply. Deer stands would be removed from the refuge daily. Gun hunting for white-tailed deer would be allowed in the Bradley Unit during the month of October by successful youth hunters who are drawn for a special quota hunt. Two to four youth gun hunts would be held each year. A staffed check station would be used for the youth gun hunts. Youth hunters must be supervised by a licensed adult who is at least 21 years of age. Archery hunters would be required to report their harvest within 24 hours or to check their deer in at one of the deer check stations on the refuge. There would be a deer check station in Alabama and in Georgia. Deer hunters must follow all state regulations for their respective state. This includes the Quality Deer Management Program for Barbour County, Alabama. The refuge participates in the Quality Deer Management Program. Hog hunting would be in accordance with state regulations. Taking of feral hogs would be allowed incidentally

to deer hunting. There would be no size or bag limit on hogs and they would not be permitted to be taken alive. A refuge hunting permit is required.

Upland Game: Dogs are not allowed for rabbit and squirrel hunting on the refuge. Hunters are required to use shotguns only. Rifles are not allowed. Nontoxic shot is required (no lead shot). A refuge hunting permit is required.

Mourning Dove: Nontoxic shot is required (no lead shot). Approximately two to four dove hunts would be held prior to the start of the archery deer season. Hunters would be required to sign in and and out each day and to report their harvest at the conclusion of the hunt. Refuge permits and maps of the hunting area would be provided at the entrance to the Houston Unit.

Waterfowl: Waterfowl hunting is a quota hunt. Successful applicants are notified of their hunt date and may bring along two quests. Blinds are provided by the refuge and due to safety concerns no more than three people are allowed in each blind. During youth hunts a licensed adult who is at least 21 years of age may supervise no more than two youth. Hunters are limited to 25 shells per hunter. Coots cannot be taken. All applicable federal and state regulations apply. Hunters must attend a briefing the morning of the hunt and will draw for blind selection at that time. A staffed hunter check station would be used and hunters are required to check in and check out at the conclusion of the hunt.

Hunting is a priority wildlife-dependent public use and has occurred on the refuge for over 40 years. The hunting program as outlined in this document allows the public the opportunity to utilize a renewable resource and still provides for portions of the refuge to be used as a sanctuary.

Availability of Resources:

Resources Involved in the Administration and Management of the Use:

- Refuge Manager: Oversight, law enforcement, and coordination with the two state agencies -- $20,000
- Administrative Officer: Issuing permits and collecting fees -- $10,000
- Refuge Biologist: Collecting data and operating the check stations -- $7,000
- Annual Hunting Regulations -- $4,000

Special Equipment, Facilities, or Improvements Necessary to Support the Use: None. The check stations are currently in use and operational.

Maintenance Costs:

- Maintenance staff: Road preparation, mowing trails, blind repair -- $15,000
- Utilities for check station -- $2,000
- Portable restroom facilities -- $2,000

Monitoring Costs: The refuge may use additional traffic counters to monitor refuge activity on the Kennedy, Bradley, Davis-Clark, and Molnar units. The estimated cost is $4,000 initially, with a $1,000 annual expense in subsequent years.

Offsetting Revenues: The fees proposed in the Comprehensive Conservation Plan include:

- Youth Gun Deer Hunt -- $20.00 per hunter
- Youth Waterfowl Hunt -- $20.00 per hunter
- Youth/Adult Waterfowl Hunt -- $20.00 per hunter
- Adult Waterfowl Hunt -- $60.00 per permit

The refuge currently collects between $8,000 and $12,000 annually through hunt fees.

Anticipated Impacts of the Use:

Short-term Impacts: Limited public hunting should not have a negative impact on the overall refuge populations of the listed species being hunted. Hunting prevents overpopulation of deer and feral hogs and prevents associated habitat damage from the overpopulation of these species. Waterfowl hunting on the refuge is tightly regulated and should not cause any negative impacts to other species. Dove hunting is limited in duration and scope on the refuge and should not lead to any negative impacts to other species. Upland game hunting for rabbit and squirrel is limited to the month of February. While some disturbance may occur to other species during this activity, it is anticipated that the disturbance would be minimal and infrequent due to the short hunting season for these species.

Long-term Impacts: No long-term impacts to wildlife or associated habitat is anticipated.

Cumulative Impacts: No cumulative impacts are anticipated.

Determination:

Hunting (Big Game)	Use is compatible with the following stipulations.
Hunting (Migratory Birds Mourning Dove)	Use is compatible with the following stipulations.
Hunting (Upland Game)	Use is compatible with the following stipulations.
Hunting (Waterfowl)	Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility: Refuge hunting permits must be signed and carried along with the appropriate state license or hunters safety course card as required by state law. State regulations for Alabama and Georgia apply to all refuge hunting for the respective state the hunter is in. Law enforcement patrols by refuge officers would ensure compliance with refuge regulations as well as state laws related to hunting. Hunting is allowed in designated areas only. Areas closed to hunting would be marked with "No Hunting" or "Seasonally Closed" signs to ensure compliance. Alcoholic beverages are not permitted. Vehicles and bicycles would be restricted to graveled roads maintained for public traffic. ATVs are not allowed. Hunters under the age of 16 must be supervised by an adult not less than 21 years old and must remain in sight and normal voice contact with the adult. For small game and quota waterfowl hunts, the adult may supervise no more than two youths. For big game hunting, the adult may supervise only one youth. Airboats are not allowed on the refuge for hunting. Nontoxic shot is required for upland hunting, dove hunting, and waterfowl hunting. Waterfowl hunting would be limited to morning hunting. All waterfowl hunts would end at 12:00 noon.

The number of hunts, hunters, and units open to hunting at any one time would be modified to minimize overharvesting and provide for a safe and quality hunting experience.

Justification: Hunting is a priority wildlife-dependent public use listed under the National Wildlife Refuge System Improvement Act of 1997. The development of hunting opportunities fulfills both the mission of the Refuge System and the goals of Eufaula NWR. Controlled limited hunting is compatible with specific refuge objectives, sound wildlife management, and the public's interest on Eufaula NWR. The removal of surplus deer and hogs prevents overpopulation, which can be detrimental to herd health and negatively impact the resource. Hunting provides the public with an opportunity to utilize a renewable resource. Hunting is a traditional use on Eufaula NWR and the lower reaches of the Chattahoochee River.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-Year Re-Evaluation Date: _____

Description of Use: *Fishing*

Recreational fishing is a common public use activity on the refuge and the surrounding area. The refuge contains approximately 4,000 acres of open water that is part of the Walter F. George Reservoir (Lake Eufaula). An additional 1,200 acres of refuge wetlands support the fishery resource. Fishing is permitted on the refuge year-round in accordance with the appropriate state regulations for Alabama and Georgia. Fishing is a priority public use.

The agreement between the U.S. Army Corps of Engineers and the Service states that the water areas of the refuge will be open to the public for recreational purposes. All open water portions of the refuge that are part of the Walter F. George Reservoir would be open for boat access and fishing. Bank access (foot access) for fishing will be provided at designated points along the shoreline of Lake Eufaula within the refuge boundaries. Refuge impoundments would also be open to public fishing in accordance with state laws. Refuge impoundments and ponds would be closed seasonally to fishing from November 15 through March 1 to provide sanctuary for wintering waterfowl. The areas would be marked by the appropriate signs and included in the annual Refuge Hunting and Fishing Regulations. Sneads Pond would also be open to the public for fishing via foot access.

Fishing is permitted year-round on refuge waters except for the refuge impoundments, which are seasonally closed for waterfowl sanctuary from November 15 through March 1. Bank fishing activity is limited to daylight use only. Bank fishing is permitted from sunrise to sunset. The two boat launches that the refuge maintains would be open to the public from sunrise to sunset. No overnight use would be permitted on the Wildlife Drive boat launch or the Gammage Road boat launch.

Fishing in Lake Eufaula is legal with an Alabama or Georgia fishing license; fishing in refuge-impounded waters requires a license for the state in which you are fishing. State regulations on species, methods of take, and creel limits would apply. Boats with motors are not permitted in refuge-impounded waters.

Recreational fishing has been permitted on the refuge since the refuge was established in 1964. The refuge overlays on Corps of Engineers property. The 1964 permit granted to the Service from the U.S. Army Corps of Engineers states that the water areas of the refuge would be open to the public for recreational purposes. Recreational fishing is one of the Big Six priority uses of national wildlife refuges.

Availability of Resources: There is adequate funding to ensure compatibility and to administer the use at its current level. Additional resources would be needed to conduct the use as outlined in the Comprehensive Conservation Plan. Funding is needed for law enforcement, new fishing piers adjacent to refuge's outlet pumps, improved parking, and signage. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs:

- Annual trail maintenance from the Wildlife Drive and other roads to bank fishing areas -- $2,000
- Litter control signs -- $500
- Litter pickup -- $2,000
- Law Enforcement patrols -- $2,000
- Future expenses (fishing pier) -- estimated at $20,000

Monitoring Costs: None.

Offsetting Revenues: None.

Anticipated Impacts of the Use:

Short-term Impacts: Recreational fishing should not adversely affect the fishery resources, wildlife resources, or endangered species on the refuge. There may be some limited disturbance to certain species of wildlife and some trampling of vegetation; however, this disturbance should be short-lived and relatively minor and would not negatively impact wetland values.

Long-term Impacts: Disturbance to known bird rookery sites could be a concern. This has been identified in the Comprehensive Conservation Plan as an area for potential research in the future. The refuge will work closely with the Corps of Engineers and the appropriate state agencies to resolve any potential conflicts. Over time, the accumulation of litter in some bank fishing areas may also be a problem and could lead to a temporary closure of certain areas of the refuge.

Cumulative Impacts: During construction of the new fishing piers and rehab of parking areas, some disturbance to wildlife will occur. Once the proposed improvements are accomplished the refuge would experience an increase in use, but the increase is not expected to be detrimental to wildlife.

Determination:

Fishing (general)	Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility: Refuge fishing seasons are set within the season constraints outlined by the States of Alabama and Georgia, and fishermen would conform to state laws and regulations. Lake Eufaula's size and creel limits, as set by the States of Alabama and Georgia, apply in all refuge waters. Bank fishing and the use of the Wildlife Drive and Gammage Road boat ramps would be limited to daylight use only. Refuge ponds and impoundments are closed to fishing from November 15 through March 1 to reduce disturbance to waterfowl. Boats with motors are not permitted in refuge impoundments and ponds. Airboats may not be used on the refuge. Fishing in Lake Eufaula is legal with an Alabama or Georgia fishing license; fishing in refuge impoundments or ponds requires a license for the state in which you are fishing. Firearms are prohibited while fishing all refuge waters. Fires are not allowed. Alcoholic beverages are not permitted. Bank fishing may be closed in certain areas at any point during the season due to excessive litter.

Justification: Recreational fishing has been allowed on the refuge since its establishment in 1964. Visitation for fishing historically has been and is expected to be the most popular activity on the refuge, accounting for over 50% of refuge visitation. Fishing is a high quality, wildlife-dependent recreational use that allows the public the opportunity to utilize a renewable resource.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-year Re-evaluation Date: _____

Description of Use: *Wildlife Observation and Photography*

Visitors observe wildlife by walking or using motorized vehicles, bicycles, motorized and nonmotorized boats, and horses. Wildlife observation and photography are priority public uses.

The majority of wildlife observation and photography occurs on the refuge's Houston Unit. This unit includes a 7-mile auto tour route, two observation platforms, and a 1/3-mile walking trail. The refuge's Kennedy, Molnar, and Bradley units are open for wildlife observation and photography via foot access. Some refuge impoundments are seasonally closed to reduce disturbance to wintering waterfowl. These areas would be identified in refuge brochures and clearly marked with signs that state, "Area Beyond this Sign is Closed to All Public Access November 15 through March 1." Motorized vehicles, bicycles, and horses would be restricted to gravel roads.

The refuge is open year-round from sunrise to sunset.

Wildlife observation and photography would be permitted throughout the year during daylight hours only. Certain refuge impoundments would be closed to all entry to provide a waterfowl sanctuary. The areas or units closed to entry may vary from year to year, depending on use and habitat conditions. Access into waterfowl impoundments would be monitored to minimize disturbance. Photographers using temporary or floating binds would be required to remove the blinds from the refuge daily.

