

**LAND PROTECTION PLAN AND
FINAL ENVIRONMENTAL ASSESSMENT
FOR THE EXPANSION OF**

GRAND BAY NATIONAL WILDLIFE REFUGE

Jackson County, Mississippi and Mobile County, Alabama



USFWS Photo by Tom Carlisle

Southeast Region



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SECTION A. LAND PROTECTION PLAN

I. Background

A. PROJECT DESCRIPTION

The Final Land Protection Plan (Final LPP) identifies the acquisition boundary for the expansion of Grand Bay National Wildlife Refuge (NWR). Working with partners, the Fish and Wildlife Service (Service) delineated approximately 8,428 acres from four areas adjacent to the refuge for restoration, enhancement, and management as part of Grand Bay NWR. These acres are encompassed by the acquisition boundary in Alternative 2 of the Final Environmental Assessment (Final EA) (Section B) for the expansion of this refuge (Figure 1). The purposes of this Final LPP are to:

- provide landowners and the public with an outline of Service policies, priorities, and protection methods for land in the project area;
- assist landowners in determining whether their property lies within the acquisition boundary; and
- inform landowners about our long-standing policy of acquiring land only from willing sellers—we will not buy any lands or easements if the owners are not interested in selling.

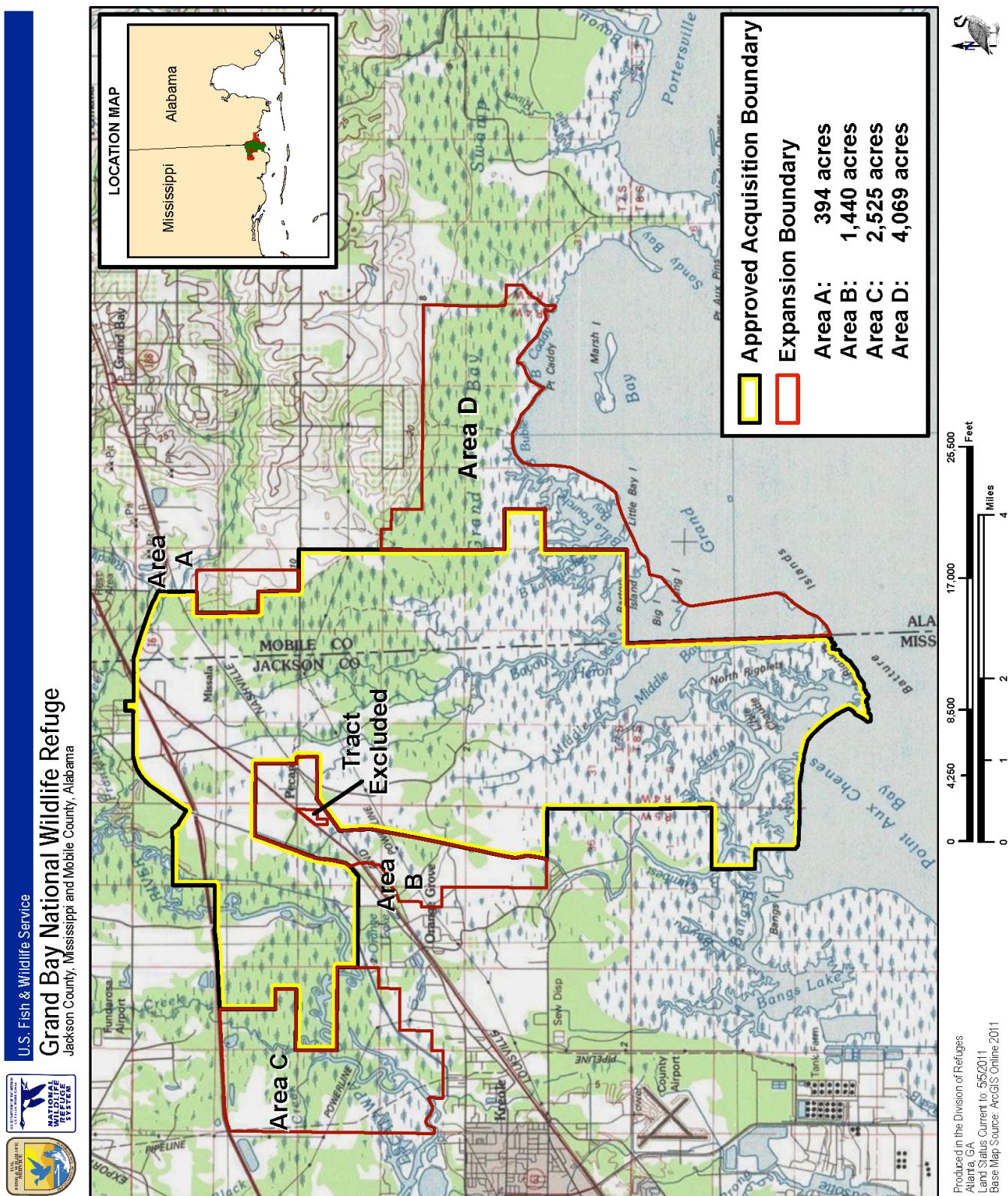
The Final LPP presents the methods the Service and interested landowners could use to accomplish their objectives for wildlife habitat within the refuge boundary.

B. REFUGE PURPOSE(S)

Grand Bay NWR was established in 1992, with an acquisition boundary of 12,100 acres. The primary purpose of the refuge is to protect one of the largest expanses of Gulf Coast savanna remaining in a relatively undisturbed state. In 1998, a 2,700-acre expansion was approved to bring under management a section of the scenic Escatawpa River. In 2003, a 665-acre expansion was approved to contribute to the goals of the Central Gulf Coast Ecosystem, by conserving valuable near-shore barrier island habitat. In addition, this expansion enabled the Service to acquire a small tract, with a metal storage building, which is being utilized as a refuge maintenance facility. The Service has acquired a total of 10,349 acres within an approved acquisition boundary of 17,742 acres at Grand Bay NWR. Documented acres for the approved acquisition boundary (15,465) differ from the actual figure of 17,742 acres, because of more accurate mapping methodologies employed today.

The purpose for the refuge expansion is to conserve valuable riverine habitat, to protect threatened and endangered species, to restore and protect key habitats (i.e., coastal savanna and longleaf pine), and to manage populations of migratory birds and other interjurisdictional trust species. The project area is within The Nature Conservancy's Grand Bay Bioreserve, the National Oceanic and Atmospheric Administration's National Estuarine Research Reserve, and the Mississippi Department of Marine Resources' Grand Bay Coastal Preserve. Excellent partnership opportunities exist with these federal and state agencies and conservation organizations.

Figure 1. Grand Bay NWR acquisition boundary and expansion areas



II. Resources

A. RESOURCES TO BE PROTECTED

Increased development and urbanization stresses the natural resources of the Central Gulf Coast ecosystem. Some of the human impacts to the natural resources of this region include forest fragmentation, road-associated impacts, incompatible public uses, exotic species introduction, hydrologic modifications, and degradation and loss of habitat. In fact, the primary impact to species survival in this part of the central gulf coast is loss of habitat due to residential and commercial development and degradation of habitat due to intensive short-rotation silvicultural operations.

Grand Bay NWR and the proposed expansion areas are flanked by two major urban areas - Pascagoula, MS five miles to the west and Mobile, AL 10 miles to the east. Within the last decade, over 600 acres of savanna have been lost to residential development. Other impacts include road construction, drainage, casino development and land speculation, agricultural runoff, hazardous waste transport (railroads and highways), oil and gas exploration, landfill siting and development, and fire suppression.

Within the refuge's approved acquisition boundaries, the Service would be able to enter into negotiations for the protection of environmentally sensitive lands. The most urgent needs for acquiring an interest in these lands are as follows:

- protection of water quality and quantity of the Escatawpa River;
- protection of large blocks of bottomland hardwood wetlands bordering a riverine corridor formed by the Escatawpa River, tributaries, and numerous sloughs and lakes;
- protection of Atlantic white cedar, which occurs as a mid-story component along the Escatawpa River;
- protection of open longleaf and slash pine savannas and flatwoods;
- protection of pond cypress savannas;
- protection of low, mid-level, and high elevation marsh habitat and unvegetated salt flats;
- protection of the westernmost occurrence of pocosin along the Gulf Coast;
- protection of a string of near-shore barrier islands and open bay areas;
- protection of occupied habitat for the listed gopher tortoise;
- protection of habitat used extensively by wading birds, shorebirds, and waterfowl, including mottled ducks, a species of concern in Alabama and Mississippi;
- protection of occupied or historic habitat for two listed turtles (yellow-blotched map turtle and Alabama red-bellied turtle);
- protection of occupied or historic habitat for the gulf sturgeon, a listed fish;
- protection of occupied or historic habitat for the Louisiana black bear, a listed mammal;
- protection of occupied habitat for two listed bird species (piping plover and least tern);
- protection of occupied or historic habitat for over 30 rare plant species;
- protection of occupied or historic habitat for two mammals of special concern (American black bear and northern yellow bat);
- protection of occupied or historic habitat for three reptiles or amphibians of special concern (gulf salt marsh water snake, Mississippi diamondback terrapin, American alligator);
- protection of occupied or historic habitat for over 20 birds of special concern;

-
- improvement of the habitat connectivity between the refuge and other regional conservation lands;
 - protection of neotropical migratory songbird, wading bird, and waterfowl habitats;
 - protection of cultural resources;
 - restoration of wet pine savanna habitat, to support primarily grassy-herbaceous dominated conditions to benefit grassland birds;
 - improvement of the capability to manage wildlife habitat through prescribed fire and protect the public from wildfires;
 - reintroduction of the Mississippi sandhill cranes to Grand Bay NWR; and
 - restoration of longleaf pine habitats.

B. RELATIONSHIP OF PROJECT TO LANDSCAPE CONSERVATION GOALS AND OBJECTIVES

Landscape conservation planning in coastal Mississippi and Alabama strives to enhance, restore, and conserve naturally occurring habitat types and the functional values of the Gulf Coast Ecosystem, while maintaining the economic productivity and recreational opportunities of the region.

A primary goal is to halt and reverse degradation of riverine systems and their associated plant and animal communities. Protection and management of the expansion areas will contribute to this goal through the conservation of a section of the Escatawpa River system.

Another goal is to restore and protect key habitats and manage populations of migratory birds and other interjurisdictional trust resources. Acquisition and management of the expansion areas will conserve a valuable riverine corridor along the Escatawpa River, bringing under Service management additional areas of coastal savanna. The expansion areas will provide protection for endangered species and unique rare natural communities, such as longleaf pine, coastal pine savanna, and high pocosin.

An additional goal is to increase public awareness and interest in the values of trust fish and wildlife, their habitats, and the ecosystems they are dependent upon. The expansion areas will offer excellent public use opportunities, such as hunting, fishing, wildlife observation, and environmental education and interpretation. In addition, new opportunities exist to promote increased stewardship of the ecosystem resources through environmental education, interpretation, and other outreach methods.

This project seeks to meet both present and future land conservation and resource protection needs for Grand Bay NWR. By protecting additional conservation lands critical to the management of refuge resources, it is tied to many of the goals and objectives of the refuge's comprehensive conservation plan.

C. PARTNERSHIP EFFORTS/RELATED RESOURCES

Public attitudes are expected to be favorable if public uses, such as hunting, fishing, bird-watching, and environmental education, are made available on the new refuge lands. The Service has coordinated the development of this project with the Mississippi Department of Marine Resources, the Alabama Department of Conservation and Natural Resources, Alabama Forestry Commission, Alabama Forest Owners Association, and Alabama Organized Seafood Association. Initial public reaction to the refuge expansion has generally been favorable. Other refuges and wildlife management areas in Mississippi and Alabama are popular with sportsmen, and most conservation groups support the Service's land acquisition program.

The Service has also coordinated the development of this project with The Nature Conservancy and the National Oceanic and Atmospheric Administration.

The Grand Bay Bioreserve in southeastern Mississippi and southern Alabama was designated by The Nature Conservancy. This is a spectacular landscape that includes an area of uplands, wetlands, and near-shore coastal waters, comprising more than 300 square miles. Within this area, The Nature Conservancy has helped the State of Alabama establish the Forever Wild Grand Bay Nature Preserve (2,800 acres).

Approximately 18,400 acres of tidal marsh, shallow-water open bay, wet pine savanna, and coastal swamp habitats in southeast Jackson County, Mississippi, have been designated as the National Estuarine Research Reserve by the National Oceanic and Atmospheric Administration. The Grand Bay NWR staff is co-located with the Grand Bay National Estuarine Research Reserve staff in the recently constructed Grand Bay Coastal Resource Center. Environmental education and interpretation possibilities on the expansion area have been discussed with the National Estuarine Research Reserve staff.

The Mississippi Department of Marine Resources administers the Coastal Preserve Program, which seeks intergovernmental and private cooperation to manage selected high-priority sites along the coast. The Grand Bay Savanna is one of these sites.

Bangs Lake Coastal Preserve is just west of the refuge and is managed by the Mississippi Department of Marine Resources. Mississippi Sandhill Crane NWR, which is managed primarily for the endangered Mississippi sandhill crane, is located 15 miles to the west. Ward Bayou WMA and Pascagoula WMA are located about 10 and 20 miles north, respectively, and both are managed for resident wildlife. Also within the general vicinity is Gulf Island National Seashore, a group of three barrier islands managed by the National Park Service.

III. Land Protection Strategy

A. ACTION AND OBJECTIVES

In determining how to achieve the fish and wildlife habitat protection goals for the project lands identified in this document, we considered and evaluated three alternatives. Alternative 2 is recommended, because it better serves the outlined purpose and need, as well as the stated goals and objectives, vision, and purpose(s) of the refuge. This project seeks to meet both present and future land conservation and resource protection needs for Grand Bay NWR. By protecting additional conservation lands critical to the management of refuge resources, it is tied to many of the goals and objectives of the refuge's comprehensive conservation plan.

B. LAND PROTECTION PRIORITIES

Our preferred action (Alternative 2) will result in the protection and management of up to 8,428 acres of prime coastal habitat as an expansion of Grand Bay NWR, through a combination of fee-title purchases from willing sellers and less-than-fee interests (e.g., conservation easements and cooperative agreements) from willing sellers. We believe these are the minimum interests necessary to conserve and protect the fish and wildlife resources in the project areas. The project areas have been prioritized for acquisition using the following criteria:

- biological significance;
- existing and potential threats;
- significance of the area to refuge management and administration;
- existing commitments to purchase or protect land; and
- ability to manage.

Four categories of land acquisition have been established, with the highest priority being the Priority I lands. A description of the lands within each of the four priority groups is given below. Table 1 summarizes four land protection priorities, parcel details, and methods of acquisition. Figures 2 through 5 identify the parcels within each of the priority groups. Figure 6 shows the locations of the project priority groups.