Wildlife observation and photography are two of the Big Six priority wildlife-dependent uses of national wildlife refuges. The level of interest in these activities is significant and continues to increase. Approximately 40,000 visitors engage in these activities on the refuge each year.

Availability of Resources: There is adequate funding to administer the use and ensure compatibility. Additional fiscal resources would be needed to carry out this use as proposed in the Comprehensive Conservation Plan. These funds would be used for additional observation platforms, improvements to the Wildlife Drive, photo blinds, etc. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs:

- Grade and maintain refuge roads -- $6,000
- Signs -- $2,000
- Litter control -- $1,000
- Law Enforcement patrols -- $10,000
- Future expenses (photo blind and observation tower) -- $50,000

Monitoring Costs: The refuge may use additional traffic counters to monitor refuge activity on the Kennedy, Bradley, Davis-Clark, and Molnar units. The estimated cost is $4,000 initially, with a $1,000 annual expense in subsequent years.

Offsetting Revenues: None.

Anticipated Impacts of the Use:

Short-term Impacts: The anticipated impacts from this use would be minor damage to vegetation, littering, increased maintenance activity, potential conflicts with other visitors, and disturbance to wildlife. Some wildlife would be killed and injured when crossing refuge roads in front of oncoming traffic.

Long-term Impacts: No long-term impacts to habitat or wildlife are anticipated.

Cumulative Impacts: Wildlife photographers can at times get too close to animals in their quest to "get the best shot." This usually results in disturbance of the animal, such as permanent dislocation or death. When photo blinds are not properly placed or temporary blinds are left for extended periods of time, the animals may stop using a particular area; for example, waterfowl may stop using an impoundment due to excessive and repeated disturbance.

Determination:

Photography (Wildlife)	Use is compatible with the following stipulations.
Wildlife Observation	Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility: Some refuge impoundments would be seasonally closed to all public entry from November 15 through March 1. This would prevent unnecessary disturbance during this critical time. These activities would be permitted during daylight hours only. Blinds brought in by the public for wildlife observation and photography must be removed from the refuge daily.

Justification: The majority of refuge visitors come to the refuge to see wildlife. While many visitors come to the refuge specifically to engage in wildlife photography, most come simply to observe wildlife in their natural setting. Approximately 50% of the refuge visitors bring their camera or video camera to capture the special moment that is part of their refuge visit. Wildlife observation and photography are two of the Big Six priority wildlife-dependent uses on national wildlife refuges. These uses are compatible and are not expected to cause significant conflicts with other refuge activities.

NEPA Compliance for Refuge Use Description: Place an X in appropriate space.

_____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- or 15-Year Re-Evaluation Date: _____

Description of Use: *Environmental Education and Interpretation*

Environmental education and interpretation include those activities that seek to increase the public's knowledge and understanding of wildlife and contribute to wildlife conservation.

Environmental education would be conducted at the refuge headquarters, on the Wildlife Drive, on the open water by boat, and on the refuge's Houston, Kennedy, Molnar, or Bradley units.

Environmental education and interpretation would primarily be done during normal business hours, from 8:00 a.m. to 4:30 p.m. However, these activities may occur outside that timeframe in order meet specific educational requirements, such as when the staff or volunteers lead "creatures of the night" programs that would occur after dark. Staff-led trips with university students to observe alligators may also occur after hours. Such after hours activities are, however, infrequent and would be approved in advance.

Environmental education and interpretation would be subject to any applicable federal, state, and refuge-specific regulations and occur within the refuge's designated public use areas. These activities include teacher-led programs; staff-led programs; teacher workshops; interpretation of wildlife resources; and visits to the refuge's support facilities, such as the refuge headquarters, visitor center, or check station facilities which are also used as environmental education classrooms.

These uses are two of the Big Six priority public uses of the National Wildlife Refuge System.

Availability of Resources: There is adequate funding to administer the uses and ensure their compatibility. Additional fiscal resources would be needed to carry out these uses as proposed in the Comprehensive Conservation Plan, to carry out the number of programs, activities, and facilities (visitor center and staff). No special equipment, facilities, or improvements are necessary to support the uses.

Maintenance Costs: Special events such as International Migratory Bird Day and National Wildlife Refuge Week can generate large numbers of visitors. The staff time and expense to conduct such events ranges from $1,000 to over $5,000. The refuge currently does not have a public use staff, so these activities are a collateral duty for the existing staff.

Monitoring Costs: None

Offsetting Revenues: Recreational use fees collected from the refuge's hunting program are used to support environmental education and interpretation activities.

Anticipated Impacts of the Use:

Short-term Impacts: The use of onsite, hands-on activities for students, boy and girl scouts, and other organized groups may impose a low level of impact to the refuge's public use areas. These impacts may include trampling of vegetation and temporary disturbance to wildlife in the immediate area of the activity. Potentail conflicts with other refuge visitors may arise with larger groups partcipating in these activities.

Long-term Impacts: No long-term impacts to wildlife or habitat is anticipated.

Cumulative Impacts: No cumulative impacts are anticipated.

Determination:

Environmental education (teaching students)	Use is compatible with the following stipulations.
Environmental education (teaching teachers)	Use is compatible with the following stipulations.
Interpretation	Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility: Special events held onsite would be held were minimal disturbance to wildlife would occur. Outdoor classroom areas would be the same areas that are open to the general public (away from resting waterfowl, and not in closed areas).

Justification: Through the use of environmental education and interpretation, the refuge can have a positive influence on thousands of visitors each year by providing insights on specific refuge problems, the importance of habitat management, and the needs of specific wildlife species. Visitors would leave the refuge with a clear message about invasive species control, longleaf pine restoration, waterfowl management, and the significance of Eufaula NWR. While providing these types of activities comes at a cost, the Service gains many important advocates through the operation of these programs.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-Year Re-Evaluation Date: _____

Description of Use: *Bicycling*

Bicycling is not a Big Six priority use, but is regulated by the refuge. Bicyling is not a commercial activity and is infrequently conducted on the refuge. Less than 100 cyclists utilize the refuge annually. The refuge requires no special facilities in support of this use other than the normal road maintenance that supports all other refuge and Big 6 activities.

Bicycling would be restricted to refuge-maintained gravel roads. No off-road use (trails, firebreaks, woods roads, etc.) would be allowed, including all roads closed to the general public whether it is a scheduled seasonal or emergency closure. Should numbers increase to an unacceptable level, this activity would be reduced or terminated.

Bicycling would occur year-round, but most likely from March through October when the temperatures are mild or when families would be on vacation. It would occur to a lesser extent as a means for transportation by deer hunters seeking to access remote portions of the refuge.

All equipment would be provided by the general public. Except on rare occasions, uses would be less than 5 on any one day. No additional facilities would be required or provided by the refuge.

The refuge is allowing this use under the assumption that users are gaining an excellent exposure to the refuge with an opportunity to observe wildlife at a level of quality equal to or greater than vehicle traffic on the auto tour route. Bicycling off the refuge is available but not in a surrounding to provide wildlife observation. It also facilitates hunter access.

Availability of Resources: No additional refuge resources are needed to support this activity. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs: None.

Monitoring Costs: None.

Offsetting Revenues: None.

Anticipated Impacts of the Use:

Short-term Impacts: This activity does not impact refuge objectives. It is not in itself a primary Big Six recreational use, but it does provide for additional wildlife viewing opportunities; often the activity encourages family outings on the refuge in a manner that is not any more disturbing to wildlife than other vehicular traffic. It provides hunter access to remote portions of the refuge.

Long-term Impacts: There would be no diversion of refuge resources away from other programs. Road maintenance is currently a high priority because it supports other refuge operations and all of the Big Six activities.

Cumulative Impacts: Bicycling is not a Big Six recreational use, but it does provide for additional wildlife viewing opportunities and hunter access; often the activity encourages family outings on the refuge in a manner that is not any more disturbing to wildlife than other vehicular traffic. There would be no diversion of refuge resources away from other programs. Road maintenance is currently a high priority because it supports other refuge operations and all of the Big Six activities.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Bicycling is compatible as long as access is limited to graveled roads and the number of users does not increase dramatically.

Justification: Bicycling enhances opportunities to observe wildlife and allows deer hunters to access remote portions of the refuge without negatively impacting wildlife or other wildlife-dependent priority public uses.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-year Re-evaluation Date: _____

Description of Use: *Canoeing*

Canoeing usage is not a Big Six use and is primarily regulated by the U.S. Army Corps of Engineers. The refuge could prohibit its use in coordination with the Corps if wildlife distubance should occur. Canoeing is not a commercial activity; there are no facilities in this area to rent canoes, only canoe owners using a public lake. Less than 50 canoers and kayakers use the refuge annually. The refuge needs no special facilities in support of this use.

Canoeing would likely occur in the refuge's creeks and coves, not in the big open water where motorized boats cause wake action. An estimated 300 acres of the 4,000 acres of reservoir within the boundary of the refuge would be used by canoers. There could be minor wildlife disturbance due to visual contact, but no more than other compatible uses. Canoeing would offer the highest quality of wildlife observation and photography because of the low impact and noise created by this venture.

Canoeing would most likely occur during an eight-month period from March to October during daylight hours. This use period would avoid disturbance to wintering waterfowl, which reach their highest numbers from late November to mid-February. Naturally, the heaviest use would be on Saturdays and Sundays.

No special equipment or facilities would be provided by the refuge. Peak one-time use would be in the low single digits on a given day, unless there should be a special event. Canoers would launch and retrieve their canoes from adjacent state parks, campgrounds, or refuge roads adjacent to the reservoir.

The refuge is allowing this use under the assumption that users are gaining an excellent exposure to the refuge with an opportunity to observe wildlife at a level of quality equal to or greater than vehicle traffic on the auto tour route. Canoeing off the refuge is available but not in a surrounding to provide wildlife observation. It also facilitates hunter access.

Availability of Resources: No additional resources will be involved in the administration and management of this use. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs: None.

Monitoring Costs: None.

Offsetting Revenues: None.

Anticipated Impacts of the Use:

Short-term Impacts: This activity does not impact refuge objectives. It is not in itself a primary Big Six recreational use, but it does provide for additional wildlife viewing opportunities on the refuge in a manner that is not any more disturbing to wildlife than motored boat traffic.

Long-term Impacts: There would be no diversion of refuge resources away from other programs.

Cumulative Impacts: Canoeing is not a Big Six recreational use, but it does provide for additional wildlife viewing opportunities; the activity encourages outings on the refuge in a manner that is less disturbing to wildlife than other boat traffic. There would be no diversion of refuge resources away from other programs.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: This use is compatible unless the use increases considerably, which is unlikely, or unacceptable wildlife disturbance is documented or increased use should occur during peak waterfowl use or wading/water bird nesting periods.

Justification: While canoeing is not a Big Six priority use, users of this category experience a high quality wildlife observation experience and cause no measurable disturbance to wildlife species or habitat. It does not interfere with refuge goals.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-year Re-evaluation Date: _____

Description of Use: *Farming and Haying*

Farming and haying involve the continued cultivation by a local farmer (cooperative farmer), using approved farming techniques outlined in the refuge's Cropland Management Plan, of less than 1,000 acres on the refuge (less than 10% of the refuge acreage). Plantings and harvesting by a cooperative farmer of high energy foods such as corn, peanuts, grain sorghum, soybeans, and other annual grasses such as millets, wheat and oats are for waterfowl, other migratory birds, and various wildlife species. This proposal supports several of the Big Six priority public uses. No additional facilities, equipment or personnel are needed to continue this activity.

Farming would be continued in traditional agricultural fields (less than 10% of the total refuge acreage). Fields are located in the uplands and in flooded fields near the river where waterfowl and migratory birds feed as they pass through or linger during their winter stay. Some species utilize these fields and associated old fields and edges year-round. Practices would include a combination of cultivation, no-till, or minimum till practices. The proposed use should not impact other areas or the public's use of the refuge. These farmed areas support several of the Big Six public use activities. Any chemical use associated with the practice would be carefully selected and contained within the fields by use of grassed field borders and other vegetation. Planting and harvesting equipment would be temporarily stored on the refuge, but not in refuge facilities.

Farming activities are seasonal, with the most activity occurring daily during the planting season (March–April) and during harvest (May and late August–September).

Farming activities would be carried out by a private farmer (cooperative farmer) and his helpers (approximately 3–4 people) using their equipment. Equipment consists of tractors, planting implements and sprayers, combines, and trucks to haul harvested grain to market. The only refuge facilities utilized are refuge-maintained roads.

Farming is a refuge proposed activity using either cooperative farmers, contracted farmers, or refuge personnel and equipment. Cooperative farming is the most economical. Farming is a vital management tool that provides food, habitat diversity and protective cover for a variety of wildlife species. The refuge provides unique facilities to provide public viewing and shallow water feeding for waterfowl not available on private land. Farming supports several Big 6 public use opportunities.

Availability of Resources: Resources are available to administer this use (currently 5% of existing employee's salary to oversee this program). No additional operating funds are needed. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs: None.

Monitoring Costs: About 5% of the current employees' salary is required for monitoring for compliance.

Offsetting Revenues: None.

Anticipated Impacts of the Use:

Short-term Impacts: Proposal bennefits numerous wildlife species and supports hunting, wildlife observation, wildlife photography, environmental education and environmental interpretation. This activity does not significantly impact any other refuge activity.

Long-term Impacts: Proposal bennefits numerous wildlife species and supports hunting, wildlife observation, wildlife photography, environmental education and environmental interpretation.

Cumulative Impacts: Proposal bennefits numerous wildlife species and supports hunting, wildlife observation, wildlife photography, environmental education and environmental interpretation.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: That policy and guidance is followed and that practice is conducted according to this station's Cropland Management Plan and any subsequent decisions developed through the CCP process.

Justification: The practice provides the needed foods for the 2,600,000 use-days for waterfowl and 2,000,000 use-days for other migratory birds. Farming by means of a cooperative farmer where a share of the crop is left for wildlife consumption is the most economical way to produce the grain foods to feed the wildlife species using the refuge. Options to utilize contracted farmers or refuge employees to conduct this program is not available due to budget contraints.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-year Re-evaluation Date: _____

Description of Use: *Feral Hog Management Program*

Refuge-wide feral hog control is being instituted on Eufaula National Wildlife Refuge in an effort to significantly reduce or eliminate the feral hog population. Three management options are being considered.

Individuals will be allowed to live-trap hogs on the refuge under the conditions and guidelines of a Special Use Permit. Hogs captured in traps must be killed before they are removed from the refuge.

Hunting with the aid of hounds will be allowed on the refuge under the conditions and guidelines of a Special Use Permit. Hogs captured by hound hunters must be removed from the refuge dead at the conclusion of the hunt.

Recreational hunting during current open refuge deer hunts. Hunters participating in archery deer hunts and youth quota gun deer hunts will be permitted to harvest feral hogs. There is no bag limit on hogs.

Feral hog management will occur throughout the refuge. Approximately 4,000 acres of the refuge is open water. The remaining 7,184 acres would be open for feral hog control as deemed necessary by the Refuge Manager to protect habitat from destruction by feral hogs.

Feral hog control by live trapping and hunting with the aid of hounds would occur from mid-February through early October to avoid any conflict with public hunts and disturbance to wintering waterfowl. These activities would be closely monitored by the refuge staff in an effort to mitigate any conflicts with the visiting public or disturbance to wildlife.

Feral hog control by public hunting would be permitted during the archery deer season and the quota youth deer hunts. The archery deer season runs from October through the end of January in Alabama and from September through the end of January in Georgia. The quota youth deer hunts occur on selected weekends during the month of October.

The Bradley Unit in Georgia is currently open for archery deer hunting and limited quota youth gun hunts. The Alabama portion of the refuge is open for archery deer season consistent with state regulations. Hunters can harvest hogs during any open deer season on the refuge. There is no bag limit. All state and federal regulations must be complied with for hunting hogs. All hogs killed must be removed from the refuge at the conclusion of the day's hunt. Individuals interested in trapping hogs or hunting with the aid of hounds on the refuge may do so under a Special Use Permit issued by the Refuge Manager.

Eufaula NWR was established to provide food and resting habitat for migratory waterfowl and wood ducks. The accomplishment of this main objective is being challenged by the disruption caused by feral hog populations on and around the refuge.

For numerous years, feral hogs have roamed at large on Eufaula NWR lands, as well as private lands surrounding the refuge. Currently, there are known populations of feral hogs located on the Bradley Unit in Georgia and the Houston Unit in Alabama. The hog population on the Bradley Unit has gone unchecked and unmanaged, allowing it to grow to a stage where its numbers are affecting native wildlife and fauna. The hog population on the Houston Unit was first documented by refuge staff and confirmed by researchers from Auburn University in April 2006. The feral hogs are degrading wildlife habitat and competing directly with native wildlife for food. Hogs are also having an impact on ground-nesting and ground-dwelling species by means of predation.

It is difficult to establish or estimate the number of hogs that inhabit the refuge due to their extensive movements to and from refuge land. The Bradley Unit is surrounded by one adjacent landowner, the W.C. Bradley Company. The dense vegetation on the Bradley Unit causes difficulty surveying the hog population. Hogs can hide very well among the tall grass of the refuge fields and impoundments, as well as the wooded areas on the perimeter of the Bradley Unit. Due to the difficulty in surveying the hog population, a threshold level cannot be developed. Managers will use professional judgment in determining the needed actions. Damage to refuge habitat and damage to adjacent croplands and managed wildlife habitat will be considered and appropriate actions taken.

Feral hog control would be a vital management tool in order to meet the objectives for which the Eufaula National Wildlife Refuge was established.

Availability of Resources: This use would be administered by the Refuge Manager. The Refuge Biologist would monitor this use and its impacts to wildlife. Random compliance checks would be conducted to verify compliance by permittees. The refuge currently has the resources to administer this use. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs: The refuge currently operates two unstaffed check stations during the archery deer season. During the quota youth deer hunts, the check station is staffed. No additional maintenance costs are anticipated for the proposed use.

Monitoring Costs: The refuge has one biologist on the staff that would monitor the impacts of this use. Feral hog removal should lead to improved overall habitat conditions on the refuge. The Refuge Manager and Assistant Refuge Manager have law enforcement authority and would perform random compliance checks on hunters and permittees.

Offsetting Revenues: The refuge currently collects permit fees for quota hunts. The fee for the quota youth deer hunt held on the Bradley Unit in Georgia is $12.50 per hunter. Twenty youth hunters participate in the hunt each year. The total revenue collected is $250.00. No additional fees would be collected related to this use.

Anticipated Impacts of the Use:

Short-term Impacts: Impacts during management actions include an increase in wildlife disturbance during trapping and hunting, with hounds along roadways due to increased vehicular traffic. Vegetation may be trampled during the placement of live traps.

Long-term Impacts: The overall quality of wildlife habitat will dramatically improve as the feral hog population decreases. The Bradley Unit in Georgia is currently infested with feral hogs. This unit of the refuge is approximately 850 acres and the entire unit has extensive damage related to feral hogs. Moist soil plants cannot be managed for waterfowl because of hog disturbance and any crops that are planted are destroyed by hogs. Feral hogs are particularly harmful to bird and reptile nests. The long term effect of this activity would be a positive improvement over the current habitat conditions.

Cumulative Impacts: This use would provide improved habitat for migratory birds and also improve habitat conditions on adjacent lands surrounding the refuge. The adajacent landowner on the Georgia side of the refuge is actively controlling the hog population on his property.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Hunters harvesting feral hogs during refuge deer hunts would possess a signed Refuge Hunting Permit. Individuals using live traps and hunting with the aid of hounds would be permitted to do so under a Special Use Permit.

In order to be considered as a permittee to live-trap feral hogs on federal lands (Eufaula National Wildlife Refuge), candidates and helpers must:

1. Possess a valid state hunting license for the appropriate state (Alabama or Georgia).
2. Possess a valid and current driver's license.
3. Possess valid and current vehicle insurance.
4. Provide three references that can describe and confirm the trapper's past hog-trapping experience.
5. Live in the local area, within approximately 50 miles, and have the ability to respond in a timely manner to any situation arising from hog trapping activities.
6. Legally possess a firearm for dispatching feral hogs.
7. Have a minimum of 4 traps to be used on the specific unit. Exceptions could be made according to the size of the unit being trapped or the Refuge Manager's discretion.

NOTE: Requirement no. 5 may be waived under certain circumstances for previous permittee demonstrating a high level of cooperation and program support.

The use of hounds to kill or chase hogs will be an alternative to be considered by the Refuge Manager according to the needs and the location. This method can be very effective if done properly with the handler exhibiting good control of the hounds. A Special Use Permit would be issued to an assigned individual or group to handle, trap or kill the hogs in the refuge. The permittee will have to provide references and proof of previous experience on using hounds to pursue hogs and agree to a background check.

To be considered for a permit to remove feral hogs with the aid of dogs on federal lands (Eufaula National Wildlife Refuge), candidates and assistants must:

1. Possess a valid state hunting license for the appropriate state (Alabama or Georgia).
2. Possess a valid and current driver's license.
3. Possess valid and current vehicle insurance.
4. Demonstrate the ability, knowledge and equipment required for hunting hogs with the aid of dogs through an interview and/or demonstration.
5. Provide three references that can describe and confirm previous experience on using hounds to pursue hogs.
6. Legally possess a firearm for dispatching feral hogs.

The selected permittee will be subject to a background investigation for violations of State and/or Federal law. Permittee selection will be based off an individual interview, letters of reference and possibly a field demonstration.

Justification: The policy of the U.S. Fish and Wildlife Service is to engage in the necessary control of wildlife within the National Wildlife Refuge System to assure a balance of wildlife and fish populations consistent with the optimum management of refuge habitat (Refuge Manual 7RM 14.2).

Title 50 CFR Part 30, Section 11 - Control of feral animals.

(a) Feral animals, including horses, burros, cattle, swine, sheep, goats, reindeer, dogs, and cats, without ownership that have reverted to the wild from a domestic state may be taken by authorized Federal or State personnel or by private persons operating under permit in accordance with applicable provisions of Federal or State law or regulations.

Title 50 CFR Part 31, Section 14 - Official animal control operations.

(a) Animal species which are surplus or detrimental to the management program of a wildlife refuge area may be taken in accordance with Federal and State laws and regulations by Federal or State personnel or by permit issued to private individuals.
(b) Animal species which are damaging or destroying Federal property within a wildlife refuge area may be taken or destroyed by Federal personnel.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-year Re-evaluation Date: _____

Description of Use: *Forest Management at Eufaula NWR*

Forest management on Eufaula NWR is not a priority public use. Prior to 2001, Eufaula had conducted little or no timber stand improvements. Both natural and planted pine forests were typified by mature trees with closed canopies and poor regeneration. Southern pine beetle outbreaks in 2000 and 2001 required the timber to be thinned. In other areas, the beetle infestations have gradually killed timber over the past 10 years. Problems with insect outbreaks are typical of overstocked stands with closed canopies. Periodic thinning and burning results in healthy forests of productive and diverse wildlife habitat. The refuge's Forest Management Plan (1971) calls for silvicultural treatments every 8 years based on an 80-year rotation cycle. In conducting timber sales, the refuge's goal is to reduce the existing timber basal area of pine to approximately 40 square feet/acre or less. The average basal area for maintaining pine forests in the south is approximately 80. The management goal in pine and pine/hardwood stands is to increase plant diversity, and habitat conditions for bobwhite quail, migratory birds (Bachman's sparrow, woodcock, brown-headed nuthatch), and wild turkey. Subsequent to thinning, the areas would be burned during winter. Hardwood trees in pine/hardwood stands are removed using timber stand improvement (TSI) methods. The healthiest, dominant, large crown trees are left, removing the smaller, subdominant, deformed ones. Streamside protection zones are left around perennial streams and shorelines. Standing snags and dead trees are retained.