PRIORITY I

The first priority is Area C, and the most important resource within this area is the large blocks of bottomland hardwood wetlands that border a riverine corridor formed by the Escatawpa River, tributaries, and numerous sloughs and lakes. Water levels fluctuate by several feet from their low point in the summer to winter and spring flood stage. The Escatawpa River also receives tidal influence from the Gulf of Mexico. Forest types are dictated by soil moisture regimes and include slash pine on the higher sites of the first levee where Atlantic white cedar occurs as a mid-story component. This occurrence represents one of the furthest known western extents of the species. Bald cypress and swamp tupelo dominate the swamps behind the natural levees. Associated trees and shrubs include sweetbay, redbay, and wax myrtle underneath the pine, while buttonbush, swamp privet, and black willow are found below the cypress-tupelo canopy.

The largest landowner in this area is International Paper Company. In 2007, Chevron USA, Inc., established a 915-acre mitigation bank on International Paper Company property for impacts associated with its Casotte Landing Natural Gas Import Terminal Project. The Conservation Fund is working with International Paper on the restoration, enhancement, and conservation plan for this area. The Conservation Fund has been in contact with the Service concerning the possibility of this area becoming part of Grand Bay NWR, once the mitigation plan has been completed later this year.

PRIORITY II

The second priority is Area B. This area is characterized by open longleaf and slash pine savannas and flatwoods, which are recognized for their spectacular displays of pitcher plants, orchids, composites, and other plants. The savannas include a low, dense herbaceous layer and a sparse tree canopy dominated by slash and longleaf pines. Flatwoods are distinguished from savannas by a lesser tree canopy, a less diverse herbaceous layer, and a well-developed and often greater shrub layer.

This area contains the most landowners of any of the four areas. Several of these landowners have expressed an interest in selling their land to the Service. The Corps of Engineers and Jackson County also own several tracts in this area and these could possibly be managed as part of the refuge in the future.

PRIORITY III

The third priority is Area D. Habitat in this area consists of pond cypress savannas, the wettest savanna communities at Grand Bay NWR, which commonly occur in slight depressions and along shallow drains that meander across Area D. The canopy is dominated by pond cypress and occasionally slash pine and is under a regime of frequent fire; an open character is maintained with a sparse shrub canopy. A dense herbaceous layer is dominated by grass and sedge species. The Grand Bay Swamp in Area D represents the westernmost occurrence of pocosin along the Gulf Coast, a natural feature of regional significance. A string of near-shore barrier islands form part of the southern boundary of Area D. These islands are continually eroding primarily because of a lack of available sediments. The open bays behind the islands support large seagrass beds, which provide cover and food for a host of estuarine and marine species.

The largest ownership in this area is a bank trust tract of approximately 1,800 acres.

PRIORITY IV

The fourth priority is Area A. The majority of this area is a large pasture that contains a pecan orchard. The importance of this area is that it supports a gopher tortoise colony.

There are three landowners in this area.

With the above criteria in mind, we configured our expansion boundaries for future land protection. The Service reserves the right to be flexible with the detailed priority list above, because a number of factors also influence the priority of land protection, including the availability of willing sellers and the availability of funding. In addition, the Service must be flexible in its methods and priorities of land protection to meet the needs of individual landowners.

Table 1. Protection priorities for the expansion and recommended methods of acquisition*

Priority Group	Expansion Area	Parcel ID #	Type of Landowners	Approximate Acreage	Methods of Acquisition (minimum interest)
I	C	3	Private	3	Fee Title, Lease, Conservation Easement, or Cooperative Agreement
		17	Private	8	
		20	Private	112	
		22	Private	44	
		27	Private	40	
		28	Private	165	
		30	NGO	847	
		32	County	164	
		35	NGO	80	
		36	Private	.8	
		37	Private	.6	
		39	Private	5	
		42	Private	12	
		43	State	2	
		45	Private	25	
		52	County	159	
		56	Private	2	
		59	Private	82	
		63	NGO	4	

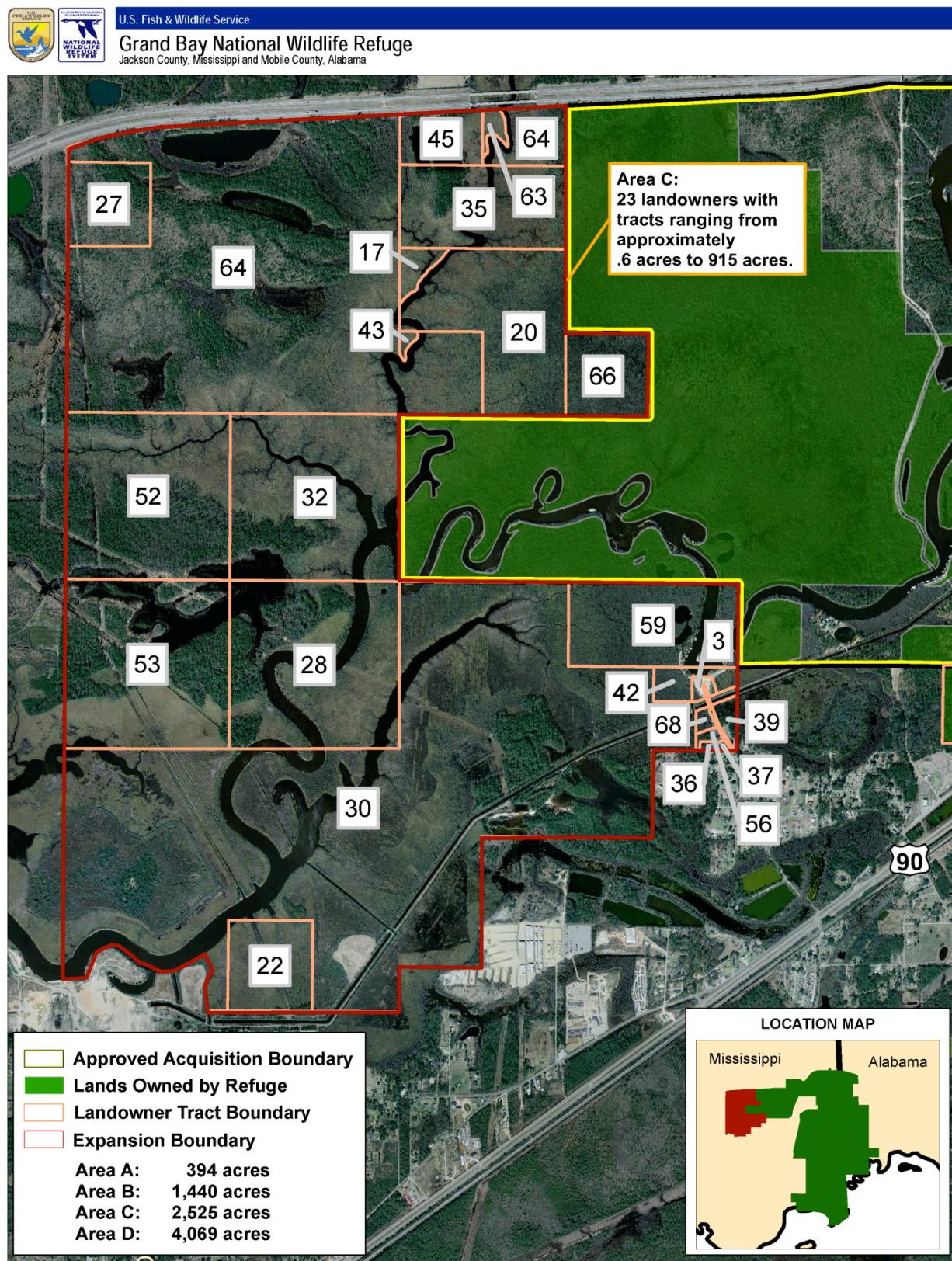
Priority Group	Expansion Area	Parcel ID #	Type of Landowners	Approximate Acreage	Methods of Acquisition (minimum interest)
I	C	64	Private	553	Fee Title, Lease, Conservation Easement, or Cooperative Agreement
		68	Private	2	
II	B	1	Private	1	Fee Title, Lease, Donation, Property Transfer, Conservation Easement, or Cooperative Agreement
		2	Private	1	
		4	Private	20	
		5	Private	2	
		6	Private	2	
		7	Private	24	
		8	Private	91	
		9	Private	3	
		10	Private	4	
		11	Private	15	
		12	Private	2	
		13	Private	1	
		14	Private	45	
		15	Private	.5	

Priority Group	Expansion Area	Parcel ID #	Type of Landowners	Approximate Acreage	Methods of Acquisition (minimum interest)
II	B	24	Private	1	Fee Title, Lease, Donation, Property Transfer, Conservation Easement, or Cooperative Agreement
		25	Private	3	
		26	Private	22	
		29	Private	20	
		31	Private	3	
		32	County	16	
		34	Private	4	
		38	Private	35	
		40	Private	12	
		41	Private	1	
		43	State	.3	
		44	Private	3	
		46	Private	.04	
		48	Private	.6	
		49	Private	4	
		50	Private	18	
		51	Town	1	
		54	Private	64	
		55	Private	11	
		58	Private	6	

Priority Group	Expansion Area	Parcel ID #	Type of Landowners	Approximate Acreage	Methods of Acquisition (minimum interest)
II	B	60	Private	7	Fee Title, Lease, Donation, Property Transfer, Conservation Easement, or Cooperative Agreement
		61	Federal	91	
		64	Private	57	
		69	Private	137	
		70	Private	4	
III	D	75	State	312	Fee Title, Lease, Conservation Easement, or Cooperative Agreement
		76	Private	.6	
		77	Private	80	
		78	NGO	1776	
		80	Private	39	
		83	Private	5	
		85	Private	80	
IV	A	64	Private	247	Fee Title, Lease, Conservation Easement, or Cooperative Agreement
		72	Private	54	
		73	Private	31	

*Parcels with the same ID # are under the same ownership.

Figure 2. Priority Group I (Project Area C)



Produced in the Division of Refuges
Atlanta, GA
Land Status Current to: 5/5/2011
Base Map Source: ArcGIS Online 2011



Figure 3. Priority Group II (Project Area B)

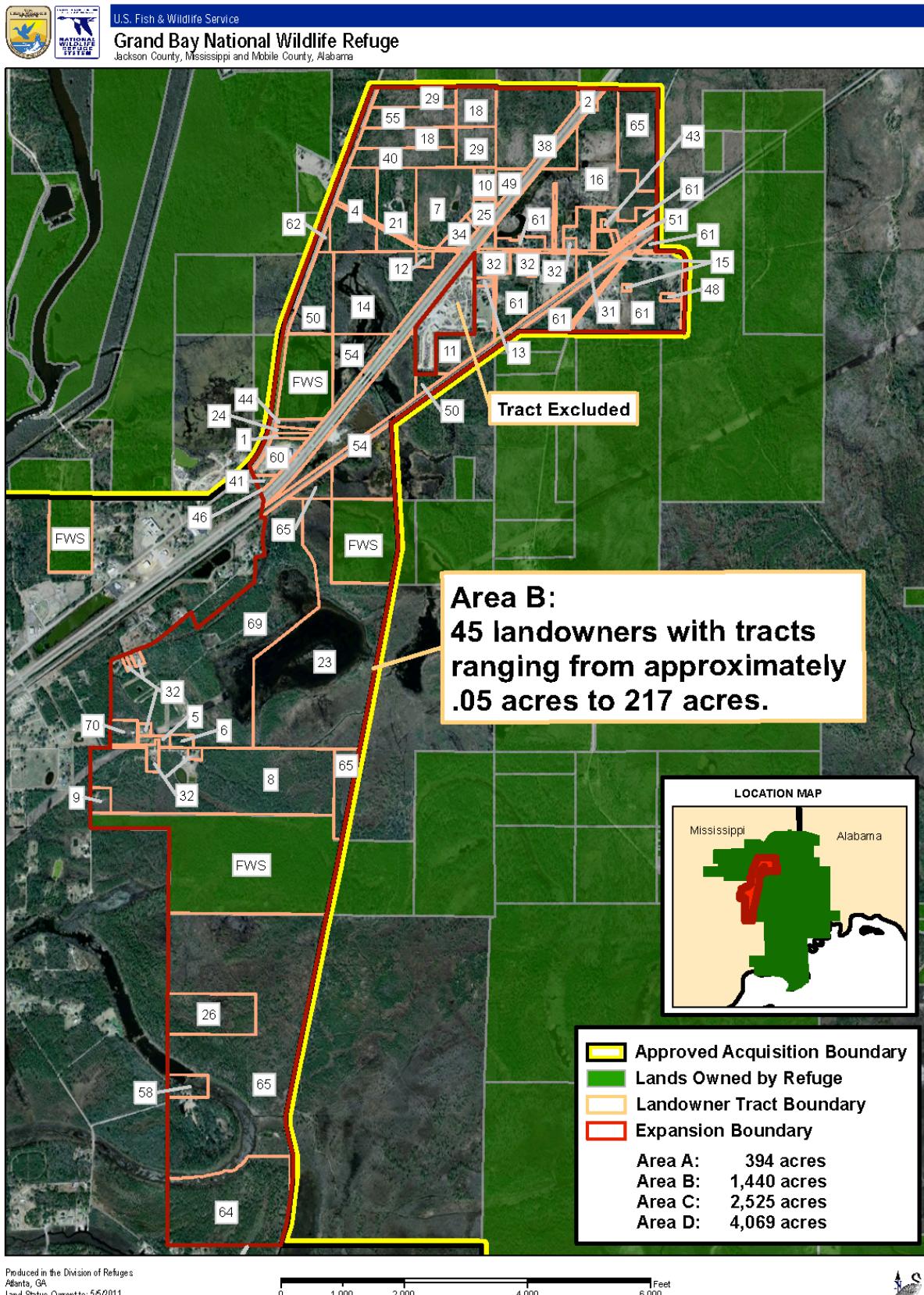


Figure 4. Priority Group III (Project Area D)