The refuge is within the historical range of longleaf pine and contains remnant longleaf pine stands. These stands have poor regeneration due to invasion by loblolly. Restoration of these former longleaf pine habitats has begun and should continue into the future. Historical aerial photography documents that these forests had a more open canopy and ground cover conditions than in recent times. Long time residents speak of the grassy open understory and of quail hunting in these forests. Thinning out the remaining loblolly pine and replanting longleaf combined with growing season burns will accomplish the restoration efforts.

Eufaula National Wildlife Refuge, lying on the upper reaches of Walter F. George Reservoir, consists of 11,184 acres. There are 7,953 acres in Barbour and Russell Counties, Alabama, and 3,231 in Stewart and Quitman Counties, Georgia. The refuge is located about 40 miles south of Columbus, Georgia, and 80 miles east of Montgomery, Alabama. Much of the refuge lies within the city limits of Eufaula. The headquarters is eight miles north of Eufaula off U.S. Highway 431 on Alabama Highway 165. There are approximately 3,150 acres of pine and pine hardwood forest on the refuge. This area will be managed to promote a healthy forest and to meet refuge objectives.

Forest management activities would occur year-round as necessary to meet specific management objectives. Timber harvest operations will be conducted using local contractors who will bid on the timber to be harvested. In conducting timber sales, the refuge's goal is to reduce the existing timber basal area of pine to approximately 40 square feet/acre or less. The average basal area for maintaining pine forests in the south is approximately 80. The management goal in pine and pine/hardwood stands is to increase plant diversity, and habitat conditions for bobwhite quail, migratory birds (Bachman's sparrow, woodcock, brown-headed nuthatch), and wild turkey. Subsequent to thinning, the areas are burned during winter. Hardwood trees in pine/hardwood stands are removed using timber stand improvement (TSI) methods. The healthiest, dominant, large crown trees are left, removing the smaller, subdominant, deformed ones. Managing the hardwood stands for acorn production is another forest management objective. Acorn-producing hardwood stands are an important wildlife resource. Larger diameter oaks with crowns fully exposed to sunlight produce more acorns than trees with crowns partially or totally shaded. Thinning is important to increase acorn production. Streamside protection zones are left around perennial streams and shorelines.

Removal of invasive species will be performed by refuge staff or contractors. Species such as Chinaberry trees, Chinese tallow, Chinese privet, etc. will be injected or sprayed and the replaced with native species.

This use is being proposed by the refuge as a management tool designed to improve habitat conditions on the refuge for trust species.

Availability of Resources: The refuge staff plans and implements all forest management activities. The refuge has sufficient staff to accomplish these activities. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs: All maintenance costs associated with a commercial timber sale will be borne by the Special Use Permit holder.

Monitoring Costs: Monitoring forest management activities is an administrative function; costs are accounted for in personnel salaries.

Offsetting Revenues: As stated in the Corps of Engineers permit, the refuge is allowed to keep receipts from all timber sales. These funds are put back into habitat management on the refuge, such as purchasing longleaf pine seedlings.

Anticipated Impacts of the Use:

Short-term Impacts: The short-term impacts will vary with the scope of the timber harvest technique utilized. Thinning and timber stand improvement projects will result in very limited impacts to habitats, and virtually no impacts to trust species. Clearcuts and patch cutting will have moderate impacts to localized blocks of habitats, and may temporarily displace trust species.

Long-term Impacts: The long-term impacts will be beneficial for all timber harvest operations, as they are designed to improve habitat conditions over time for trust species. Benefits include, but are not limited to, increased vigor of key species, increased diversity both in structure and species composition of the forest habitats, and improved wildlife habitat.

Cumulative Impacts: No negative cumulative impacts are expected as a result of timber management. Timber management, in concert with other refuge management activities, will greatly enhance the suitability of the various habitats on the refuge for a variety of wildlife species.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: All commercial activities will be conducted under the regulations set forth by Special Use Permits. These regulations will follow all guidelines outlined in the Eufaula Forest Management Plan. Forest management activities will follow the Alabama and Georgia Forest Best Management Practices.

The Special Use Permit holder will utilize management techniques which do not adversely affect soils, water bodies, or any other natural resources present. These techniques should include harvesting under proper climatic conditions and placing buffer strips where necessary to protect water quality or other natural resources. Any special use activity not in compliance will be immediately stopped.

Justification: Forest management, including thinning and regeneration of the pine and pine-hardwood forest on Eufaula National Wildlife Refuge, is required to create and maintain the habitat needed by Bachman's sparrow populations and healthy populations of brown-headed nuthatch, northern bobwhite, wild turkey, red-headed woodpecker, fox squirrel, southern hognose snake and other trust species.

Silviculture is an important component in meeting Hazard Fuel Reduction (HFR) and/or Wildland-Urban Interface (WUI) mitigation goals of the 10-Year Comprehensive Strategy and the key points of the 2001 National Fire Plan. Forest management is compatible, is justified and is a vital part of refuge management.

One goal that is identified in the refuge's Comprehensive Conservation Plan is to restore longleaf pine habitats on approximately 1,000 acres by 2015. Part of the Refuge System's mission is to restore fish, wildlife, and plant resources. In order to restore pine and pine hardwood stands on the refuge, timber harvests are required. The only cost-effective way to do this type of forest management is through a public bid process and Special Use Permits.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-year Re-evaluation Date: _____

Description of Use: *Horseback Riding*

Horseback riding is not a Big Six use, but is regulated by the refuge. It is not a commercial activity and is infrequently conducted on the refuge. Riders are required to remain on refuge roads or the immediate shoulder. Less than 25 riders utilize the refuge annually. The refuge requires no special facilities in support of this use, other than the normal road maintenance that supports all other refuge and Big Six activities.

Horseback riders would be restricted to refuge-maintained gravel roads. No off-road use (open fields, trails, firebreaks, woods roads, etc.) would be allowed. Restricted use includes all roads and areas closed to the general public, whether it is a scheduled seasonal or emergency closure. This is seen as a low impact form of transportation and being more suitable to the refuge than permitted recreational vehicles (RVs) and school or tour buses.

Horseback riding would occur year-round, but most likely from March through October when the temperatures are mild. Horses and equipment would be owned and trailered to the refuge by the general public. Except on rare occasions, uses would be 2–3 on any one day. No additional facilities would be required or provided by the refuge.

The refuge is allowing this use under the assumption that users are gaining an excellent exposure to the refuge with an opportunity to observe wildlife at a level of quality equal to or greater than vehicle traffic, including the auto tour route, and it is more acceptable than RVs and buses. Horseback riding off the refuge is not available to the public where it provides quality wildlife observation.

Availability of Resources: No added refuge resources are needed to support this activity. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs: None.

Monitoring Costs: None.

Offsetting Revenues: None.

Anticipated Impacts of the Use:

Short-term Impacts: This activity does not impact refuge objectives. It is not a primary Big 6 recreational use, but it does provide for additional wildlife viewing opportunities on the refuge in a manner that is not any more disturbing to wildlife than vehicles using refuge roads for Big 6 activities.

Long-term Impacts: There would be no diversion of refuge resources away from other programs.

Cumulative Impacts: Horseback riding is not a Big 6 recreational use, but it does provide for additional wildlife viewing opportunities in a manner that is not any more disturbing to wildlife than other vehicular traffic. There would be no diversion of refuge resources away from other programs. Road maintenance is currently a high priority because it supports other refuge operations and all of the Big 6 activities.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Horseback riding is compatible as long as access is limited to graveled roads, the use does not increase considerably or unacceptable wildlife disturbance is not documented.

Justification: Horseback riding enhances opportunities to observe wildlife without negatively impacting wildlife or other wildlife-dependent priority public uses. It does not damage refuge roads nor interfere with refuge goals. It is seen as at least as acceptable as buses and RVs.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-year Re-evaluation Date: _____

Description of Use: *Jogging and Walking*

Jogging and walking are not Big Six uses, but are regulated by the refuge. It is not a commercial activity and is infrequently conducted on the refuge. Joggers and walkers are required to remain on refuge roads or the immediate shoulder. Less than 25 joggers and walkers utilize the refuge annually. The refuge requires no special facilities in support of this use other than the normal road maintenance that supports all other refuge and Big Six activities.

Joggers and walkers would be restricted to refuge-maintained gravel roads. No off-road use (open fields, trails, firebreaks, woods roads, etc.) would be allowed. Restricted use includes all roads and areas closed to the general public ,whether it is a scheduled seasonal or emergency closure.

Jogging and walking would occur year-round, but most likely from March through October when the temperatures are mild.

No special equipment or facilities would be provided by the refuge. Users would be limited to 1 or 2 users on any one day with many days having no use.

The refuge is allowing this use under the assumption that users are gaining an excellent exposure to the refuge with an opportunity to observe wildlife at a level of quality equal to or greater than vehicle traffic, including the auto tour route. Jogging and walking are available off-refuge, but not available to the public where it provides quality wildlife observation.

Availability of Resources: No additional resources will be involved in the administration and management of this use. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs: None.

Monitoring Costs: None.

Offsetting Revenues: None.

Anticipated Impacts of the Use:

Short-term Impacts: This activity does not impact refuge objectives. Jogging and walking are not a primary Big 6 recreational use, but they do provide for additional wildlife viewing opportunities on the refuge in a manner that is not any more disturbing to wildlife than vehicles using refuge roads for Big 6 activities.

Long-term Impacts: There would be no diversion of refuge resources away from other programs.

Cumulative Impacts: Jogging and walking are not a Big Six recreational use, but they do provide for additional wildlife viewing opportunities in a manner that is not any more disturbing to wildlife than other vehicular traffic. There would be no diversion of refuge resources away from other programs. Road maintenance is currently a high priority because it supports other refuge operations and all of the Big Six activities.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Jogging and walking are compatible as long as access is limited to graveled roads, and as long as the use does not increase considerably or unacceptable wildlife disturbance is documented.

Justification: Jogging and walking enhance opportunities to observe wildlife without negatively impacting wildlife or other wildlife-dependent priority public uses. It does not damage refuge roads nor interfere with refuge goals.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-year Re-evaluation Date: _____

Description of Use: *Scientific Field Studies (Research)*

Reseach is an existing activity encouraged by the refuge. Research and studies are limited to resource problems and a need to obtain information on how to better conduct refuge habitat and management programs, better control invasive plants, how to better manage fish and wildlife populations, how to control certain diseases, etc. It is not a Big Six activity and is not an economical activity. A maximum of 2–3 research projects are conducted annually. No expanded refuge involvement is required.

Research projects are reviewed on a case-by-case basis and must offer some benefit to the refuge by furthering the staff's understanding of an issue that needs an answer or solution. It could be conducted on any portion of the refuge or on any subject on the refuge using sound protocol and reasoning. No impacts to other users or refuge operations would be anticipated.

Research could be conducted year-round and by night or day. The duration could be short-term or multiyear.

Research or special studies would normally be conducted by colleges or university professors and students.

The research will be conducted to enhance the refuge staff's knowledge of how better to manage the habitats and species on the refuge.

Availability of Resources: Generally, no added resources are needed to conduct these activities except during the startup phase. Since the refuge and staff are direct benefactors, it is possible that some support would be ongoing during the period of active research such as nominal assistance from staff or discussions about progress. No special equipment, facilities, or improvements are necessary to support the use.

Maintenance Costs: None.

Monitoring Costs: None.

Offsetting Revenues: None.

Anticipated Impacts of the Use:

Short-term Impacts: There are no anticipated impacts for this activity. It is essentially the same as refuge employees carrying out their duties.

Long-term Impacts: None.

Cumulative Impacts: None.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: This use would continue unless researchers interfere with the refuge mission. Research projects will be limited to resource management issues that make contributions to the refuge's goals and purposes.

Justification: Research enhances the refuge's ability to improve all phases of habitat and species management.

NEPA Compliance for Refuge Use Description: *Place an X in appropriate space.*

_____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- or 15-year Re-evaluation Date: _____

APPROVAL OF COMPATIBILITY DETERMINATIONS

The signature of approval is for all compatibility determinations considered within the Comprehensive Conservation Plan for Eufaula National Wildlife Refuge. If one of the descriptive uses is considered for compatibility outside of the comprehensive conservation plan, the approval signature becomes part of that determination.