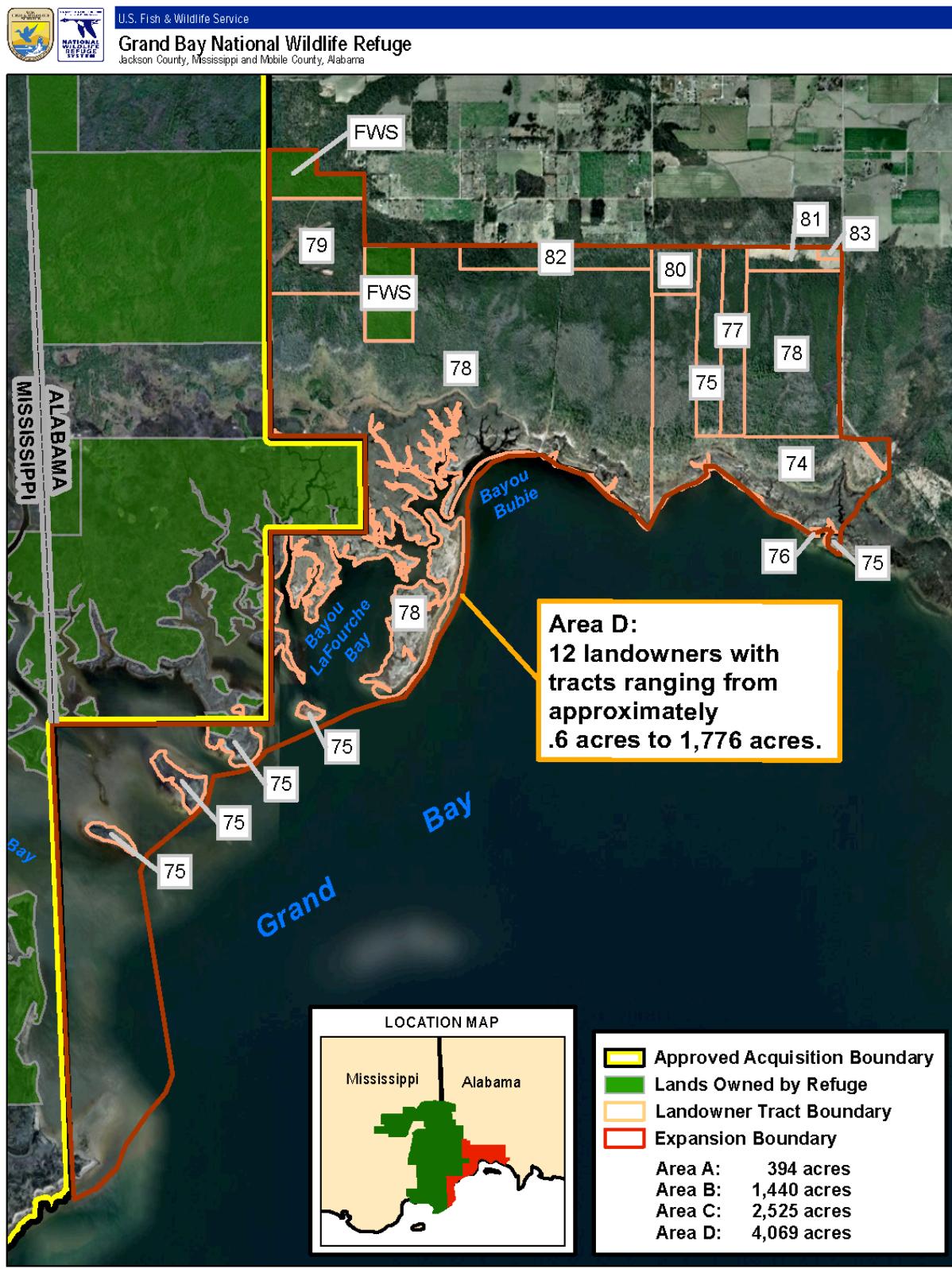


Figure 5. Priority Group IV (Project Area A)

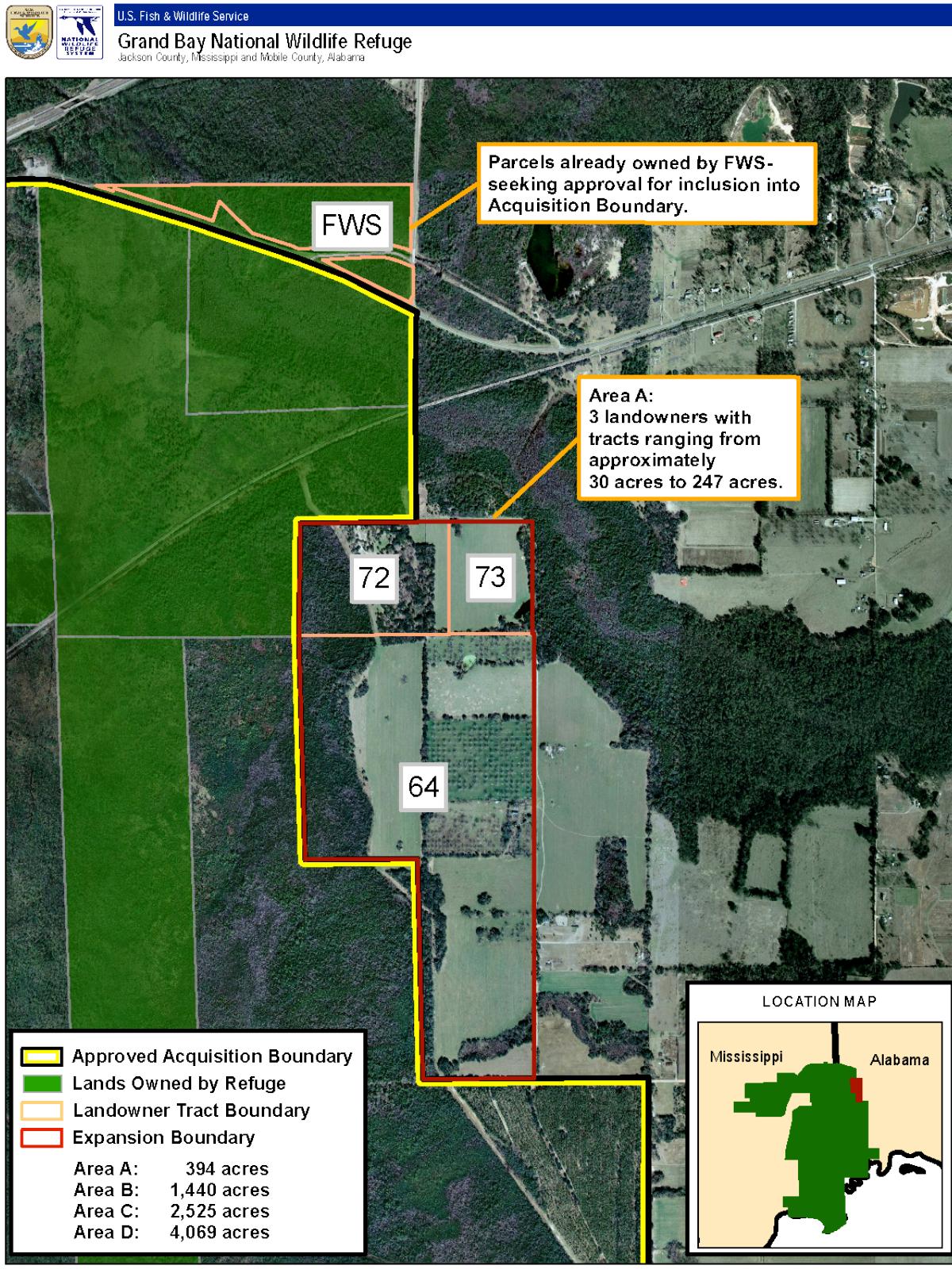
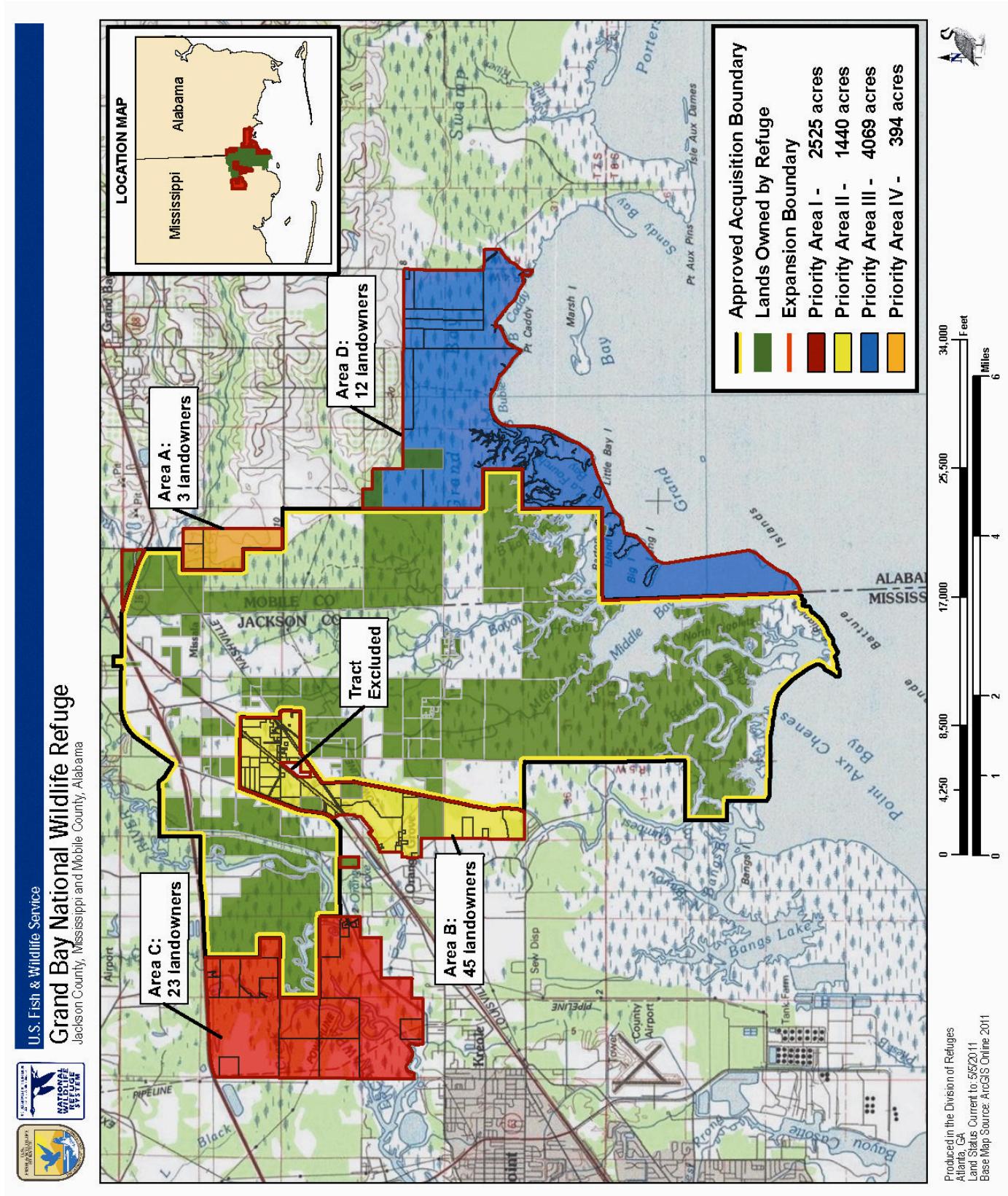


Figure 6. Project area land acquisition priority groups



C. LAND PROTECTION OPTIONS

The Service acquires lands and interests in lands, such as easements, and management rights in lands through leases or cooperative agreements, consistent with legislation or other congressional guidelines and executive orders, for the conservation of fish and wildlife and to provide wildlife-dependent public use for recreational and educational purposes. These lands include national wildlife refuges, national fish hatcheries, research stations, and other areas.

The Service will use the following options to implement the Final LPP:

Option 1: less-than-fee-title acquisition by the Service

Option 2: fee-title acquisition by the Service

When land is needed to achieve fish and wildlife conservation objectives, the Service seeks to acquire the minimum interest necessary to meet those objectives, and acquires it only from willing sellers. Our project includes a combination of the two options above. We believe this approach offers a cost-effective way of providing the minimal level of protection needed to accomplish refuge objectives, while also attempting to meet the needs of local landowners.

OPTION 1. LESS-THAN-FEE-TITLE ACQUISITION

Under option 1, the Service will protect and manage land by purchasing only a partial interest, typically in the form of a conservation easement. This option leaves the parcel in private ownership, while allowing control over the land use in a way that enables the Service to meet its goals for the parcel or that provides adequate protection for important adjoining parcels and habitats. The structure of such easements will provide permanent protection of existing wildlife habitats, while also allowing habitat management or improvements and access to sensitive habitats, such as for endangered species or migratory birds. It will also allow for public use where appropriate. The Service will negotiate with each landowner, on a case-by-case basis, as to the extent of the rights it will be interested in purchasing. Those may vary, depending on the configuration and location of the parcel, the current extent of development, the nature of wildlife activities in the immediate vicinity, the needs of the landowner, and other considerations.

In general, any less-than-fee-title acquisition will maintain the land in its current configuration, with no further subdivision. Easements are a property right, and typically are perpetual. If a landowner later sells the property, the easement continues as part of the title. Properties subject to easements generally remain on the tax rolls, although the change in market value may reduce the assessment. The Service does not pay refuge revenue sharing on easement rights. Where conservation easements are identified, the Service will be interested primarily in purchasing development and some wildlife management rights.

Easements are best when:

- only minimal management of the resource is needed, but there is a desire to ensure the continuation of current undeveloped uses and to prevent fragmentation over the long-term, and in places where the management objective is to allow vegetative succession;
- a landowner is interested in maintaining ownership of the land, does not want it to be further developed, and would like to realize the benefits of selling development rights;

-
- current land use regulations limit the potential for adverse management practices;
 - the protection strategy calls for the creation and maintenance of a watershed protection area that can be accommodated with passive management; or
 - only a portion of the parcel contains lands of interest to the Service.

The determination of value for purchasing a conservation easement involves an appraisal of the rights to be purchased based on recent market conditions and structure in the area. The Land Protection Methods section further describes the conditions and structure of easements.

OPTION 2. FEE-TITLE ACQUISITION

Under Option 2, the Service will acquire parcels in fee-title from willing sellers, thereby purchasing all rights of ownership. This option provides the Service with the most flexibility in managing priority lands, and ensures the protection in perpetuity of nationally significant trust resources.

Generally, the lands the Service will purchase require more than passive management (e.g., controlling invasive species, mowing or prescribed burning, planting, or managing for the six priority public uses). The Service will propose fee-title acquisition when adequate land protection could not be assured under other ownerships, when active land management will be required, or when the current landowner will be unwilling to sell a partial interest, such as a conservation easement.

In some cases, it could become necessary to convert a previously acquired conservation easement to fee-title acquisition (e.g., when an owner is interested in selling the remainder of interest in the land on which the Service has acquired an easement). The Service will evaluate that need on a case-by-case basis.

D. LAND PROTECTION METHODS

Several methods are used to acquire either a full or partial interest in parcels identified by the Service for land protection. The methods are: (1) Purchase (e.g., complete title, or a partial interest like a conservation easement), (2) leases and cooperative agreements, (3) donations, and (4) exchanges.

PURCHASE

For most of the tracts in the boundary, the proposed method is listed as *Fee* or *Easement*; however, the method ultimately used depends partly on the landowner's wishes.

Fee-Title Purchase

A fee-title interest is normally acquired when: (1) the area's fish and wildlife resources require permanent protection not otherwise assured; (2) land is needed for visitor use development; (3) a pending land use could adversely impact the area's resources; or (4) it is the most practical and economical way to assemble small tracts into a manageable unit.

Fee-title acquisition conveys all ownership rights to the Federal Government and provides the best assurance of permanent resource protection. A fee-title interest may be acquired by donation, exchange, transfer, or purchase (as the availability of funding allows).