Refuge Manager: _____
(Signature/Date)

Regional Compatibility Coordinator: _____
(Signature/Date)

Refuge Supervisor: _____
(Signature/Date)

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

Appendix VII. Intra-Service Section 7 Biological Evaluation

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Troy Littrell
Telephone Number: 334-687-5906
E-Mail: troy_littrell@fws.gov
Date: April 27, 2007

PROJECT NAME: Eufaula 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/Agencies: Alabama Department of Conservation and Natural Resources
Georgia Wildlife Resources Division

III. Station Name: Eufaula National Wildlife Refuge

IV. Description of Proposed Action:

The proposed Comprehensive Conservation Plan would provide overall direction for management of wildlife populations, habitat, and public use at Eufaula Refuge over the next 15 years. The preferred alternative would provide for balanced wildlife/habitat management and public use activities. It would support the purposes for which the refuge was established, including conservation of endangered or threatened species.

V. Pertinent Species and Habitat:

A. Include species/habitat occurrence map: Please see Figure 4 in the CCP.

B. Complete the following table:

SPECIES/CRITICAL HABITAT	STATUS[1]
Wood stork (*Mvcteria americana*)	E

[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): See Figures 1 and 2 in the CCP.

A. Ecoregion Number and Name: #30, Northeast Gulf Watersheds

B. Counties and States: Barbour and Russell counties, Alabama
Stewart and Quitman counties, Georgia

C. Section, township, and range (or latitude and longitude): 31.9° N, 85.1° W

D. Distance (miles) and direction to nearest town: 7 miles south to Eufaula, AL

E. Species/habitat occurrence:

Wood stork – This species is commonly seen on the refuge between May and October, especially when lake levels and impoundment water levels are low enough to provide isolated pools for foraging. The number of storks using the refuge fluctuates greatly from year to year, with as many as 70 birds having been observed. Although the refuge has several active wading bird rookeries, no wood stork nesting has occurred in the refuge vicinity. The Molnar Unit was established as a management area for wood storks. Nesting platforms and decoys were installed but have not been successful to date. Periodically, excess fingerlings, minnows, and tadpoles from the Warm Springs Fish Hatchery are released in the Molnar Impoundment as a supplemental food resource for storks and other wading birds. Habitat management for wood storks is an objective in other impoundments as well.

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
Wood stork	Actions proposed under CCP would continue to provide for seasonal and temporary use (foraging and resting). Refuge would continue to monitor abundance and distribution of wood storks. The Molnar Unit in particular would continue to be managed for wood storks

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

SPECIES/ CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS
Wood stork	Impacts of proposed actions would be largely beneficial; unnecessary or excessive disturbance of wood storks would be discouraged.

VIII. Effect Determination and Response Requested:

SPECIES/CRITICAL HABITAT	DETERMINATION[1]			REQUESTED
	NE	NA	AA	
Wood stork		X		Concurrence

[1]DETERMINATION/ RESPONSE REQUESTED:
NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested is optional but a "Concurrence" is recommended for a complete Administrative Record.

NA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response Requested is a" Concurrence".

AA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested for listed species is "Formal Consultation". Response requested for proposed 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 VIII. 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:

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

2. has outstanding opportunities for solitude or primitive and unconfined types of recreation;

3. has at least 5,000 contiguous roadless acres or is of sufficient size to make practicable its preservation and use in an unimpeded condition; or is a roadless island, regardless of size;

4. does not substantially exhibit the effects of logging, farming, grazing, or other extensive development or alteration of the landscape, or its wilderness character could be restored through appropriate management at the time of review; and

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

The lands with Eufaula National Wildlife Refuge were reviewed for their suitability in meeting the criteria for wilderness, as defined by the Wilderness Act of 1964. No lands in the refuge were found to meet these criteria, in particular criterion #3 (5,000 contiguous roadless acres). Therefore, the suitability of refuge lands for wilderness designation is not further analyzed in this plan.

Appendix IX. Refuge Biota

BIRDS

LOONS	Sp	S	F	W
Common Loon (*Gavia immer*)	o	o	u	u
Red-throated Loon (*Gavia stellata*)	x	-	-	-

GREBES	Sp	S	F	W
Pied-billed Grebe* (*Podilymbus podiceps*)	c	u	c	c
Horned Grebe (*Podiceps auritus*)	r	-	r	o
Eared Grebe (*Podiceps nigricollis*)	x	-	-	-

SHEARWATERS, PETRELS	Sp	S	F	W
Leach's Storm-petrel (*Oceanodrama leucorhoa*)	-	-	x	-

PELICANS AND ALLIES	Sp	S	F	W
Double-crested Cormorant (*Phalacrocorax auritus*)	c	u	u	c
Anhinga* (*Anhinga anhinga*)	u	u	r	r
Brown Pelican (*Pelecanus occidentalis*)	r	-	r	-
White Pelican (*Pelecanus erythrorhynchos*)	r	r	x	x

HERONS, EGRETS AND ALLIES	Sp	S	F	W
American Bittern (*Botaurus lentiginosus*)	u	r	o	u
Least Bittern* (*Ixobrychus exilis*)	c	c	-	-
Great Blue Heron* (*Ardea herodias*)	c	c	c	a
Great Egret* (*Ardea alba*)	c	c	a	a
Snowy Egret* (*Egretta thula*)	u	u	o	o
Little Blue Heron* (*Egretta caerulea*)	c	c	u	u
Tricolored Heron (*Egretta tricolor*)	u	u	o	r
Reddish Egret (*Egretta rufescens*)	r	-	r	r
Cattle Egret* (*Bubulcus ibis*)	c	a	a	u
Green-backed Heron* (*Butorides striatus*)	c	c	u	r
Black-crowned Night-Heron (*Nyctanassa nycticorax*)	c	u	c	c
Yellow-crowned Night-Heron (*Nyctanassa violacea*)	u	o	r	-

IBISES, SPOONBILL, STORK	Sp	S	F	W
Glossy Ibis (*Plegadis falcinellus*)	r	r	-	r
White Ibis* (*Eudocimus albus*)	u	u	u	u
Roseate Spoonbill (*Ajaia ajaia*)	-	-	x	x
Wood Stork (*Mycteria americana*)	-	r	r	-

WATERFOWL	Sp	S	F	W
Fulvous Whistling-Duck (*Dendrocygna bicolor*)	x	-	-	x
Tundra Swan (*Cygnus columbianus*)	x	-	r	o
Greater White-Fronted Goose (*Anser albifrons*)	o	-	o	u
Snow Goose (*Chen caerulescens*)	u	-	u	c
Canada Goose* (*Branta canadensis*)	c	c	a	a
Wood Duck* (*Aix sponsa*)	c	a	a	a
Green-winged Teal (*Anas crecca*)	c	-	a	a
American Black Duck (*Anas rubripes*)	u	-	u	u
Mallard (*Anas platyrhynvchos*)	a	c	a	a
Northern Pintail (*Anas acuta*)	u	-	a	a
Blue-winged Teal (*Anas discors*)	c	o	a	u
Northern Shoveler (*Anas clypeata*)	c	-	c	a
Gadwall (*Anas strepera*)	u	-	a	a
American Wigeon (*Anas americana*)	c	o	a	a
Canvasback (*Aytha valisineria*)	o	-	o	u
Redhead (*Aythya americana*)	o	-	u	u
Ring-necked Duck (*Aythya collaris*)	c	-	a	a
Greater Scaup (*Aythya marila*)	-	-	-	r
Lesser Scaup (*Aythya affinis*)	u	-	c	c
Oldsquaw (*Clangula hyemalis*)	x	-	-	x
Common Goldeneye (*Bucephala clangula*)	o	-	r	u
Bufflehead (*Bucephala albeola*)	u	-	u	c
Hooded Merganser* (*Lophodytes cucullatus*)	u	r	u	c
Common Merganser (*Mergus merganser*)	r	-	o	o
Red-breasted Merganser (*Mergus serrator*)	o	-	u	u
Ruddy Duck (*Oxyura jamaicensis*)	u	-	u	c

VULTURES, HAWKS AND ALLIES	Sp	S	F	W
Black Vulture (*Coragyps atratus*)	u	u	u	u
Turkey Vulture (*Cathartes aura*)	c	u	c	c
Osprey (*Pandion haliaetus*)	u	u	u	o
Mississippi Kite (*Ictinia mississippiensis*)	-	r	-	-
Bald Eagle (*Haliaeetus leucocephalus*)	o	o	o	u
Northern Harrier (*Circus cyaneus*)	u	-	c	c
Sharp-shinned Hawk (*Accipiter striatus*)	u	o	u	u
Cooper's Hawk (*Accipiter cooperii*)	u	o	u	u
Red-shouldered Hawk (*Buteo lineatus*)	u	u	u	u
Broad-winged Hawk (*Buteo platypterus*)	o	o	o	r
Swainson's Hawk (*Buteo swainsoni*)	-	-	x	x
Red-tailed Hawk* (*Buteo jamaicensis*)	c	u	c	c
Rough-legged Hawk (*Buteo lagopus*)	-	-	x	x
Golden Eagle (*Aquila chrysaetos*)	-	r	r	o
American Kestrel (*Falco sparverius*)	o	o	c	c
Merlin (*Falco columbarius*)	r	-	o	o
Peregrine Falcon (*Falco peregrinus*)	r	-	r	r

GALLINACEOUS BIRDS	Sp	S	F	W
Wild Turkey* (*Meleagris gallopavo*)	o	o	o	o
Northern Bobwhite* (*Colinus virginianus*)	a	a	a	a

RAILS, GALLINULES, COOTS AND CRANES	Sp	S	F	W
Yellow Rail (*Coturnicops noveboracensis*)	x	r	-	x
Black Rail (*Laterallus jamaicensis*)	x	-	-	-
King Rail* (*Rallus elegans*)	u	u	u	o
Virginia Rail (*Rallus limicola*)	o	-	x	r
Sora (*Porzana carolina*)	o	x	o	o
Purple Gallinule (*Porphyrio martinica*)	u	u	o	r
Common Moorhen (*Gallinula chloropus*)	c	c	u	u
American Coot (*Fulica americana*)	c	u	a	a
Sandhill Crane (*Grus canadensis*)	r	-	x	r

SHOREBIRDS	Sp	S	F	W
Black-bellied Plover (*Pluvialis squatarola*)	u	r	u	o
American Golden Plover (*Pluvialis dominica*)	u	-	u	-
Wilson's Plover (*Charadrius wilsonia*)	-	-	x	-
Semipalmated Plover (*Charadrius semipalmatus*)	u	o	o	x
Piping Plover (*Charadrius melodus*)	r	r	-	-
Killdeer* (*Charadrius vociferous*)	c	c	a	a
Black-necked Stilt (*Himantopus mexicanus*)	-	x	-	-
American Avocet (*Recurvirostra americana*)	-	r	r	r
Greater Yellowlegs (*Tringa melanoleuca*)	c	u	u	u
Lesser Yellowlegs (*Tringa flavipes*)	c	u	c	u
Solitary Sandpiper (*Tringa solitaria*)	u	o	o	r
Willet (*Catoptrophorus semipalmatus*)	o	r	o	r
Spotted Sandpiper (*Actitis macularia*)	c	u	u	o
Upland Sandpiper (*Bartramia longicauda*)	u	r	r	-
Whimbrel (*Numenius phaeopus*)	-	x	-	-
Marbled Godwit (*Limosa fedoa*)	-	x	-	-
Ruddy Turnstone (*Arenaria interpres*)	x	x	x	-
Red Knot (*Calidris canutus*)	-	-	x	-
Sanderling (*Calidris alba*)	o	o	o	-
Semipalmated Sandpiper (*Calidris pusilla*)	u	u	u	r
Western Sandpiper (*Calidris mauri*)	u	r	o	u
Least Sandpiper (*Calidris minutilla*)	c	u	c	c
White-rumped Sandpiper (*Calidris fuscicollis*)	u	x	r	-
Baird's Sandpiper (*Calidris bairdii*)	r	r	o	-
Pectoral Sandpiper (*Calidris melanotus*)	c	u	c	u
Dunlin (*Calidris alpina*)	u	-	c	c
Stilt Sandpiper (*Calidris himantopus*)	o	o	o	-
Buff-breasted Sandpiper (*Tryngites subrufcollis*)	x	r	r	-
Ruff (*Philomachus pugnax*)	x	x	-	-
Short-billed Dowitcher (*Limnodromus griseus*)	o	o	u	u
Long-billed Dowitcher (*Limnodromus scolopaceus*)	u	x	u	-