Easement Purchase

Easement purchase refers to the purchase of limited rights (less-than-fee-title) from an interested landowner. The landowner will retain ownership of the land, but will sell certain rights identified and agreed upon by both parties. The objectives and conditions of the conservation easements will recognize lands for their importance to wildlife habitat or outdoor recreational activities, and any other qualities that recommend them for addition to the National Wildlife Refuge System. Land uses that are normally restricted under the terms of a conservation easement include:

- development rights (e.g., agricultural and residential);
- alteration of the area's natural topography;
- uses adversely affecting the area's floral and faunal communities;
- private hunting and fishing leases;
- excessive public access and use; and
- alteration of the natural water regime.

LEASES AND COOPERATIVE AGREEMENTS

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

DONATION

The Service encourages donations in fee-title or conservation easement in the approved areas, and is not currently aware of any formal opportunities to accept donations of parcels within the land protection boundary.

EXCHANGE

The Service has the authority to exchange land in its ownership for other land that has greater habitat and/or wildlife value. Inherent in this concept is the requirement to obtain dollar-for-dollar value with, occasionally, an equalization payment. Exchanges are attractive because they usually do not increase federal land holdings or require purchase funds; however, they also may be very labor-intensive and take a longer time to complete.

E. SERVICE LAND ACQUISITION POLICY

Once a land protection (refuge acquisition) boundary has been approved, the Service contacts landowners within the boundary to determine whether any are interested in selling. If a landowner expresses an interest and gives permission, a real estate appraiser will appraise the property to determine its market value. Once an appraisal has been approved, the Service can present an offer for the landowner's consideration.

Appraisals conducted by Service or contract appraisers must meet federal as well as professional appraisal standards. In all fee-title acquisition cases, the Service is required by federal law to offer 100 percent of the property's appraised market value, which is typically based on comparable sales of similar types of properties.

The Service based the land protection (refuge acquisition) boundary on the biological importance of key habitats. The expansion of this boundary gives the Service the approval to negotiate with landowners who may be interested or may become interested in selling their land in the future. With this internal approval in place, the Service can react more quickly as important lands become

available. The Service has a long-established policy of working with willing sellers as funds for land acquisition become available. Lands within the acquisition boundary do not become part of the refuge until owners willingly sell or donate them to the Service.

F. FUNDING

The Service draws funding for land acquisition from the Migratory Bird Conservation Fund (MBCF) and the Land and Water Conservation Fund (LWCF). These funds are not derived from traditional tax revenues. The MBCF is collected from the sale of Federal Duck Stamps, entrance fees from certain national wildlife refuges, and import duties on arms and ammunition. The LWCF is derived from the sale of offshore oil leases. Both the MBCF and LWCF are intended for land conservation and may be used to purchase land and/or permanent conservation easements.

IV. Coordination

Two intergovernmental meetings were held to inform state, federal, and local agencies (along with conservation organizations) of the Service's refuge expansion project. The first meeting was held at the Grand Bay National Estuarine Research Reserve Visitor Center on March 29, 2011. This meeting was attended by Grand Bay National Estuarine Research Reserve personnel and representatives from the city of Pascagoula, the Southeastern Wildlife Conservation Group, and the Land Trust for the Mississippi Coastal Plain. The second intergovernmental meeting was held at 5 Rivers – Alabama's Delta Resource Center near Mobile, Alabama, on April 14, 2011. This meeting was attended by representatives from the Alabama Department of Conservation and Natural Resources, the Alabama Forestry Commission, The Nature Conservancy, The Conservation Fund, the Friends of Bon Secour NWR, and the Southeastern Wildlife Conservation Group.

Both meetings generated valuable suggestions and recommendations from the attendees. Plans were then made to hold two public scoping meetings. Prior to the public meetings, a press tour of the proposed expansion areas was conducted by refuge staff for several representatives from area television and local media outlets. This tour generated several articles and television clips.

It was decided to hold the public meetings at a central location, relative to the expansion areas, in Grand Bay, Alabama. The site selected was the Grand Bay Senior and Community Center and the meetings were held on June 28 and 29, 2011. At the first meeting, 40 persons attended including State Representative David Sessions (R - Grand Bay) and a representative from the Alabama Organized Seafood Association. The second meeting was attended by 30 persons including the Mobile County NRCS District Conservationist, Citizens for a Better Grand Bay, and an official with Jackson County.

The initial public reaction to the refuge expansion was generally favorable. Other refuges and wildlife management areas in Mississippi and Alabama are popular with sportsmen, and most conservation groups support the Service's land acquisition program. During the two public meetings, support for the expansion was expressed and several landowners indicated that they would be willing sellers. The Organized Seafood Association indicated an interest in working with the Service to improve oyster habitat on any riparian lands that the Service would acquire in Area D. Some questions and/or concerns were raised by individuals regarding: oil/gas mining, noise/disturbance in the existing refuge, a desire for better communication with the Jackson County Planning Commission, hunters coming onto private land (unclear boundaries), public access issues, poachers, feral hogs, and the need for additional game wardens/law enforcement officers.

FINAL ENVIRONMENTAL ASSESSMENT
FOR THE EXPANSION OF
GRAND BAY
NATIONAL WILDLIFE REFUGE

SECTION B. FINAL ENVIRONMENTAL ASSESSMENT

I. PURPOSE AND NEED FOR ACTION

A. INTRODUCTION

The Fish and Wildlife Service (Service), Southeast Region, will protect and manage valuable coastal habitat in southeastern Mississippi and southwestern Alabama through the expansion of Grand Bay NWR.

The mission of the National Wildlife Refuge System is "... to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Improvement Act of 1997). National wildlife refuges provide important habitat for native plants and many species of mammals, birds, fish, insects, amphibians, and reptiles. They also play a vital role in conserving threatened and endangered species. Refuges offer a wide variety of wildlife-dependent recreational opportunities and many have visitor centers, wildlife trails, and environmental education programs. Nationwide, about 25 million visitors annually hunt, fish, observe and photograph wildlife, or participate in educational and interpretive activities on refuges.

The purpose of the refuge expansion is to conserve valuable riverine habitat, protect threatened and endangered species, restore and protect key habitats (i.e., coastal savanna and longleaf pine), and manage populations of migratory birds and other interjurisdictional trust species. The project areas are within The Nature Conservancy's Grand Bay Bioreserve, the National Oceanic and Atmospheric Administration's National Estuarine Research Reserve, and the Mississippi Department of Marine Resources' Grand Bay Coastal Preserve. Excellent partnership opportunities exist with these federal and state agencies and conservation organizations.

The scope of this Final Environmental Assessment (Final EA) is limited to the acquisition of lands for the expansion of Grand Bay NWR. This Final EA is not intended to cover the development and/or implementation of detailed, specific programs for the administration and management of those lands. Once the refuge boundary is expanded and the needed lands or interests in lands are acquired, the Service will update the Comprehensive Conservation Plan for Grand Bay NWR, which was approved in 2008, to incorporate the new lands and resources under its control, as referenced in Section 7(D) of Public Law 105-57.

B. PURPOSE AND NEED

This Final EA presents a project for the protection of additional wildlife habitat in Jackson County, Mississippi, and Mobile County, Alabama, through the expansion of the Grand Bay NWR. This project will expand the acquisition boundaries of the refuge.

Acquisition boundaries are administrative lines delineating areas in which the Service may consider negotiations with willing landowners for acquisition of an interest in land. Lands within a refuge acquisition boundary do not become part of the refuge unless and until a legal interest is acquired through a management agreement, easement, lease, donation, or purchase; and are not subject to any refuge regulations or jurisdiction until that time. Land interests are acquired from willing sellers/owners only. Any landowner whose land is within an approved acquisition boundary, even though the surrounding parcels may have been purchased by the Service, retains all the rights,

privileges, and responsibilities of private land ownership. This includes, but is not limited to, the right to access, hunt, vehicle use, control of trespass; the right to sell the property to any other party; and the responsibility to pay local real estate or property taxes. Additional information regarding the Service's land acquisition policy is provided in subsection E.

Within acquisition boundaries, the Service will be able to enter into negotiations for the protection of environmentally sensitive lands. The most urgent needs for acquiring an interest in these lands are as follows:

- protection of water quality and quantity of the Escatawpa River;
- protection of large blocks of bottomland hardwood wetlands bordering a riverine corridor formed by the Escatawpa River, tributaries, and numerous sloughs and lakes;
- protection of Atlantic white cedar, which occurs as a mid-story component along the Escatawpa River;
- protection of open longleaf and slash pine savannas and flatwoods;
- protection of pond cypress savannas;
- protection of low, mid-level, and high elevation marsh habitat and unvegetated salt flats;
- protection of the westernmost occurrence of pocosin along the Gulf Coast;
- protection of a string of near-shore barrier islands and open bay areas;
- protection of occupied habitat for the listed gopher tortoise;
- protection of habitat used extensively by wading birds, shorebirds, and waterfowl, including mottled ducks, a species of concern in Alabama and Mississippi;
- protection of occupied or historic habitat for two listed turtles (yellow-blotched map turtle and Alabama red-bellied turtle);
- protection of occupied or historic habitat for the gulf sturgeon, a listed fish;
- protection of occupied or historic habitat for the Louisiana black bear, a listed mammal;
- protection of occupied habitat for two listed bird species (piping plover and least tern);
- protection of occupied or historic habitat for over 30 rare plant species;
- protection of occupied or historic habitat for two mammals of special concern (American black bear and northern yellow bat);
- protection of occupied or historic habitat for three reptiles or amphibians of special concern (gulf salt marsh water snake, Mississippi diamondback terrapin, American alligator);
- protection of occupied or historic habitat for over 20 birds of special concern;
- improvement of the habitat connectivity between the refuge and other regional conservation lands;
- protection of neotropical migratory songbird, wading bird, and waterfowl habitats;
- protection of cultural resources;
- restoration of wet pine savanna habitat, to support primarily grassy-herbaceous dominated conditions to benefit grassland birds;
- improvement of the capability to manage wildlife habitat through prescribed fire and protect the public from wildfires;
- reintroduction of the Mississippi sandhill cranes to Grand Bay NWR; and
- restoration of longleaf pine habitats.

C. BACKGROUND

Grand Bay NWR is located in the coastal zone of Jackson County, Mississippi, and Mobile County, Alabama, approximately 10 miles east of Pascagoula, Mississippi. This refuge was established in 1992, with an acquisition boundary of 12,100 acres. The primary purpose of the refuge is to protect one of the largest expanses of Gulf Coast savanna remaining in a relatively undisturbed state. In 1998, a 2,700-acre expansion was approved to bring under management a section of the scenic Escatawpa River. In 2003, a 665-acre expansion was approved to contribute to the goals of the Central Gulf Coast Ecosystem, by conserving valuable near-shore barrier islands' habitat. In addition, this expansion enabled the Service to acquire a small tract with a metal storage building, which is being utilized as a refuge maintenance facility. The Service has acquired a total of 10,349 acres within an approved acquisition boundary of 17,742 acres at Grand Bay NWR. Documented acres for the approved acquisition boundary (15,465) differ from the actual figure of 17,742 acres, because of more accurate mapping methodologies employed today.

Grand Bay NWR is managed as part of the Gulf Coast National Wildlife Refuge Complex (Complex), headquartered in Gautier, Mississippi. The Complex is comprised of Mississippi Sandhill Crane, Grand Bay, and Bon Secour NWRs. The Complex provides habitat for several endangered species and numerous species of neotropical migratory birds.

D. ACTION

The Service will acquire, restore, and manage certain lands in the Grand Bay area of southeastern Mississippi and southwestern Alabama, by acquisition through fee-title purchases from willing sellers and through leases, conservation easements, and/or cooperative agreements with willing landowners. All lands and waters acquired will be managed by the Service as part of the Grand Bay NWR. The goals of the refuge expansion are to: (1) Provide for the restoration and conservation of native plant and animal communities on suitable sites; (2) provide habitat for migratory birds and threatened/endangered species; and (3) provide wildlife-dependent public use activities.

E. COORDINATION AND CONSULTATION

Throughout the scoping process, the Service coordinated the development of this project with the Grand Bay National Estuarine Research Reserve, Mississippi Department of Marine Resources, the Alabama Forestry Commission, Alabama Forest Owners Association, and the Alabama Department of Conservation and Natural Resources. The Service also coordinated the development of this project with The Nature Conservancy, the Conservation Fund, and a coastal land trust.

Two intergovernmental meetings were held to inform state, federal, and local agencies (along with conservation organizations) of the Service's refuge expansion project. The first meeting was held at the Grand Bay National Estuarine Research Reserve Visitor Center on March 29, 2011. This meeting was attended by Grand Bay National Estuarine Research Reserve personnel and representatives from the city of Pascagoula, the Southeastern Wildlife Conservation Group, and the Land Trust for the Mississippi Coastal Plain. The second intergovernmental meeting was held on April 14, 2011, at 5 Rivers – Alabama's Delta Resource Center near Mobile, Alabama. This meeting was attended by representatives of the Alabama Department of Conservation and Natural Resources, the Alabama Forestry Commission, The Nature Conservancy, the Conservation Fund, the Friends of Bon Secour NWR, and the Southeastern Wildlife Conservation Group.

Both meetings generated valuable suggestions and recommendations from the attendees. Plans were then made to hold two public scoping meetings. Prior to the public meetings, a press tour of the expansion areas was conducted by refuge staff for several media representatives from area television and local media. This tour generated several articles and television clips.

The Service decided to hold the public meetings at a central location relative to the expansion areas. The site selected was the Grand Bay Senior and Community Center in Grand Bay, Alabama, and the meetings were held on June 28 and 29, 2011. At the first meeting, 40 persons attended, including State Representative David Sessions (R - Grand Bay) and a representative from the Alabama Organized Seafood Association. The second meeting was attended by 30 persons, including the Mobile County NRCS District Conservationist, Citizens for a Better Grand Bay, and an official with Jackson County.

Initial public reaction to the refuge expansion was generally favorable. Other refuges and wildlife management areas in Mississippi and Alabama are popular with sportsmen, and most conservation groups support the Service's land acquisition program. During the two public meetings, support for the expansion was expressed and several landowners indicated that they would be willing sellers. The Organized Seafood Association indicated an interest in working with the Service to improve oyster habitat on any riparian lands acquired by the Service in Area D. Some questions and/or concerns were raised by individuals regarding the following: (1) Oil/gas mining; (2) noise/disturbance in the existing refuge; (3) desire for better communication with the Jackson County Planning Commission; (4) possibility of hunters coming onto private land (unclear boundaries); (5) public access issues; and (6) poachers, feral hogs, and the need for additional game wardens/ law enforcement officers.

F. PUBLIC PARTICIPATION

The public was notified of the proposed expansion of the refuge and the availability of the Draft Land Protection Plan and Draft Environmental Assessment (Draft LPP/Draft EA) through a news release distributed on October 19, 2011. This news release summarized the proposal, invited comments from the public, and gave pertinent dates and other information necessary for public review and comment on the proposal. Copies of the document were provided to representatives of federal, state, and county governments, other federal and state agencies, interested groups, affected landowners, and the general public. Written comments were accepted through November 28, 2011.

On November 3, 2011, the Service held a public meeting to discuss the Draft LPP/Draft EA and receive comments. The meeting was held at the Grand Bay Senior and Community Center and was attended by 35 citizens. The public response to the expansion proposal was positive. Several questions were asked about the Service's acquisition process, including mineral rights, funding, conservation easements, and riparian rights.

The Service received letters or email comments from 6 members of the general public and one national conservation group.

In accordance with the requirements of the National Environmental Policy Act, the Service responded to substantive comments. For the purposes of this Final EA, a substantive comment is one that was submitted during the public review and comment period and within the scope of the action (and the other alternatives outlined in this Final EA), is specific to the action, has a direct relationship to the action, and includes reasons for it to be considered by the Service. (For example, a substantive comment might be that the document referenced 500 individuals of a

particular species, but that current research found 600. In such a case, the Service would likely update the plan to reflect the 600, citing the current research. On the other hand, a comment such as "We love the refuge" would not be considered substantive.)

Comment: Letters of support for the expansion were received from the Alabama Department of Conservation and Natural Resources, the Mississippi and Alabama Chapters of the Nature Conservancy, the Land Trust for the Mississippi Coastal Plain, and Jena Band of Choctaw Indians.

Service Response: Comment noted.

Comment: The Alabama Department of Conservation and Natural Resources (ADCNR) commented that although their agency is in a cooperative partnership for management of hunting and fishing activities within the refuge, no public access currently exists on the Alabama side of the refuge. ADCNR recommends that public access should be developed in Areas A and D.

Service Response: Concur. One of the justifications for proposing Areas A and D was the need to develop public access in Alabama.

Comment: The ADCNR also commented that presently, on the refuge, archery is the only method allowed for big game. ADCNR operates the Grand Bay Savanna Community Hunting Area, which is adjacent to refuge expansion Area D. This state hunting area currently allows the use of firearms for big game hunting. Due to the close proximity of these hunting areas, ADCNR requests that the use of firearms be evaluated in current and future acquired lands of Grand Bay NWR in Alabama.

Service Response: Concur. The Service will consider this request as we develop future Hunt Plans for the refuge.

Comment: The ADCNR strongly urges that hunting and other wildlife-dependent activities should be a permanent "compatible use" within the refuge.

Service Response: Concur. The National Wildlife Refuge System Improvement Act of 1997 identified six priority wildlife-dependent recreational uses. All of these uses are available to the public on the refuge and will continue to be offered.

Comment: The ADCNR indicates that certain lands incorporated in the expansion are state-owned conservation lands and that any matters related to these lands should be coordinated with the State Lands Division. They also recommended that the plan should reference that Grand Bay and its bayous are state-owned water bottoms.

Service Response: Concur. This reference is included in the Final LPP/Final EA.

Comment: The ADCNR notes that the expansion will require an update of the 2008 Grand Bay Comprehensive Conservation Plan. This update should address management practices for the control and eradication of all exotic species, particularly cogongrass and Chinese tallow trees. ADCNR requests consultation and input throughout the development of the updated comprehensive conservation plan.

Service Response: Concur. The Service will continue to fully cooperate and consult with ADCNR on any comprehensive conservation plan updates.

Comment: The ADCNR welcomes the additional environmental education and interpretation possibilities that the refuge expansion may create and offers assistance in teaching and instructing the public on the importance and value of natural resources in the State of Alabama.

Service Response: The Service looks forward to increased partnership opportunities with the ADCNR as additional lands in Alabama are included in the refuge.

Comment: Three citizens indicated that they would be willing sellers and wanted to know if their property was within the expansion boundary.

Service Response: Each landowner was contacted and informed as to whether or not their land was included within the boundary.

Comment: A comment was received from an attorney representing the owner of the Pascagoula Auto Salvage, Inc., a tract that the Service excluded from Area B. The owner felt that there was no justification for the exclusion of this tract from the expansion and asked that appropriate steps be taken to include this parcel in Area B.

Service Response: We appreciate the owner's desire to be included within the acquisition boundary of Grand Bay NWR. However, during project development, we delineated project boundaries to meet as many stated goals and objectives of the refuge as possible. We attempted to exclude properties with certain land-use types (i.e., high-density housing, incompatible land-use practices, or commercial uses), while identifying properties that would provide the greatest benefit to the resource. We used the stated purpose of the refuge expansion "to conserve valuable riverine habitat, to protect threatened and endangered species, to restore and protect key habitats (i.e., coastal savanna and longleaf pine), and to manage populations of migratory birds and other inter-jurisdictional trust species" (Draft LPP and Draft EA), as a guide for parcel selection. Given these biological criteria, various properties that did not meet these criteria were excluded from the expansion boundary.

II. AFFECTED ENVIRONMENT

This section describes the environment that will be affected by the implementation of the alternatives. It is organized under the following impact topics, which include the area's natural vegetation, land use, fish and wildlife resources, related resources, landscape perspective, climate change factors, cultural resources, and socioeconomic and socio-cultural conditions.

A. GENERAL

Located in the Gulf Coastal Plain close to the ocean, the refuge is characterized by flat topography and a low elevation just a few feet above mean sea level. This area has mild winters and long spring and summer seasons. Freezing temperatures are rare and snowfall is even rarer. January's average temperature is 50 degrees Fahrenheit (F), while summers reach into the 90s. Like most of the Southeast, the area receives substantial rainfall, averaging more than 64 inches a year; of this, a mere one-tenth of an inch on average falls as snow. Summer is the wettest season and July the wettest single month (Wikipedia 2010).

B. HABITAT AND LAND USE

The expansion areas contain a diversity of habitat types including wooded swamps, wet pine savannas, riverine corridors, estuarine tidal marshes, and near-shore coastal waters. Some of the most significant natural communities are:

Bottomland Hardwood Wetlands

In Area C, large blocks of bottomland hardwood wetlands border a riverine corridor formed by the Escatawpa River, tributaries, and numerous sloughs and lakes. Water levels fluctuate by several feet from their low point in the summer to winter and spring flood stage. The Escatawpa River also receives tidal influence from the Gulf of Mexico. Forest types are dictated by soil moisture regimes and include slash pine on the higher sites of the first levee, where Atlantic white cedar occurs as a mid-story component. This occurrence represents one of the furthest known western extents of the species. Bald cypress and swamp tupelo dominate the swamps behind the natural levees. Associated trees and shrubs include sweetbay, redbay, and wax myrtle underneath the pine, while buttonbush, swamp privet, and black willow are found below the cypress-tupelo canopy.

Pine Savannas and Flatwoods

Open longleaf and slash pine savannas and flatwoods, which are recognized for the spectacular displays of pitcher plants, orchids, composites, and other plants, characterize Area B. The savannas include a low, dense herbaceous layer and a sparse tree canopy dominated by slash and longleaf pines. Studies indicate that species richness in savannas is among the highest of any natural community in temperate North America, with up to 40 species per-square-meter having been measured at Grand Bay NWR. Flatwoods are distinguished from savannas by a higher tree canopy, a less diverse herbaceous layer, and a well-developed and often more diverse shrub layer.

Pond Cypress Savannas

Pond cypress savannas, which are the wettest savanna communities at Grand Bay NWR, commonly occur in slight depressions and along shallow drains, which meander across Area D. The canopy is dominated by pond cypress and occasionally slash pine; and under a regime of frequent fire, an open character is maintained with a sparse shrub canopy. A dense herbaceous layer is dominated by grass and sedge species.

Intertidal Marshes

The intertidal marshes located in the Grand Bay estuaries of Area D include a wide variety of marsh types (low, mid-level, and high elevation marsh habitat) and some unvegetated salt flats. The brackish marsh occurs as a fringe of varying width along the southern edge bordering on the Mississippi Sound. Dominant plants in this community are saltgrass, black rush, and cordgrass. Salt flats occur at the upper margin of brackish marshes and are characterized by expanses of hypersaline soil devoid of vegetation apart from widely scattered individuals of a limited number of halophytic species. Narrow, distinct bands of cordgrass occur along the creeks and channels.

Upland Fields

Area A is primarily a grassy pasture and a pecan orchard. These are the highest elevation lands within any of the four expansion areas.

Pocosin

The Grand Bay swamp in Area D represents the westernmost occurrence of pocosin along the Gulf Coast, a natural feature of regional significance. Pocosin, a natural community more commonly associated with the Atlantic Coastal Plain of the Carolinas, comprises a virtually impenetrable, shrub thicket of sweetbay, titi, swamp black gum, and slash pine laced with bamboo vine. The plants grow on a substrate of waterlogged organic matter often as much as two meters thick. Rare plants known from this community include Atlantic white cedar and spoonflower.

Barrier Islands

A string of near-shore barrier islands form part of the southern boundary of Area D. The water bottoms are state-owned. These islands are continually eroding primarily because of a lack of available sediments and wave action. The open bay behind the islands supports large productive oyster reefs and seagrass beds. The habitats provide cover and food availability for a host of estuarine and marine species. The coastline is fringed with salt flats, salt shrub thickets, shell middens, and tidal creeks, which provide shelter and foraging habitat for a variety of game and nongame wildlife.

C. WILDLIFE RESOURCES

The expansion areas contain diverse habitat types and a wide variety of wildlife species.

Waterfowl, Shorebirds, and Other Migratory Birds

The salt flats, tidal creeks, and brackish marshes in Areas B and D are used extensively by wading birds, shorebirds, and waterfowl, including mottled ducks, a species of concern in Alabama and Mississippi. About 20 percent of the coastal waterfowl in Alabama and Mississippi winter in this area, the most prevalent species being lesser scaup, redhead, ring-necked duck, mallard, and American wigeon.

Commonly seen wading birds include the snowy egret, little blue heron, tricolored heron, cattle egret, great egret, glossy ibis, white ibis, reddish egret, black skimmer, and American oystercatcher. The cypress-tupelo swamps provide ideal habitat for wood ducks and migratory songbirds.

Threatened and Endangered Species

Area A contains a pasture/pecan orchard (approximately 80 acres), which supports a large gopher tortoise colony. This threatened species may also occur in the other expansion areas. The most significant threats to the species are adverse habitat alteration, illegal take, and development of occupied habitats. Acquisition of this area by the Service will result in protection and management of the gopher tortoise colony.

The yellow-blotched map turtle and Alabama red-bellied turtle are known to occur along the lower Escatawpa River in Area C. The gulf sturgeon may also be found in the lower Escatawpa River in this area. The piping plover and least tern may be found on the small barrier islands along the Gulf Coast in Area D.

Other Species of Special Concern

According to the natural heritage programs in Mississippi and Alabama, the following species have been documented or are likely to occur within the expansion areas:

Birds:

Henslow's sparrow (*Area B*)
Louisiana seaside sparrow (*Area B*)
Sharp-shinned hawk (*Areas A, B, C, D*)
Mottled duck (*Areas B, D*)
Southeastern snowy plover (*Areas B, D*)
Snowy plover (*Areas B, D*)
Piping plover (*Areas B, D*)
Wilson's plover (*Areas B, D*)
Yellow rail (*Areas B, D*)
Reddish egret (*Areas B, D*)
White ibis (*Areas B, D*)
Gull-billed tern (*Areas B, D*)
American oystercatcher (*Areas B, D*)
Bald eagle (*Areas B, D*)
Caspian tern (*Areas B, D*)
Least bittern (*Areas B, D*)
Black rail (*Areas B, D*)
Brown pelican (*Areas B, D*)
Glossy ibis (*Areas B, D*)
Black skimmer (*Areas B, D*)
Common tern (*Areas B, D*)
Least tern (*Areas B, C, D*)
Royal tern (*Areas B, D*)
Sandwich tern (*Areas B, D*)
Peregrine falcon (*Areas A, B, C, D*)
Osprey (*Areas B, C, D*)
White pelican (*Area D*)

Mammals:

American Black bear (*Area D*)
Northern yellow bat (*Areas C, D*)

Reptiles and Amphibians:

Gulf salt marsh water snake (*Area D*)
Mississippi diamondback terrapin (*Area C*)
American alligator (*Areas B, C, D*)

Resident Wildlife

The cypress-tupelo swamps in Area D provide ideal habitat for many resident wildlife species, including white-tailed deer and wild turkey. River otters, raccoons, nutria, and muskrats inhabit the tidal marshes in Areas B and D and riverine corridors in Areas B and C. Other major terrestrial species include bobcat and both gray and red fox.

Rare Plants

Table 2. Documented or likely occurrences of rare plant species

Area	Documented or Likely Rare Plant Species	Global Rank	State Status	Federal Status
A	NONE			
B	<i>Agalinis aphylla</i> Coastal plain false-foxtongue	G3G4	S2S3	NONE
B	<i>Agalinis filicaulis</i> Thin stemmed false-foxtongue	G3G4	G3G4	NONE
B	<i>Calopogon multiflorus</i> Many flower grass-pink	G2G3	S1	NONE
D	<i>Chasmanthium nitidum</i> Shiny spikegrass	G3	S1	NONE

Area	Documented or Likely Rare Plant Species	Global Rank	State Status	Federal Status
B	<i>Cirsium lecontei</i> Le Conte's thistle	G2G3	S1	NONE
B	<i>Coreopsis nudata</i> Georgia tickseed	G3	S1S2	NONE
B	<i>Eurybia chaomani</i> Chapman aster	G2G3	SH	NONE
D	<i>Helianthemum arenicola</i> Gulf rockrose	G3	S1S2	NONE
D	<i>Isoetes louisianensis</i> Louisiana quillwort	G3	S2	LE
B	<i>Lachnocaulon digynum</i> Pineland bogbutton	G3	S2	NONE
D	<i>Lilaeopsis carolinensis</i> Carolina lilaeopsis	G3G5	S2S3	NONE
D	<i>Lindera subcordacea</i> Bog spice bush	G2	S2	NONE
B	<i>Linum macrocarpum</i> Large fruited flax	G2	S2	NONE
D	<i>Lobelia boykinii</i> Boykin's lobelia	G2G3	S1	NONE
C	<i>Ludwigia spathulata</i> Sprathulate seedbox	G2	S1S2	NONE

Area	Documented or Likely Rare Plant Species	Global Rank	State Status	Federal Status
D	<i>Macranthera flemmea</i> Flame flower	G3	S3	NONE
C	<i>Myriophyllum laxum</i> Loose watermilfoil	G3	S1	NONE
B	<i>Panicum nudicaule</i> Naked-stemmed panic grass	G3Q	S2	NONE
D	<i>Paronychia erecta</i> Beach sand-squares	G3G4	S1S2	NONE
C	<i>Peltandra sagittifolia</i> White arum	G3G4	S2S3	NONE
D	<i>Phaseolus sinuatus</i> Sandhill bean	G3	S1S2	NONE
D	<i>Pieris phillyreifolia</i> Climbing fetter-bush	G3	S1	NONE
B	<i>Pinguicula primuliflora</i> Southern butterwort	G3G4	S3	NONE
B	<i>Platanthera integra</i> Yellow fringed orchid	G3G4	S3S4	NONE
C	<i>Rhododendron austrinium</i> Florida flame azalea	G3	S2S3	NONE
B	<i>Rhynchospora macra</i> Large beakrush	G3	S3	NONE
B	<i>Ruellia noctiflora</i> Night-flowering ruellia	G2	S2	NONE