Common Snipe (*Gallinago gallinago*)	a	u	c	c
American Woodcock* (*Scolopax minor*)	o	r	u	u
Wilson's Phalarope (*Phalaropus tricolor*)	o	r	o	-
Red-necked Phalarope (*Phalaropus lobatus*)	-	x	-	-
Red Phalarope (*Phalaropus fulicaria*)	-	-	x	-
Laughing Gull (*Larus atricilla*)	o	o	r	o
Bonaparte's Gull (*Larus philadelphia*)	u	-	u	u
Ring-billed Gull (*Larus delawarensis*)	c	o	c	a
Herring Gull (*Larus argentatus*)	u	o	u	u
Gull-billed Tern (*Gelochelidon nilotica*)	-	-	-	x
Caspian Tern (*Sterna caspia*)	u	o	r	r
Royal Tern (*Sterna maxima*)	-	x	-	-
Sandwich Tern (*Sterna sandvicensis*)	-	x	-	-
Common Tern (*Sterna hirundo*)	x	x	-	r
Forster's Tern (*Sterna forsteri*)	u	u	c	u
Least Tern (*Sternula antillarum*)	-	r	o	u
Black Tern (*Chlidonias niger*)	o	u	-	-
Black Skimmer (*Rhynchops niger*)	-	x	-	-
PIGEONS, DOVES	Sp	S	F	W
Rock Dove* (*Columba livia*)	c	c	c	c
Mourning Dove* (*Zenaida macroura*)	c	a	a	a
Common Ground-Dove* (*Columbina passerina*)	u	c	u	u
CUCKOOS	Sp	S	F	W
Black-billed Cuckoo (*Coccyzus erythropthalmus*)	-	-	-	o
Yellow-billed Cuckoo* (*Coccyzus americanus*)	c	c	o	-
Groove-billed Ani (*Crotophaga sulcirostris*)	-	-	x	-
OWLS	Sp	S	F	W
Barn Owl* (*Tyto alba*)	u	u	u	u
Eastern Screech-Owl* (*Megascops asio*)	c	c	c	c
Great Horned Owl* (*Bubo virginianus*)	u	u	u	u
Barred Owl* (*Strix varia*)	u	u	u	u
Long-eared Owl (*Asio otus*)	-	-	-	x
Short-eared Owl (*Asio flammeus*)	o	-	-	o
Northern Saw-whet Owl (*Aegolius acadicus*)	-	-	-	x
GOATSUCKERS	Sp	S	F	W
Common Nighthawk* (*Chordeiles minor*)	u	o	o	-
Chuck-will's-widow* (*Caprimulgus carolinensis*)	u	u	-	-
Whip-poor-will (*Caprimulgus vociferus*)	r	-	-	-
SWIFTS, HUMMINGBIRDS	Sp	S	F	W
Chimney Swift (*Chaetura pelagica*)	c	c	c	-
Ruby-throated Hummingbird* (*Archilochus colubris*)	u	u	r	-

KINGFISHERS	Sp	S	F	W
Belted Kingfisher* (*Megaceryle alcyon*)	c	c	c	c

WOODPECKERS	Sp	S	F	W
Red-headed Woodpecker* (*Melanerpes erythrocephalus*)	o	o	o	o
Red-bellied Woodpecker* (*Melanerpes carolinus*)	c	c	c	c
Yellow-bellied Sapsucker (*Sphyrapicus varius*)	u	-	u	c
Downy Woodpecker* (*Picoides pubescens*)	c	c	c	c
Hairy Woodpecker* (*Picoides villosus*)	u	o	u	u
Red-cockaded Woodpecker (*Picoides borealis*)	-	-	-	x
Northern Flicker* (*Colaptes auratus*)	u	u	c	c
Pileated Woodpecker* (*Dryocopus pileatus*)	u	u	u	u

FLYCATCHERS	Sp	S	F	W
Olive-sided Flycatcher (*Contopus borealis*)	-	-	x	-
Eastern Wood-Pewee* (*Contopus virens*)	o	r	r	-
Acadian Flycatcher (*Empidonax virescens*)	u	c	u	-
Alder Flycatcher (*Empidonax alnorum*)	x	-	-	-
Least Flycatcher (*Empidonax minimus*)	o	x	-	-
Eastern Phoebe (*Sayornis phoebe*)	u	-	c	c
Great Crested Flycatcher* (*Myiarchus crinitus*)	c	c	r	-
Eastern Kingbird* (*Tyrannus tyrannus*)	c	c	-	-
Gray Kingbird (*Tyrannus dominicensis*)	-	-	x	-

LARKS	Sp	S	F	W
Horned Lark (*Eremophila alpestris*)	-	-	-	x

MARTINS AND SWALLOWS	Sp	S	F	W
Purple Martin* (*Progne subis*)	c	c	o	u
Tree Swallow (*Tachycineta bicolor*)	c	u	a	o
Northern Rough-winged Swallow (*Stelgidopteryx serripennis*)	c	a	a	x
Bank Swallow (*Hirundo rustica*)	u	a	u	-
Cliff Swallow (*Hirundo pyrrhonota*)	r	-	o	-
Barn Swallow* (*Hirundo rustica*)	c	c	a	-

JAYS AND CROWS	Sp	S	F	W
Blue Jay* (*Cyanocitta cristata*)	c	c	c	c
American Crow* (*Corvus brachyrhynchos*)	c	c	c	a
Fish Crow*(*Corvus ossifragus*)	c	c	c	c

CHICKADEES AND TITMICE	Sp	S	F	W
Carolina Chickadee* (*Parus carolinensis*)	c	c	c	c
Tufted Titmouse* (*Parus bicolor*)	c	c	c	c

NUTHATCHES	Sp	S	F	W
Red-breasted Nuthatch (*Sitta canadensis*)	r	-	-	o
White-breasted Nuthatch (*Sitta carolinensis*)	-	-	-	r
Brown-headed Nuthatch* (*Sitta pusilla*)	c	c	c	c

CREEPERS	Sp	S	F	W
Brown Creeper (*Certhia americana*)	o	-	o	u

WRENS	Sp	S	F	W
Carolina Wren* (*Thryothorus ludovicianus*)	c	c	c	c
Bewick's Wren (*Thryomanes bewickii*)	-	-	-	r
House Wren (*Troglodytes aedon*)	o	x	o	u
Winter Wren (*Troglodytes troglodytes*)	r	-	o	o
Sedge Wren (*Cistothorus platensis*)	u	-	u	c
Marsh Wren (*Cistothorus palustris*)	u	-	u	c

KINGLETS AND GNATCATCHERS	Sp	S	F	W
Golden-crowned Kinglet (*Regulus satrapa*)	-	-	u	u
Ruby-crowned Kinglet (*Regulus calendula*)	u	-	u	c
Blue-gray Gnatcatcher* (*Polioptila caerulea*)	c	c	u	o

BLUEBIRDS, THRUSHES AND ROBIN	Sp	S	F	W
Eastern Bluebird* (*Sialia sialis*)	c	u	c	c
Veery (*Catharus fuscescens*)	o	-	-	-
Gray-cheecked Thrush (*Catharus minimus*)	o	-	r	-
Swainson's Thrush (*Catharus ustulatus*)	o	-	r	-
Hermit Thrush (*Catharus guttatus*)	-	u	c	-
Wood Thrush* (*Hylocichla mustelina*)	u	c	o	-
American Robin* (*Turdus migratorius*)	c	u	c	a

THRASHERS	Sp	S	F	W
Gray Catbird* (*Dumetella carolinensis*)	u	u	u	o
Northern Mockingbird* (*Mimus polyglottos*)	c	c	c	c
Brown Thrasher* (*Toxostoma rufum*)	c	c	c	c

PIPITS	Sp	S	F	W
American Pipit (*Anthus rubescens*)	c	-	u	c

WAXWINGS	Sp	S	F	W
Cedar Waxwing (*Bombycilla cedrorum*)	u	-	o	c

STARLINGS	Sp	S	F	W
European Starling* (*Sturnus vulgaris*)	c	c	c	a

SHRIKES	Sp	S	F	W
Loggerhead Shrike* (*Lanius ludovicianus*)	c	c	c	c

VIREOS	Sp	S	F	W
White-eyed Vireo* (*Vireo griseus*)	u	c	u	o
Solitary Vireo (*Vireo solitarius*)	o	-	o	o
Yellow-throated Vireo (*Vireo flavifrons*)	o	r	r	x
Warbling Vireo (*Vireo gilvus*)	o	-	x	-
Philadelphia Vireo (*Vireo philadelphicus*)	-	r	r	-
Red-eyed Vireo* (*Vireo olivaceus*)	u	c	u	-

WARBLERS	Sp	S	F	W
Blue-winged Warbler (*Vermivora pinus*)	x	-	x	-
Golden-winged Warbler (*Vermivora chrysoptera*)	-	x	-	-
Tennessee Warbler (*Vermivora peregrina*)	r	-	o	-
Orange-crowned Warbler (*Vermivora celata*)	o	-	o	u
Nashville Warbler (*Vermivora ruficapilla*)	-	-	r	-
Northern Parula* (*Parula americana*)	c	c	o	-
Yellow Warbler (*Dendroica petechia*)	o	o	x	-
Chestnut-sided Warbler (*Dendroica pensylvanica*)	x	-	-	-
Magnolia Warbler (*Dendroica magnolia*)	r	-	-	-
Cape May Warbler (*Dendroica tigrina*)	r	-	u	-
Black-throated Blue Warbler (*Dendroica caerulescens*)	u	-	u	-
Yellow-rumped Warbler (*Dendroica coronata*)	c	-	c	a
Black-throated Green Warbler (*Dendroica virens*)	o	-	r	-
Blackburnian Warbler (*Dendroica fusca*)	o	-	o	-
Yellow-throated Warbler* (*Dendroica dominica*)	u	u	o	-
Pine Warbler* (*Dendroica pinus*)	c	c	c	c
Prairie Warbler* (*Dendroica discolor*)	u	u	o	-
Bay-breasted Warbler (*Dendroica castanea*)	-	-	u	-
Palm Warbler (*Dendroica palmarum*)	c	-	c	c
Blackpoll Warbler (*Dendroica striata*)	o	-	-	-
Cerulean Warbler (*Dendroica cerulea*)	x	-	x	-
Black-and-white Warbler (*Mniotilta varia*)	u	x	u	o
American Redstart (*Setophaga ruticilla*)	u	-	o	-
Prothonotary Warbler* (*Protonotaria citrea*)	u	c	-	-
Worm-eating Warbler (*Helmitheros vermivorus*)	o	r	-	-
Swainson's Warbler (*Limnothlypis swainsonii*)	r	-	-	-
Ovenbird (*Seiurus aurocapilla*)	o	-	u	-
Northern Waterthrush (*Seiurus noveboracensis*)	u	-	u	r
Louisiana Waterthrush* (*Seiurus motacilla*)	u	u	-	-
Kentucky Warbler* (*Oporornis formosus*)	c	c	c	c
Common Yellowthroat* (*Geothlypos trichas*)	c	c	c	c
Hooded Warbler* (*Wilsonia citrine*)	u	c	u	-