Area	Documented or Likely Rare Plant Species	Global Rank	State Status	Federal Status
B	<i>Sarracenia leucophylla</i> Crimson pitcher-plant	G3	S2S3	NONE
C	<i>Schisandra glabra</i> Scarlet woodbine	G3	S3	NONE
B	<i>Schwalbea americana</i> American chafseed	G2	SH	LE
B	<i>Spiranthes brevilabris</i> var <i>floridana</i> Florida ladies'-tresses	G3G4T	S1	NONE
B	<i>Spiranthes longilabris</i> Giant spiral ladies'-tresses	G3	S2S3	NONE
B	<i>Utricularia floridana</i> Florida bladderwort	G3G5	S1S2	NONE
B	<i>Xyris chapmanii</i> Chapman's yellow-eyed grass	G3	S2	NONE
B	<i>Xyris drummondii</i> Drummond's yellow-eyed grass	G3	S2	NONE
B	<i>Xyris scabrifolia</i> Harper's yellow-eyed grass	G3	S1S2	NONE

Global Ranking System	State Ranking System	Federal - Fish and Wildlife Service
G1 Critically Imperiled – At very high risk of extinction due to extreme rarity (often 5 or fewer), very steep declines, or other factors.	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.	Endangered Species (LE) – in danger of extinction throughout all or a significant portion of range.
G2 Imperiled – At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.	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.	Threatened Species (LT) – likely to become an endangered species within the foreseeable future throughout all or a significant portion of range.
G3 Vulnerable – At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.	S3 Rare or uncommon in Alabama (on the order of 21 to 100 occurrences).	Proposed Endangered (PE) – the species is proposed to be listed as endangered.
G4 Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.	S4 Apparently secure in Alabama, with many occurrences.	Proposed Threatened (PT) – the species is proposed to be listed as threatened.
G5 Secure – Common; widespread and abundant.	S5 Demonstrably secure in Alabama and essentially "ineradicable" under present conditions.	Partial Status (PS) – an infraspecific taxon or population has federal status but the entire species does not; status is in only a portion of the species range.

Global Ranking System	State Ranking System	Federal - Fish and Wildlife Service
GX Presumed Extinct (species) – Not located despite intensive searches and virtually no likelihood of rediscovery.	SX Presumed Extirpated – Species or community is believed to be extirpated from Alabama. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.	Candidate (C) –Species for which the Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened. Development and publication of proposed rules on candidate taxa are anticipated, and the Service encourages other agencies to give consideration to such taxa in environmental planning.
Eliminated (ecological communities) – Eliminated throughout its range, with no restoration potential due to extinction of dominant or characteristic species.	SH Historical (Possibly Extirpated) – Species or community occurred historically in Alabama, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become SH without such a 20- 40-year delay if the only known occurrences in a nation or state/province were destroyed, or if it had been search for both extensively and unsuccessfully. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.	Nonessential Experimental Population (XN) – Experimental reintroduced population

Global Ranking System	State Ranking System	Federal - Fish and Wildlife Service
Presumed Eliminated – (historic, ecological communities) – Presumed eliminated throughout its range, with no or virtually no likelihood that it will be rediscovered, but with the potential for restoration (e.g., American Chestnut forest).	SNR Unranked – State conservation status not yet assessed.	
GU Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.	SA Accidental in Alabama, including species (usually birds or butterflies) recorded once or twice or only at very great intervals hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded.	
GNR Not ranked to date.	SU Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.	
G#T# Infraspecific Taxon (trinomial) – The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above for global conservation status ranks. A T-rank cannot imply the subspecies or variety is more abundant than the species as a whole (e.g., a G1T2 cannot occur.) At this time, the T- rank is not used for ecological communities.	SE An exotic established in Alabama.	

D. FISHERY RESOURCES

The fishery resources of the Escatawpa River system are excellent. The section of the river in Area C and its associated sloughs and lakes contain large populations of largemouth bass, bream, crappie, and catfish. Public fishing is popular along the river. More than 80 species of fish have been reported from the estuarine habitats of Grand Bay, including commercially valuable species such as Atlantic croaker, spot, menhaden, spotted sea trout, flounder, red drum, oysters, brown shrimp, white shrimp, and blue crabs.

Species of Special Concern

According to the Natural Heritage programs in Mississippi and Alabama, the following fish species have been documented or are likely to occur within the listed expansion areas.

Scaly sand darter (*Area D*)
Alligator gar (*Areas C, D*)
Bluespotted sunfish (*Area D*)
Swamp darter (*Area D*)
Brighteye darter (*Area D*)
Golden topminnow (*Area D*)
Banded topminnow (*Area D*)
Saltmarsh topminnow (*Area D*)
Least killifish (*Area D*)
Rainwater killifish (*Area D*)
Cherryfin shiner (*Area D*)
Ironcolor shiner (*Area D*)
Taillight shiner (*Area D*)
Coastal shiner (*Area D*)
Sailfin molly (*Area D*)
Flagfin shiner (*Area D*)

E. RELATED RESOURCES

The Grand Bay Bioreserve in southeastern Mississippi and southern Alabama was designated by The Nature Conservancy. This is a spectacular landscape that includes an area of uplands, wetlands, and near-shore coastal waters comprising more than 300 square miles. Within this area, The Nature Conservancy has helped the State of Alabama establish the Forever Wild Grand Bay Nature Preserve (2,800 acres).

Approximately 18,400 acres of tidal marsh, shallow-water open bay, wet pine savanna, and coastal swamp habitats in southeast Jackson County, Mississippi, have been designated as the Grand Bay NERR by the NOAA. The Grand Bay NWR staff is co-located with the Grand Bay National Estuarine Research Reserve staff in the recently constructed Grand Bay Coastal Resource Center. Environmental education and interpretation possibilities on the expansion area have been discussed with the Grand Bay NERR staff.

The Mississippi Department of Marine Resources administers the Coastal Preserve Program, which seeks intergovernmental and private cooperation to manage selected high-priority sites along the coast. The Grand Bay Savanna is one of these sites.

Bangs Lake Coastal Preserve is just west of the refuge and is managed by MDMR. Mississippi Sandhill Crane NWR, which is managed primarily for the endangered Mississippi sandhill crane, is located 15 miles to the west. Ward Bayou Wildlife Management Area (WMA) and Pascagoula WMA are located about 10 and 20 miles north, respectively, and both are managed for resident wildlife. Also within the general vicinity is Gulf Island National Seashore, a group of three barrier islands managed by the National Park Service (Figure 7).

F. CLIMATE CHANGE

The climate in coastal Mississippi and Alabama has always been variable and sometimes extreme—and climate change may intensify this historical pattern. Average state temperatures have varied substantially over the past century, with a warming trend since the late 1960s. Average rainfall has changed only a little, with summers becoming slightly drier and winters slightly wetter, and extreme rainfall events have become more frequent. Sea level along the Gulf Coast has risen by as much as 8 inches over the past 100 years due to a combination of globally rising seas and substantially local sinking of the land (subsidence) (UCS 2009).

G. SOCIOECONOMIC AND SOCIO-CULTURAL CONDITIONS

The socioeconomic and socio-cultural conditions vary considerably throughout the project areas. The refuge expansion lies within Jackson County, Mississippi, and Mobile County, Alabama.

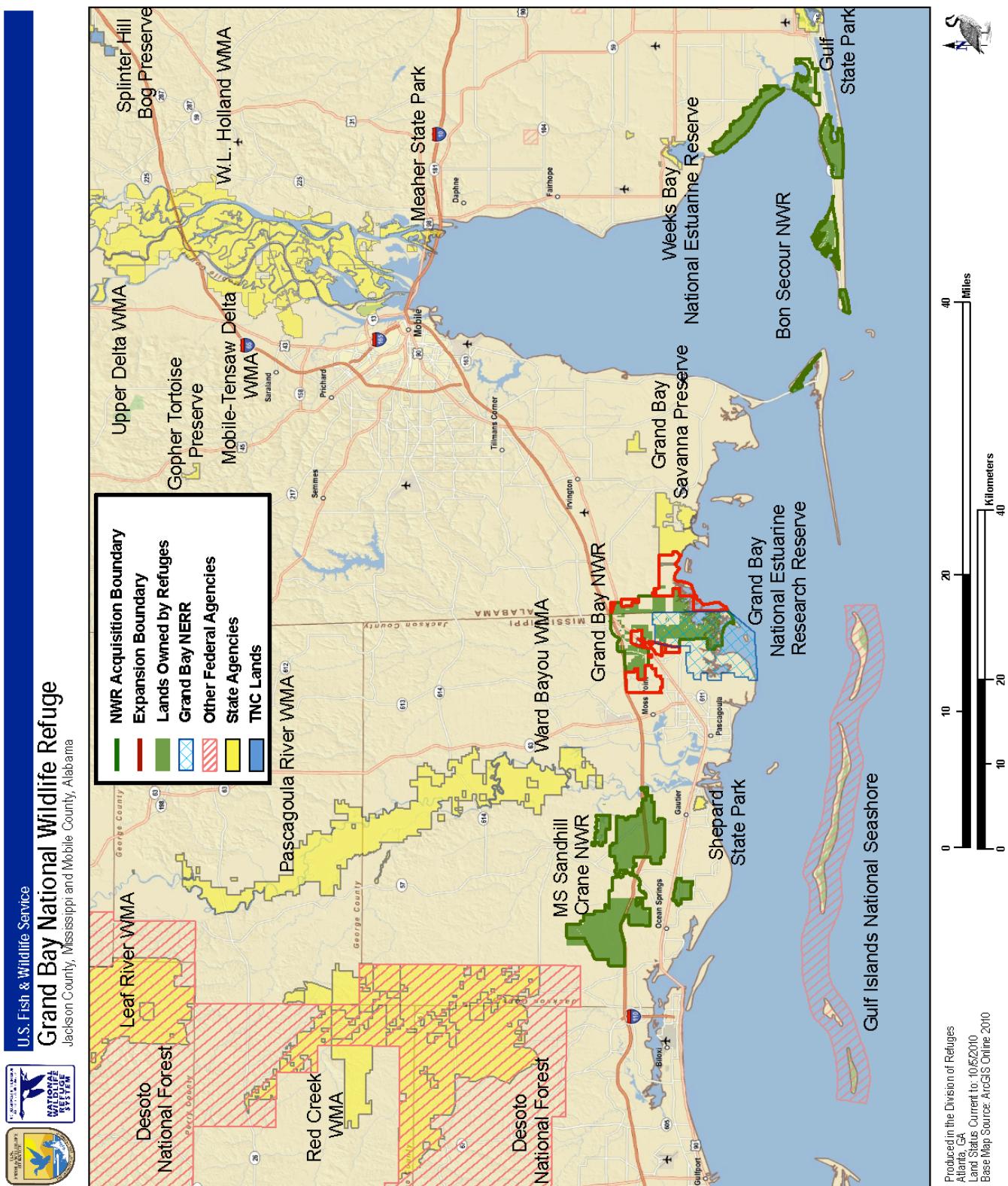
Jackson County, Mississippi, was founded in 1812, and is located at the southeastern tip of the state adjacent to Alabama. Jackson County is named for President Andrew Jackson and the county seat is Pascagoula, a metropolitan statistical area. The county was severely damaged from both Hurricane Camille in August 1969, and Hurricane Katrina in August 2005, causing catastrophic effects.

A key to the county's economic growth was the development of the Port of Pascagoula in 1840. The county's timber and sawmill industry prospered in those early days, bringing about the first economic boom lasting from 1880 to 1910. Pecans were a big industry at the turn of the century. Shipbuilding was recorded as early as 1838, with the construction of flat-bottomed schooners for coastal trade. It and other early shipyards were precursors of the state's largest employer, Ingalls. In more modern times, Jackson County continued to attract new industries. The Jackson County Board of Supervisors established the Bayou Casotte Industrial Park in 1954. Major industries, like Chevron USA, moved here in the early 1960s.

The 2009 population of Jackson County was 132,922. The median household income in 2008 was \$51,034, and the per capita money income in 1999 was \$17,768. In 2008, the percentage of persons living below the poverty level was 13.3 percent, compared to the national average of 13.2 percent in 2008 (Wikipedia 2010).

Mobile County, Alabama, was created by proclamation of Governor Holmes of the Mississippi Territory on December 18, 1812. Mobile County is located in the southwestern corner of the State of Alabama, and is bordered by the State of Mississippi on the west, Washington County on the north, Baldwin County and Mobile Bay on the east, and the Gulf of Mexico on the south. It encompasses 1,238 square miles. As of 2009, its population was 411,721. The county seat is Mobile. The word Mobile is believed to come from a Choctaw Indian word for "paddlers." Mobile is the largest municipality on the Gulf Coast between New Orleans, Louisiana, and St. Petersburg, Florida. Mobile is the principal municipality of the Mobile Metropolitan Statistical Area (MSA), a region of 399,843 residents, which is composed solely of Mobile County and is the second largest MSA in the state.

Figure 7. Related resources near Grand Bay NWR



Mobile is included in the Mobile-Daphne-Fairhope Combined Statistical Area, with a total population of 540,258, the second largest combined statistical area in the state behind Birmingham.

Located at the junction of the Mobile River and Mobile Bay on the northern Gulf of Mexico, Mobile is the only seaport in Alabama. The Port of Mobile has always played a key role in the economic health of Mobile County, beginning as a key trading center between the French and Native-Americans, down to its current role as the 9th largest port in the United States.

The median household income in Mobile County in 2008 was \$40,951, and the per capita income in 1999 was \$17,178. In 2008, the percentage of persons living below the poverty level was 15.9 percent (Wikipedia 2010).

Outdoor recreation pursuits such as hunting and fishing are traditional and favored pastimes for local residents and tourists in both Jackson and Mobile Counties. The State of Mississippi manages two wildlife management areas and several public lakes within the project area. The State of Alabama manages the Grand Bay Savanna Community Hunting Area which is adjacent to Area D. In addition, the leasing of private land for hunting is becoming increasingly popular. As the project lands are acquired for Grand Bay NWR, the cost will be based on the fair market values of the properties as determined by appraisals. The lands acquired will become part of the National Wildlife Refuge System, and some land-use changes may occur; however, these changes are not expected to cause any significant economic or socio-cultural impacts on the local communities.

H. CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act of 1966, as amended, and Section 14 of the Archaeological Resources Protection Act require the Service to evaluate the effects of any of its actions on cultural resources (e.g., historical, architectural, and archaeological) that are listed or eligible for listing in the National Register of Historic Places (NRHP). In accordance with these regulations, the Service has coordinated the review of this project with the Mississippi and Alabama State Historic Preservation Offices.

The Service believes that the acquisition of lands will have no adverse effects on any known or yet-to-be identified NRHP-eligible cultural resources. However, in the future, if the Service plans or permits any actions that might affect eligible cultural resources, it will carry out appropriate site identifications, evaluations, and protection measures as specified in the regulations and in Service directives and manuals.

III. ALTERNATIVES INCLUDING THE PREFERRED ACTION

In determining how to achieve the fish and wildlife habitat protection goals for the project lands and waters identified in this document, the Service considered and evaluated three alternatives. These are:

A. ALTERNATIVE 1: NO ACTION

This is the "status quo" alternative. Under this alternative, the Service will not acquire any of the project lands identified in this project. The project lands will remain in private ownership and current land uses will continue. Protection of the fish and wildlife habitats and natural resource values of these lands will be contingent upon the enforcement of existing federal, state, and local environmental regulations (i.e., Clean Water Act and state water quality and pollution laws) and the discretion of the private landowners.

B. ALTERNATIVE 2: PROTECTION AND MANAGEMENT OF UP TO 8,428 ACRES BY THE FISH AND WILDLIFE SERVICE (PREFERRED ALTERNATIVE)

Under this alternative, the Service will acquire an interest in up to 8,428 acres for restoration, enhancement, and management as part of Grand Bay NWR (Figure 8). These areas will be included in the approved acquisition boundary for the refuge. This is the preferred alternative, as the Service has the expertise and means to manage these lands for a diversity of wildlife habitats, with special emphasis on migratory birds and endangered species in order to provide lasting benefits to the public.

C. ALTERNATIVE 3: PROTECTION AND MANAGEMENT OF UP TO 4,028 ACRES BY THE FISH AND WILDLIFE SERVICE

Under this alternative, the Service will acquire up to 4,028 acres in Mississippi within Areas B and C. Areas A and D in Alabama will not be included in this alternative. Under this alternative, the Service will enhance and/or restore habitats and manage lands that contain an area of coastal savanna near the central part of the refuge and a section of the Escatawpa River (Figure 9). Areas encompassing lands already owned by the refuge will also be incorporated into this action. Inclusion of these properties into the acquisition boundary will be purely administrative, as this action will have no impact on landowners and land protection practices on these properties will not change.

The acquisition methods that could be used by the Service under this alternative are the same as described in Alternative 2.

Figure 8. Lands included in the project under Alternative 2

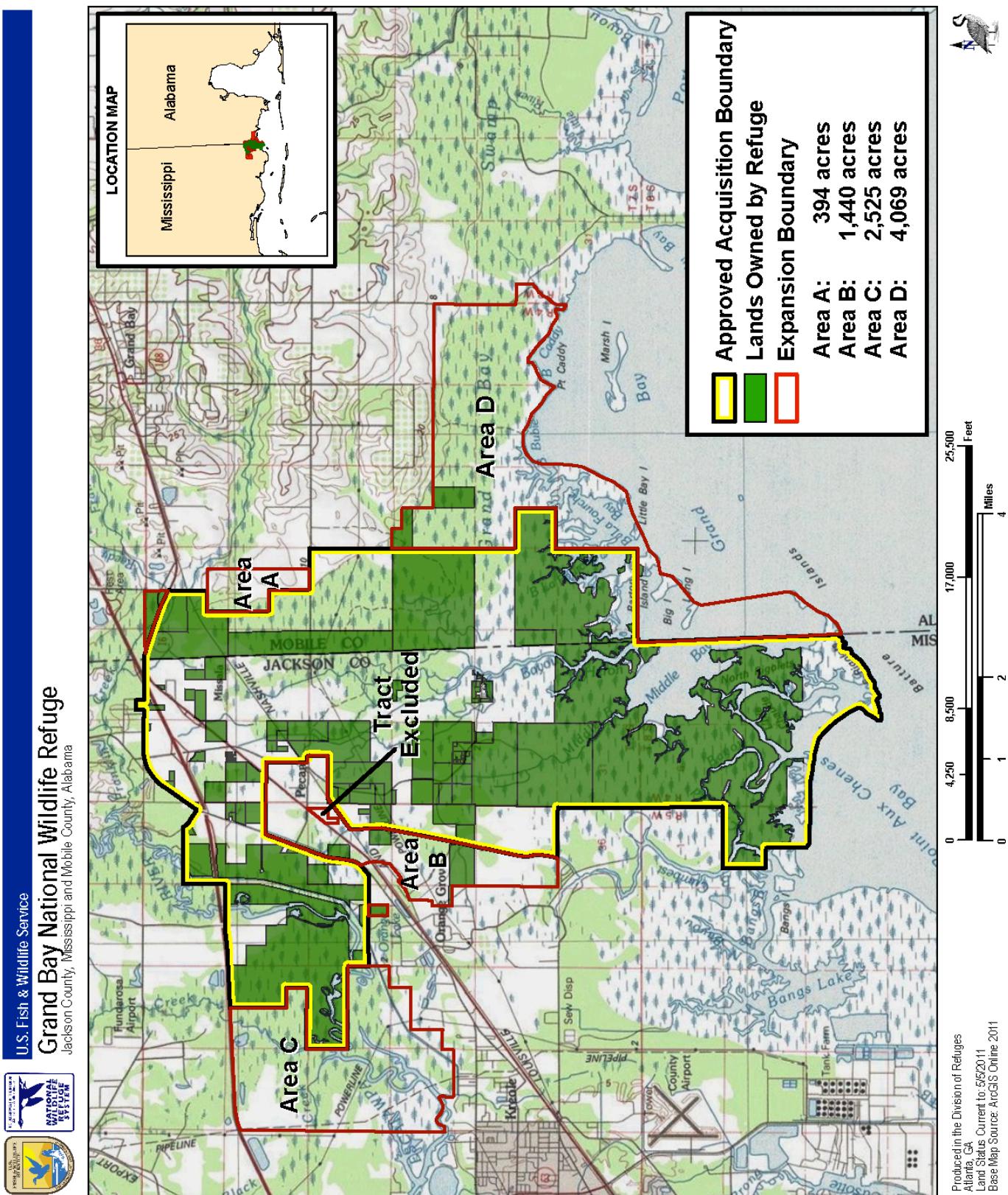
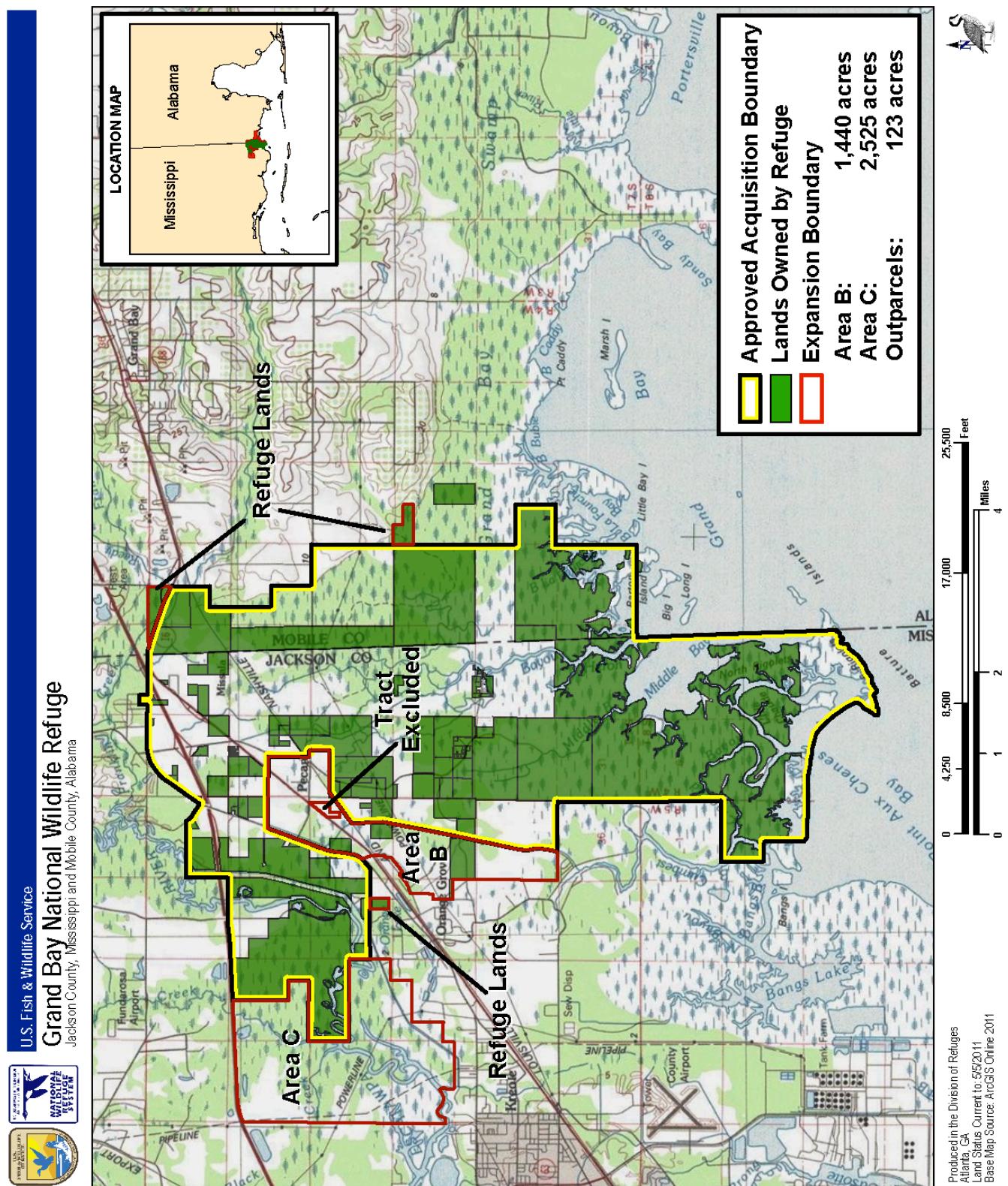


Figure 9. Lands included in the project under Alternative 3



IV. ENVIRONMENTAL CONSEQUENCES

This section analyzes and discusses the potential environmental impacts of the three management alternatives described in Section II.

A. ALTERNATIVE 1: NO ACTION

Under this alternative, no action will be taken to acquire, protect, and manage any lands to expand Grand Bay NWR.

Future habitat protection under existing laws and regulations may be insufficient to prevent significant degradation of the area's fish and wildlife resource values. Federal executive orders involving the protection of wetlands and floodplains only apply to federal agencies. They do not apply to habitat alterations by non-federal entities, which receive no federal funds.

The primary deterrent against the loss of resource values is the Army Corps of Engineers (Corps) Section 404 permit program, administered under the authority of the Clean Water Act. This program requires permits for most types of work in wetlands. Most of the wetlands in the project area qualify for protection under this program. In addition, the states have regulatory authority over the area and will not permit any developments that would violate the state's water quality standards.

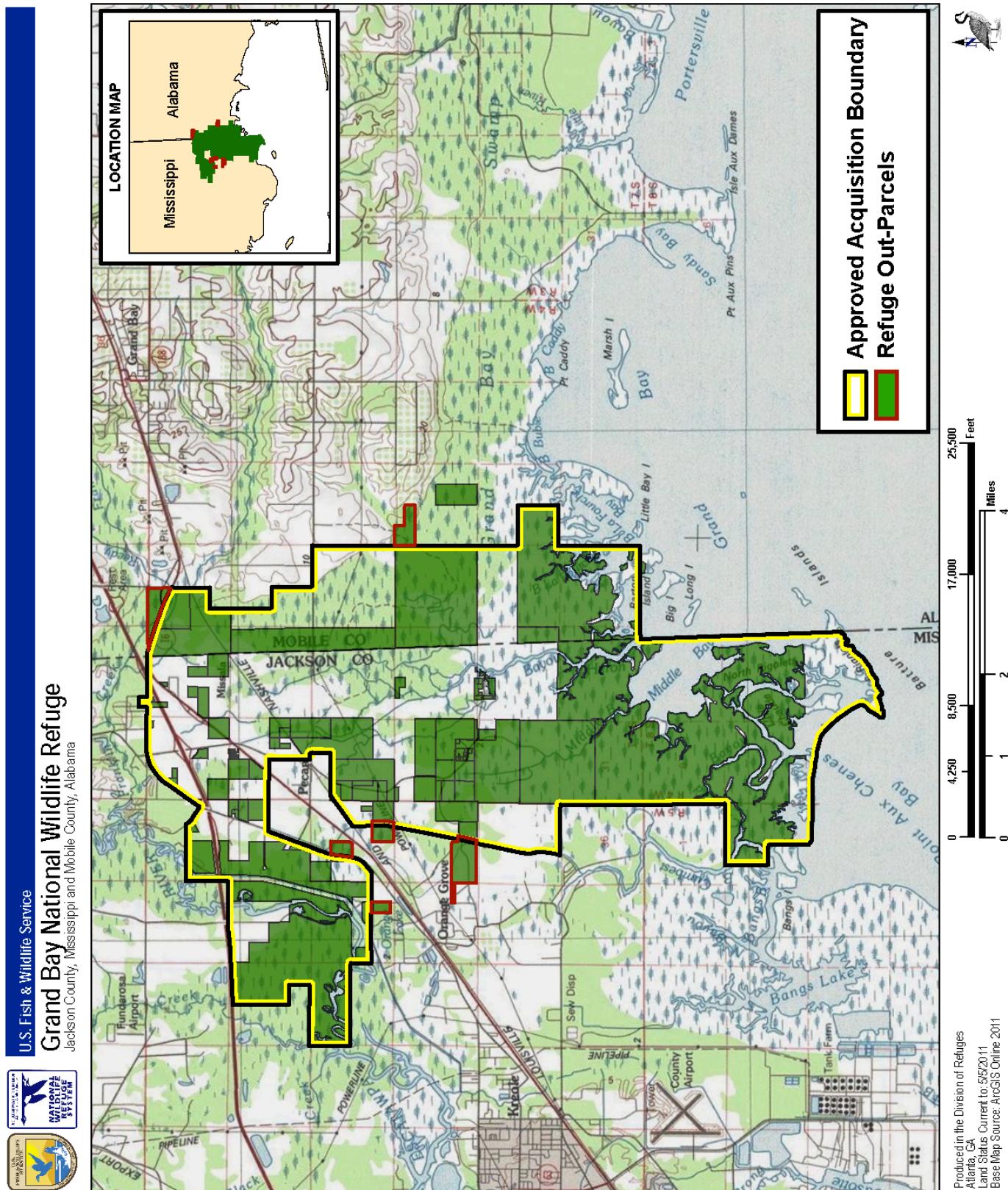
However, there is no assurance that the protection offered by these regulations will be consistent with protection of the area's fish and wildlife resources. The regulatory programs are designed to accomplish different objectives. In addition, these programs are subject to changes in the law and to varying definitions and interpretations, often to the detriment of wetlands. The Corps' regulatory authority provides for the issuance of Section 10 and/or Section 404 permits when it is not contrary to the public interest to do so and provided other conditions are met. Fish and wildlife conservation is only one of several public interest factors that are considered in permit issuance decisions. If fish and wildlife conservation is outweighed by other factors, permits that will alter the wetlands in the refuge unit area could be issued.