Wilson's Warbler (*Wilsonia pusilla*)	x	-	x	-
Yellow-breasted Chat* (*Icteria virens*)	u	u	u	-
TANAGERS	Sp	S	F	W
Summer Tanager* (*Piranga rubra*)	u	u	x	-
Scarlet Tanager (*Piranga olivacea*)	o	-	-	-
NEW WORLD FINCHES	Sp	S	F	W
Northern Cardinal* (*Cardinalis cardinalis*)	c	c	c	c
Rose-breasted Grosbeak (*Pheucticus ludovicianus*)	o	-	-	-
Blue Grosbeak* (*Passerina caerulea*)	u	c	u	-
Indigo Bunting* (*Passerina cyanea*)	u	c	u	-
Dickcissel (*Spiza americana*)	r	-	x	-
SPARROWS	Sp	S	F	W
Rufous-sided Towhee* (*Pipilo erythrophthalmus*)	c	c	c	c
Bachman's Sparrow* (*Aimophila aestivalis*)	-	o	r	-
Chipping Sparrow* (*Spizella passerine*)	c	u	c	a
Clay-colored Sparrow (*Spizella pallida*)	x	-	-	-
Field Sparrow* (*Spizella pusilla*)	c	c	c	c
Vesper Sparrow (*Pooecetes gramineus*)	u	-	u	c
Lark Sparrow (*Chondestes grammacus*)	-	x	-	-
Savannah Sparrow (*Passerculus sandwichensis*)	c	-	c	a
Grasshopper Sparrow* (*Ammodramus savannarum*)	o	o	o	u
Henslow's Sparrow (*Ammodramus henslowii*)	-	-	-	x
Le Conte's Sparrow (*Ammodramus leconteii*)	o	-	r	o
Sharp-tailed Sparrow (*Ammodramus caudacutus*)	-	-	-	x
Fox Sparrow (*Passerella iliaca*)	o	-	o	u
Song Sparrow (*Melospiza melodia*)	c	-	c	a
Lincoln's Sparrow (*Melospiza lincolnii*)	-	-	x	x
Swamp Sparrow (*Melospiza georgiana*)	c	-	u	a
White-throated Sparrow (*Zonotrichia albicollis*)	c	-	u	a
White-crowned Sparrow (*Zonatrichia leucophrys*)	o	-	o	o
Dark-eyed Junco (Junco hyemalis)	o	-	u	c
BLACKBIRDS, GRACKLES, COWBIRDS AND ORIOLES	Sp	S	F	W
Bobolink (*Dolichonyx oryzivorus*)	-	c	-	-
Red-winged Blackbird* (*Agelais phoeniceus*)	a	a	a	a
Eastern Meadowlark* (*Sturnella magna*)	c	c	c	c
Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)	-	-	x	-
Rusty Blackbird (*Euphagus carolinus*)	u	-	o	u
Brewer's Blackbird (*Euphagus cyanocephalus*)	-	-	-	o
Common Grackle* (*Quiscalus quiscula*)	c	c	a	a

Brown-headed Cowbird* (*Molothrus ater*)	c	c	a	a
Orchard Oriole* (*Icterus spurious*)	u	c	-	-
Northern Oriole (*Icterus galbula*)	r	-	-	r
OLD WORLD FINCHES	Sp	S	F	W
Purple Finch (*Carpodacus purpureus*)	-	-	o	u
Pine Siskin (*Carduelis pinus*)	-	-	-	u
American Goldfinch* (*Carduelis tristis*)	u	o	u	c
Evening Grosbeak (*Coccothraustes vespertinus*)	-	-	-	r
WEAVER FINCHES	Sp	S	F	W
House Sparrow* (*Passer domesticus*)	c	c	c	c

Seasonal appearance

Sp - Spring - March to May

S - Summer - June to August

F - Fall - September to November

W - Winter - December to February

Seasonal abundance

a - abundant: a common species which is very numerous

c - common: certain to be seen in suitable habitat

u - uncommon: present but not certain to be seen

o - occasional: seen only a few times during a season

r - rare: seen at intervals of 2 to 5 years

x - accidental: out of normal species range

* - known or suspected to have nested on refuge

MAMMALS

The following list of mammals includes those known to occur and also mammals whose natural distribution overlaps the Refuge according to recognized mammalogy texts and historic refuge data. This includes rare mammals and those whose exact distribution status is unknown but may occur on the refuge.

Common Name	Scientific Name
Nine-banded armadillo	*Dasypus novemcinctus*
Virginia opossum	*Didelphis virginianus*
Least shrew	*Cryptotis parva*
Short-tailed shrew	*Blarina brevicauda*
Southeastern shrew	*Sorex longirostris*
Eastern mole	*Scalopus aquaticus*
Southeastern pocket gopher	*Geomys pinetis*
Silverhaired bat	*Lasionycteris noctivagans*
Eastern pipistrel	*Pipistrellus subflavus*
Big brown bat	*Eptesicus fuscus*
Red bat	*Lasiurus borealis*
Southeastern myotis	*Myotis austroriparius*
Northern Long-eared myotis	*Myotis septentrionalis*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Seminole bat	*Lasiurus seminolus*
Hoary bat	*Lasiurus cinereus*
Evening bat	*Nycticeius humeralis*
Raccoon	*Procyon lotor*
Long-tailed weasel	*Mustela frenata*
Mink	*Mustela vison*
River otter	*Lutra canadensis*
Striped skunk	*Mephitis mephitis*
Red fox	*Vulpes fulva*
Gray fox	*Urocyon cinereoargenteus*
Coyote	*Canis latrans*
Bobcat	*Lynx rufus*
Eastern gray squirrel	*Scuirus carolinensis*

Common Name	Scientific Name
Eastern fox squirrel	*Sciurus niger*
Southern flying squirrel	*Glaucomys volans*
Eastern chipmunk	*Tamias striatus*
Beaver	*Castor canadensis*
Eastern harvest mouse	*Reithrodontomys humulis*
Oldfield mouse	*Peromyscus polionotus*
Cotton mouse	*Peromyscus gossypinus*
Golden mouse	*Ochrotomys nuttalli*
Rice rat	*Oryzomys palustris*
Hispid cotton rat	*Sigmodon hispidus*
Eastern woodrat	*Neotoma floridana*
Pine vole	*Microtus pinetorum*
Norway rat	*Rattus norvegicus*
House mouse	*Mus musculus*
Eastern cottontail	*Sylvilagus floridanus*
Swamp rabbit	*Sylvilagus aquaticus*
Marsh rabbit	*Sylvilagus palustris*
White-tailed deer	*Odocoileus viginianus*
Nutria	*Myocastor coypus*
Feral hog	*Sus scrofa*

Appendix X. Budget Requests

REFUGE OPERATING NEEDS SYSTEM (RONS)

FISH AND WILDLIFE POPULATION MANAGEMENT

Project # 00001, $128,000

Provide a biological technician to conduct important wildlife surveys and habitat management activities (such as invasive exotic plant control measures), and manage growing public hunting programs. This position will help improve habitats to benefit a host of wildlife species and the many visitors who enjoy them. The position would also assist with conducting conservation easement compliance checks and wildlife management practices. Eufaula NWR is responsible for overseeing 21 easements and 3 fee title tracts in SE Alabama and SW Georgia ranging in distance from the Eufaula NWR office 120 miles west, 150 east, 60 miles north and 70 miles south. Annual compliance checks by ground are difficult to complete. Aerial flights will be scheduled semiannually. Potential violations will then be ground-truthed. Boundary lines will be inspected annually and corrected. Other potential biological activities such as reforestation, prescribed burning, and needed surveys cannot be pursued due to inadequate funding. Some of these activities would be contracted and supervised by station biologist. Project would benefit pitcher plant bogs, endangered gopher tortoises and longleaf pine habitat. Reforestation efforts would consist of longleaf pine habitat restoration.

HABITAT MANAGEMENT

Project # 99003, $50,000

Reforest 100 acres of agricultural fields to a diverse native forest of hardwood species on Eufaula Refuge, and reforest 2,000 acres of off-refuge agricultural fields on willing private landowner's property through an established partnership with the Georgia Natural Resource Conservation Service. Hardwood habitats are one of the Fish and Wildlife Service's priority habitats for this area of the country. This project would be accomplished with a contract planter preparing sites, securing quality seedlings, and planting specified species.

Project # 99001, Station Rank # 1 – $200,000

Proposal is to restore managed wetlands to native species by reducing dense stands of invasive and undesirable plant species. Invasion of pest plants is the greatest threat to wetland habitat on Eufaula NWR. The invasive plants out-compete native species unless controlled; these include Hydrilla, American lotus, alligator-weed, cattail, primrose, black willow, sesbania, maiden cane, giant cut grass, water hyacinth and potentially Salvinia. Failure to control these species will result in the refuge's inability to provide the natural foods for waterfowl species, which is the main purpose for refuge establishment. The refuge will work in cooperation with Corps of Engineer personnel to establish a maintenance program including spraying, burning, disking, flooding and mowing that would allow the wetland plant communities to function as natural communities and not as monoculture stands of invasive plants. We plan to develop a model program that other resource managers would benefit from.

Project # 97003, Station Rank # 5 – $30,000

Project would provide the operational expenses to conduct annual water management program. This station depends on the ability to flood impoundments in the fall and then dewater them in spring to manage 1,100 acres (14 subunits) of wetland habitat. Pumping is essential to support refuge waterfowl hunts, which provides opportunity for over 500 hunters annually to enjoy a quality outdoor experience. Pumping during the growing season provides for an alternate means of controlling invasive plants by drowning plants, but declining operating margins have prevented this management activity in recent years. Without this management tool, the refuge would be unable to meet critical program obligations for waterfowl, shorebirds, other migratory birds and the endangered wood stork and would have to reduce or eliminate public hunting. This $25,000 project is an annual need for Eufaula NWR to effectively manage moist soil habitat.

VISITOR SERVICES

Project # 00003, Station Rank #4 – $154,000

Initiate and maintain an aggressive outreach program at Eufaula Refuge by providing a supervisor outreach specialist (Supervisory Park Ranger) to lead education and recreational programs for tens of thousands of visitors and school children. As part of that mission, this position will manage the 10,000-square foot visitor and education center in the preliminary design phase at Eufaula Refuge. The Eufaula Visitor Learning Center is currently one of 20 centers nationwide planned under the Centennial Legacy Plan. Eufaula Refuge is uniquely located in an area of the southeastern U.S. where wildlife related recreation is the major source of income in the local economy. Lake Eufaula and the vicinity attracts more than three million visitors annually, including hunters, fishers, and wildlife viewers, and it has been designated three years running by *Sports Afield* magazine as the number one destination in Alabama for families to enjoy outdoor recreation.

Project # 00004, Station Rank #4 – $118,000

This project would establish a Park Ranger position to staff the visitor center and provide support for the recreation fee program by collecting funds, processing hunt applications, conducting quota hunt drawings, and staffing hunter check stations.

REFUGE ADMINISTRATION

Project # 00005, Station Rank #5 – $129,000

Provide a maintenance worker to properly care for newly developed grounds and facilities as part of a 10,000-square foot visitor and education center in the preliminary design phase at Eufaula Refuge. This position would also assist with maintenance of facilities, grounds, trails, signs, and other visitor related facilities throughout the refuge. The position will also assist with the Refuge force account farming operations.

Project # 99002, Station Rank # 1 – $140,000

Add a full-time refuge Law Enforcement Officer to provide resource protection and public safety for refuge visitors. Eufaula NWR is located on Lake Eufaula; where station visitation exceeds 300,000 annually. Law enforcement is needed to support visitor activities such as hunting, fishing, boating, and skiing, provide archaeological protection, search and rescue, and prevent controlled substances use and marijuana cultivation on the refuge. Cooperation is required with multiple law enforcement offices including state agencies from Georgia and Alabama, two counties in both states, two municipal police forces and the Corps of Engineers. The refuge conducts extensive hunting and fishing programs and attracts visitors to two wildlife observation points and a wildlife drive. Twenty-four conservation easements in southeast Alabama and southwest Georgia will also receive added protection.

MMS 00001, 0200001A, and 020001B - Visitor/Office Construction

This project is not included among the other existing RONS list of projects (although it was on the MMS – now SAMMS – list) but is a high priority of the refuge and Region 4. By 2022, or within 15 years of CCP approval, Eufaula Refuge aims to construct and begin to operate a visitor center. This would include adequate staff to operate and maintain the facility. A visitor center for Eufaula NWR is on the top 20 national list of planned refuge visitor centers. However, it is unknown when funding will become available for construction. One potential location for the proposed visitor center is at the Kennedy Impoundment, although this location is several miles from the new refuge headquarters. (MMS 00001, 0200001A, and 020001B - Visitor Center/Office - Centennial Legacy Project - Phases I, II, and III).