Jackson and Mobile Counties will receive no additional payments from the Refuge Revenue Sharing Act under the No Action Alternative, and public use will continue to be restricted within the project areas.

Currently, there are four out-parcels which the Service owns at Grand Bay NWR that are outside the approved acquisition boundary (Figure 10). This is the result of tracts that were acquired inside the boundary and part of the ownership extended outside the boundary. Under all alternatives described in this document, these out-parcels will be included in the approved acquisition boundary.

The desired fish and wildlife protection objectives, therefore, cannot be achieved to any degree under this alternative. Specifically, implementation of the No Action Alternative will adversely impact the area's valuable fish, waterfowl, and wildlife habitats.

Figure 10. Current out-parcels at Grand Bay NWR



B. ALTERNATIVE 2: PROTECTION AND MANAGEMENT OF UP TO 8,428 ACRES BY THE FISH AND WILDLIFE SERVICE (PREFERRED ALTERNATIVE)

The Service will acquire under the preferred alternative up to 8,428 acres of habitat as part of Grand Bay NWR. This will allow the Service to actively manage these lands for a wide variety of fish and wildlife, including migrating and wintering waterfowl, endangered species, and neotropical migratory birds.

The Grand Bay ecosystem is one of the very few areas where one can still observe a mile-long gradient from open longleaf and slash pine savannas and flatwoods through pond cypress savanna to brackish and salt marsh communities. Acquisition and management of lands within the project areas by the Service will help prevent fragmentation of this valuable ecosystem.

Opportunities for partnerships in this area are excellent. Other agencies and organizations working to protect and manage lands at Grand Bay include: The Nature Conservancy (Grand Bay Bioreserve), NOAA (National Estuarine Research Reserve), and MDMR (Grand Bay Coastal Preserve).

The largest landowner in this area is International Paper Company (IP). In 2007, Chevron U.S.A., Inc., established a 915-acre mitigation bank on IP property for impacts associated with its Casotte Landing Natural Gas Import Terminal Project. The Conservation Fund is working with IP on the restoration, enhancement, and conservation plan for this area. The Conservation Fund has been in contact with the Service concerning the possibility of this area becoming part of Grand Bay NWR once the mitigation plan has been completed later this year.

Acquisition of the project areas will increase the potential for reestablishing a second breeding flock of the endangered Mississippi sandhill crane, a non-migratory subspecies with low population numbers. In the 1920s, sandhill cranes were recorded as having nested in the Grand Bay NWR area.

The wetland complex at Grand Bay NWR, including the project areas, is of critical importance as a groundwater recharge area for the regional aquifer and as a source of high-quality water to the productive estuarine waters of the Gulf of Mexico.

The project seeks to meet both present and future land conservation and resource protection needs for Grand Bay NWR. By protecting additional conservation lands critical to the management of refuge resources, it is tied to many of the goals and objectives of the refuge's comprehensive conservation plan including:

Goal 1: Fish and Wildlife Populations and Habitat Management - In support of national and regional plans, promote management actions that will provide for viable populations of native fish and wildlife species and habitats, with special emphasis on wet pine savanna;

Objective 1-1: Migratory Waterfowl – Within 15 years of the date of the CCP, support the annual population objective of the North American Waterfowl Management Plan (NAWMP), by contributing 20 percent (3,600 ducks) of a midwinter population of approximately 18,000 ducks in the Coastal Mississippi Wetlands Initiative Area.

Objective 1-2: Other Migratory Birds – Within 15 years of the date of the CCP, provide habitats sufficient to meet population goals of regional and national bird conservation plans.

Objective 1-3: Threatened and Endangered Species – Document all sightings of listed species, and within 15 years of the date of the CCP, create and enhance favorable conditions for gopher tortoises (200 acres) and possible reintroduction of 12-15 Mississippi sandhill cranes (5-7 nesting pairs) and gopher frog (creating 2 ponds).

Objective 1-5: Wet Pine Savanna – Within 15 years of the date of the CCP, restore 2,500 acres of wet pine savanna habitat, supporting primarily grassy-herbaceous dominated conditions to benefit grassland birds.

Objective 1-6: Forested Wetlands – Within 15 years of the date of the CCP, restore forest structure to promote super-emergent trees, cavities, and understory structure on approximately 2,000 acres to benefit migratory land birds.

Goal 2: Resource Protection - Identify, conserve, and protect natural and cultural resources through partnerships, land protection programs, and law enforcement.

Objective 2-2: Cultural Resources – Within 15 years of the date of the CCP, develop and begin to implement a Cultural Resources Management Plan.

Goal 3: Visitor Services - Provide opportunities for quality, wildlife-dependent public uses, leading to greater understanding and enjoyment of fish, wildlife, and the Gulf Coast ecosystems contained within the refuge.

Objective 3-1: Visitor Services Plan – Within 3 years of the date of the CCP, develop a Visitor Services Plan to be used in managing public use facilities and opportunities on the refuge.

Objective 3-3: Fishing and Hunting – Continue to allow fishing and provide hunting for deer, squirrel, and waterfowl consistent with state regulations and seasons.

C. ALTERNATIVE 3: PROTECTION AND MANAGEMENT OF 4,028 ACRES BY THE FISH AND WILDLIFE SERVICE

Under this alternative, the Service will seek to acquire up to 4,028 acres in only Areas B, and C as part of Grand Bay NWR. The lands within this alternative contain an area of coastal savanna near the central part of the refuge and a section of the Escatawpa River.

Areas A and D are not included in this alternative and any significant cultural and historic resources within this area will remain in private ownership, and the protection offered by existing state and federal laws will apply. This protection is limited, however, and the area's cultural and historical resources will be subjected to greater risks of loss during potential land-use changes.

Mobile County will receive no additional payments from the Refuge Revenue Sharing Act under this alternative and public use will continue to be restricted.

This alternative is not recommended because the refuge will never reach its desired management level unless the full range of diverse habitat types is enhanced, restored, protected, and managed.

D. CUMULATIVE IMPACTS

A cumulative impact is defined as an impact on the natural or human environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such other actions (40 CFR 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 a reduction in population crosses a threshold of reproductive sustainability, and threatens to extinguish the population.

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

The Service is not aware of any past, present, or future planned actions that will result in a significant cumulative impact when added to the refuge’s expansions, as outlined in the preferred alternative. The project is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988. The action does not involve highly uncertain, unique, or unknown environmental risks to the human environment. The effects on the quality of the human environment are not likely to be highly controversial. The project will not significantly affect any unique characteristics of the geographic area nor will the action have a significant effect on public health and safety.

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 for implementation under the preferred alternative include wildlife and population management, resource protection, public use, and administrative programs. These actions will result in both direct and indirect effects. For example, increased public use, a direct effect, will in turn lead to indirect effects such as increased littering, noise, and vehicular traffic.

Other indirect effects that may result from implementing the preferred alternative include minor impacts from siltation due to the disturbance of soils and vegetation while expanding habitat management and research activities, as well as expanding or creating new foot trails and providing greater visitor access through additional boat ramps.

Short-term Uses versus Long-term Productivity

Any habitat restoration, protection, and management actions undertaken by the Service on lands acquired within the project areas will be dedicated to restoring and maintaining the long-term productivity. The benefits of this restoration and long-term productivity will far outweigh any impacts from short-term actions, such as the new signage, construction of observation towers, and creation of new trails. While these activities will cause short-term negative impacts, the educational values and associated public support gained from the improved visitor experience will produce long-term benefits for the entire Grand Bay ecosystem. Therefore, implementing the preferred alternative will lead to long-term benefits for wildlife protection and land conservation that far outweigh any short-term impacts.

E. RECOMMENDATION

Alternative 2 is recommended because it better serves the outlined purpose and need, as well as the stated goals and objectives and the vision and purpose(s) of the refuge. This project seeks to meet both present and future land conservation and resource protection needs for Grand Bay NWR. By protecting additional conservation lands critical to the management of refuge resources, it is tied to many of the goals and objectives of the refuge's comprehensive conservation plan.

V. REFERENCES AND LITERATURE CITATIONS

Union of Concerned Scientists

2009. *Gulf Coast's Ecological Heritage at Risk – The Gulf States.* Accessed at <http://www.uscusa.org/gulf/gcstatedmis-cli.html> and [uscusa.org/gulf/gcstateala-cli.html](http://www.uscusa.org/gulf/gcstateala-cli.html).

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SECTION C. APPENDICES

APPENDIX A. INTERIM RECREATION ACT FUNDING ANALYSIS

Refuge Name: Grand Bay NWR Expansion

Date Refuge Established: 1992.

Purposes for which the Refuge was Established:

Grand Bay NWR was established in 1992, with an acquisition boundary of 12,100 acres. The main function of the refuge is to protect one of the largest expanses of Gulf Coast savanna remaining in a relatively undisturbed state. In 1998, a 2,700-acre expansion was approved to bring under management a section of the scenic Escatawpa River. In 2003, another expansion was approved to include a string of near-shore barrier islands just to the south of the refuge (660 acres) and a 5-acre tract on the north side of Independence Road, which forms part of the refuge's northern boundary. To date, the Service has acquired approximately 10,349 acres within the acquisition boundary. The refuge was established under the authority of the Emergency Wetlands Resources Act of 1986, which calls for:

"... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..." (16 U.S.C. 3901 (b), 100 Stat. 3583).

Recreational Use(s) Evaluated for the proposed expansion of Grand Bay NWR:

(1) Recreational hunting of resident game and migratory birds in accordance with federal and Mississippi and Alabama regulations; (2) recreational fishing of freshwater and saltwater fish species in accordance with Mississippi and Alabama regulations; and (3) wildlife observation/photography.

Funding required to administer and manage the recreational use(s):

Minimal funding in the amount of \$100,000 will be made available to implement initial protection, hunt implementation, data collection, and non-consumptive uses.

Based on a review of the refuge budget allocated for recreational use management, I certify that funding is adequate to ensure compatibility and to administer and manage the recreational use(s).

Project Leader:
(Signature/Date)

Mary L. Barnes / 3-7-12
Elizabeth Barnes 3-12-12

Refuge Supervisor:
(Signature/Date)

**Chief, National
Wildlife Refuge System,
Southeast Region:**
(Signature/Date)

[Signature] 3-28-12

APPENDIX B. INFORMATION ON PREPARERS

This document was prepared by:

Mike Dawson, a contractor for the Service,

with the assistance of
the staff at Gulf Coast NWR Complex in Gautier, Mississippi, and

Kimberly Eldridge in the Service's Regional Office.

APPENDIX C. FINDING OF NO SIGNIFICANT IMPACT

for the Expansion of Grand Bay National Wildlife Refuge

The Fish and Wildlife Service (Service) will protect and manage certain fish and wildlife resources in Jackson County, Mississippi, and Mobile County, Alabama, through the expansion of Grand Bay National Wildlife Refuge. The Service analyzed the following management alternatives in a Final Environmental Assessment (copy attached):

Alternative 1: No Action

Alternative 2: Protection and Management of up to 8,428 Acres by Fish and Wildlife Service (Preferred Alternative)

Alternative 3: Protection and Management of up to 4,028 Acres by Fish and Wildlife Service

The preferred alternative was selected over the other alternatives because it offers full protection of the natural resource values of this unique area along the Gulf coast. The Grand Bay ecosystem is one of the very few areas where one can still observe a mile-long gradient from open longleaf and slash pine savannas and flatwoods through pond cypress savanna to brackish and salt marsh communities. Acquisition and management of lands within the project areas by the Service will help prevent fragmentation of this valuable ecosystem. It will also protect this resource for the benefit of a wide variety of fish and wildlife, including migrating and wintering waterfowl, endangered species, and neotropical migratory birds.

Implementation of the agency's decision is expected to result in the following environmental, social, and economic effects:

See Final EA, page 27.

Because the project does not have any adverse effects, measures to mitigate and/or minimize adverse effects have not been incorporated into the project.

The project is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988 (Final EA, page 55).

The project has been thoroughly coordinated with all interested and/or affected parties. Parties contacted include:

All affected landowners
Congressional representatives
Governor of Alabama
Governor of Mississippi
Mississippi State Clearinghouse
Alabama State Clearinghouse
Mississippi State Historic Preservation Officer

Alabama State Historic Preservation Officer
Interested citizens and organizations
Alabama Department of Conservation and Natural Resources
Mississippi Department of Marine Resources
Local community officials

Copies of the Final EA are available by contacting:

Ms. Rosamond A. Hopp, Senior Planner
U.S. Fish and Wildlife Service
Division of Planning and Resource Management
1875 Century Boulevard, Suite 420
Atlanta, Georgia 30345
404/679-7247

Therefore, it is my determination that the project does not constitute a major federal action significantly affecting the quality of the human environment under the meaning of Section 102(2) (c) of the National Environmental Policy Act of 1969 (as amended). As such, an environmental impact statement is not required. This determination is based on the following factors (40 CFR 1508.27):

1. Both beneficial and adverse effects have been considered and this action will not have a significant effect on the human environment (Final EA, page 55).
2. The action will not have a significant effect on public health and safety (Final EA, page 55).
3. The project will not significantly affect any unique characteristics of the geographic area (Final EA, page 55).
4. The effects on the quality of the human environment are not likely to be highly controversial (Final EA, page 55).
5. The action does not involve highly uncertain, unique, or unknown environmental risks to the human environment (Final EA, page 55).
6. The action will not establish a precedent for future actions with significant effects nor does it represent a decision in principle about a future consideration (Final EA, page 55).
7. There will be no cumulatively significant impacts on the environment (Final EA, page 55).
8. The action will not significantly affect any site listed in, or eligible for listing in, the National Register of Historic Places, nor will it cause loss or destruction of significant scientific, cultural, or historical resources (Final EA, page 46).
9. The action is not likely to adversely affect threatened or endangered species, or their habitats (Final EA pages 35, 47, 54).
10. The action will not lead to a violation of federal, state, or local laws imposed for the protection of the environment (Final EA, page 27)

References:

Final Land Protection Plan and Final Environmental Assessment for the Expansion of Grand Bay National Wildlife Refuge, U.S. Fish and Wildlife Service, Southeast Region, Atlanta, Georgia.


Cynthia K. Dohner
Regional Director, Southeast

Date

3/30/12

**Land Protection Plan and
Final Environmental Assessment
For the Expansion of
Grand Bay National Wildlife Refuge**

Grand Bay National Wildlife Refuge

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