Project # 00006, Station Rank # 3 – $100,000

This project would provide the annual costs of operating this new visitor center facility. Costs would include janitorial services, building and grounds upkeep, pest control, utility costs, educational materials, computers, and other supplies for the visitors. This would be an annual need to operate the public use facility.

Project # 98012, Station Rank # 9 – $30,000

Project would fund an archaeological survey of Eufaula NWR which would facilitate the clearance process for future construction projects identified by CCP process and help joint law enforcement efforts with the Corps of Engineers and State agencies in Alabama and Georgia to protect identified sites. Eufaula NWR is rich with archaeological history. The refuge and the adjacent Corps properties have two areas that are currently identified and protected, with many more inadequately documented or suspected. A refuge-wide reconnaissance would provide compliance with the several laws/Acts as we conduct management, construction and law enforcement activities. The reconnaissance would be completed by a contractor in coordination with the Region 4 archaeologist.

MAINTENANCE MANAGEMENT SYSTEM NEEDS

Deferred Maintenance Projects for Eufaula NWR

Station Rank	Project Title	Asset Number
1	Houston ditches	10017867
2	Houston Levee (road)	10017863
3	Chemical Storage building	10017850
4	Vehicle storage building	10017852
5	Shop security fence	10017898
6	Boundary posting	10017876
7	Bradley ditches	10017936
8	Bradley cross levee (road)	10040754
9	Entrance Kiosk	10017891
10	Gammage boat ramp	10017929

Project Descriptions

1. Rehabilitate silted and overgrown ditches in the Houston Unit. This network of ditches enables the refuge to gravity feed water into several mission critical waterfowl sanctuary cells. These inundated cells provide optimum wintering habitat for approximately 20,000 ducks and geese and other wildlife. Ditches are full of silt and trapped water cannot be seasonally drained; therefore, rapid plant growth has occurred along ditch banks which further exacerbates stream flow impediment. Silt will be mechanically removed with an excavator equipped with a bucket. Once the area dries, trees and other vegetation will be mechanically removed with an excavator equipped with either a mulching head or a rigid thumb which removes trees by the root. Reclaiming ditches is beneficial on many fronts. Economically, operating cost is reduced significantly when ditches are maintained and free of obstruction. From a wildlife standpoint, a wider range of habitat management strategies is afforded with improved ditches. Better habitat equals more waterfowl which increases public visitation for those wanting to view or photograph wildlife.

2. Repair leak(s) under the road designated Federal Highway Route Identifier (FWHI) # 012. This elevated road provides public access to the lower portion of the Houston Bottoms Unit and it also serves as a perimeter levee/dike for an interior waterfowl sanctuary. In addition, hunters, fishermen, and wildlife observers utilize this road to access other popular refuge locations. The adjacent sanctuary provides critical wintering habitat for waterfowl and other wildlife. This elevated road provides public access to the lower portion of the Houston Bottoms Unit and it also serves as a perimeter levee/dike for an interior waterfowl sanctuary. In addition, hunters, fishermen, and wildlife observers utilize this road to access other popular refuge locations. The adjacent sanctuary provides critical wintering habitat for waterfowl and other wildlife. Existing road material will be removed, down to the toe of slope, and clay will be packed in these locations to sever leaks. Key-ways will be installed to ensure clay material adheres properly to existing substrate. The road surface will be weather-proofed with 300-400 tons of gravel. Repairing this road will provide a safe and reliable means of travel for the 55,000 annual visitors whom utilize this road while engaged in various refuge supported activities.

3. Replace unapproved chemical storage building. This building is used to store herbicides applied on refuge agricultural crops and noxious and invasive aquatic plants growing in waterfowl impoundments and in the Chattahoochee River within refuge boundaries. Per a Refuge Environmental Audit on 11/16/06, the refuge chemical storage building was reported out-of-compliance. The existing storage building is a metal grain bin which failed all criteria for a chemical storage facility. The existing building lacks secondary containment, adequate ventilation, and sub-standard flooring. The building will be replaced with a 12' x 18' concrete hazardous storage building with the necessary options such as lighting and ventilation fans designed for a hazardous (flammable) location. Replacing the building will provide a safe and environmental friendly facility for storing various herbicides. Also, it will bring the station into compliance with Environmental Protection Agency (EPA) and Fish and Wildlife Service (FWS) environmental policies and regulations.

4. Replace warn vehicle storage building. The building is utilized to securely store passenger vehicles, Law Enforcement boats, three all-terrain vehicles, and various wildland firefighting equipment. This structure alleviates outdoor storage of equipment and compromised security. The 2,100 sq. ft. block structure was built in 1968 and is plagued with problems. An asbestos survey was conducted on the facility in 2006 and asbestos containing materials were found in the building. Additional maintenance concerns include inadequate heating and air conditioning, faulty plumbing, insufficient lighting, single-pane windows, a brittle and leaking asphalt shingle roof, no insulation, and five poorly operating roll-up doors are the most significant problems. Demolish existing building and replace with a metal building of comparable size. The building site will remain the same. Replacing this building will result in the cessation of recurring problems. It will allow equipment to be stored in a secure, climate controlled non hazardous facility.

5. Replace warn shop fence. This chain-link fence system (2,482 linear feet) completely surrounds the entire maintenance compound. It provides security for several million dollars worth of buildings, heavy equipment, agricultural tractors and associated implements, and wildland firefighting equipment. Also, it provides security for resident volunteers and researchers living on the Refuge. The fence, which was constructed in 1977, is beyond its useful life and shows signs of deterioration. Vertical and horizontal support poles are rusting as is the mesh wire. Fence is sagging due to lack of rigidity in support poles. The entire fence system will be replaced. The replacement fence will be chain-link type and 6' in height. Horizontal and vertical support posts will be spaced according to manufacturer standards. Replacing this fence will provide increased security for the equipment responsible for conserving, protecting, and enhancing 11,184 Refuge acres.

6. Replace various warn refuge boundary signs and associated U-channel sign post. Proper signage is paramount and ensures Refuge visitors do not inadvertently encroach on adjacent private landowners and vice versa. Also, it ensures compliance is maintained in areas with special conditions (i.e. areas seasonally closed and areas open to foot travel only). Many signs have exceeded their useful life and faded to the point text is hardly visible. Also, many of the metal sign posts are old and structurally unsatisfactory. Replace all warn signs and/or posts along 52 miles of boundary line and effected interior lines. Replace all warn signs and/or posts along 52 miles of boundary line and effected interior lines.

7. Rehabilitate silted and overgrown ditches in the Bradley Unit. This network of ditches enables the refuge to gravity feed water into several mission critical waterfowl sanctuary cells. These inundated cells provide optimum wintering habitat for approximately 20,000 ducks and geese and other wildlife. Ditches are full of silt and trapped water cannot be seasonally drained; therefore, rapid plant growth has occurred along ditch banks which further exacerbate stream flow impairment. Silt will be mechanically removed with an excavator equipped with a bucket. Once the area dries, trees and other vegetation will be mechanically removed with an excavator equipped with either a mulching head or a rigid thumb which removes trees by the roots. Reclaiming ditches is beneficial on many fronts. Economically, operating cost is reduced significantly when ditches are maintained and free of obstruction. From a wildlife standpoint, a wider range of habitat management strategies is afforded with improved ditches. Better habitat equals more waterfowl which enhances the publics visiting experience.

8. Rehabilitate narrow Federal Highway Administration (FHWA) Route #111. This elevated road provides access to the middle section of the Bradley Unit and serves as a levee/dike for waterfowl sanctuary cells located on both sides of the road. This road is utilized by refuge staff, researchers, duck hunters participating in

refuge sponsored quota duck hunts, deer hunters, and a large contingency of birdwatchers from Georgia and Alabama. The road is very narrow and has steep sloped sides, which creates unsafe situations for visitors accessing the Refuge in personal automobiles. Also, four worn water control structures (gated culverts) running under this road need to be replaced. The road width will be increased with the aid of a self-loading dirt pan; shoulders will be sloped 3:1, and four each 36" aluminum water control structures (flashboard risers) with associated pipes will replace existing water control structures. Site elevations will be shot to ensure pipes are placed at correct depth. Increasing the width of the road will allow vehicles to safely pass side by side without dangerously hanging off the side of the road. The existing water control structures are constructed of corrugated metal and very susceptible to rusting; therefore, aluminum material will be used due to its resistance to rust. This will be a major cost savings long term due to the durability of aluminum water control structures.

9. Repair and rehabilitate warn and outdated entrance kiosk. This kiosk provides information and orientation to the visiting public through a variety of refuge brochures, a site map, and four large information panels. This kiosk is the first line of contact the public encounters when entering the Refuge via the Wildlife Drive. The kiosk has four adjoining rock walls that exhibit structural problems in the way of hairline cracks. The information panels were developed in 1983 and are so outdated; most information is grossly inaccurate and misleading. Also, the information panels have faded through attrition. Rehabilitate kiosk with an open wood frame structure and update all panels with the latest graphics, maps, and literature. Raise the height of the kiosk to facilitate raising the panels farther from the ground. The Refuge lacks a Visitors Center; therefore, weekend or late afternoon visitors must rely on information obtained at the kiosk for orientation and general information. Updated materials will provide the public with useful and meaningful information.

10. Rehabilitate warn Gammage boat ramp. This concrete boat ramp is located on the western periphery of the Refuge and is a popular access for visitors utilizing the Cowikee Creek area. This is the only public ramp, within 10 miles, along Cowikee Creek. The ramp is narrow and portions of the ramp appear to be cracked. Adjacent parking area needs to be better defined which will include removing a few trees and bush hogging entire area. The boat ramp is also in need of the appropriate Refuge signs such as entrance, informational, and boundary signs. The ramp will be extended to a width of 16' along the entire 50' length. Adjacent parking area will be rehabilitated and all pertinent Refuge signage will be erected. Rehabilitating this ramp will allow hunters, fishermen, birdwatchers, and others to launch boats from a wider, safer, and more accommodating Refuge access.

Appendix XI. List of Preparers

Don Burdette, State Parks Forester, Alabama Department of Conservation and Natural Resources – participant, goals-alternatives-objectives workshop

Roger Clay, Alabama Division of Wildlife and Freshwater Fisheries – participant, goals-alternatives-objectives workshop

Mike Dawson, Natural Resource Planner, USFWS, Jackson, Mississippi – planning team leader and CCP editor

Bill Gray, Supervising Wildlife Biologist, District 6, Alabama Division of Wildlife and Freshwater Fisheries – participant, goals-alternatives-objectives workshop

Gary Hepp, Professor, School of Forestry and Wildlife Science, Auburn University – participant, goals-alternatives-objectives workshop

Milton Hubbard, Biologist, Eufaula NWR, USFWS – participant, goals-alternatives objectives workshop

Leon Kolankiewicz, Wildlife Biologist/Environmental Planner/Consultant, Mangi Environmental Group – planning team facilitator and CCP writer/editor

Troy Littrell, Refuge Manager, Eufaula NWR, USFWS – CCP editor, overall guidance and oversight

Eveline Martin, Botanist/Environmental Planner/Consultant, Mangi Environmental Group – CCP writer

Danny Moss, Assistant Refuge Manager, Eufaula NWR, USFWS – participant, goals-alternatives-objectives workshop

Adam Pritchett, Wildlife Biologist, Barbour Wildlife Management Area, Alabama Division of Wildlife and Freshwater Fisheries – participant, goals-alternatives-objectives workshop

Julie Robbins, Senior Wildlife Biologist, Wildlife Resources Division, Georgia Department of Natural Resources – participant, goals-alternatives-objectives workshop

Jim Royal, Superintendent, Lakepoint State Park – participant, goals-alternatives objectives workshop

Jody Timmons, Park Ranger, U.S. Army Corps of Engineers – participant, goals-alternatives-objectives workshop