

DRAFT LAND PROTECTION PLAN AND  
ENVIRONMENTAL ASSESSMENT  
FOR THE PROPOSED EXPANSION OF  
**POCOSIN LAKES NATIONAL WILDLIFE REFUGE**

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*Hyde, Tyrrell, and Washington Counties, North Carolina*



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**Southeast Region**





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*Hyde, Tyrrell, and Washington Counties, North Carolina*

**U.S. Department of the Interior**  
**Fish and Wildlife Service**  
*Southeast Region*  
**Atlanta, Georgia**

**October 2012**

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## TABLE OF CONTENTS

### LAND PROTECTION PLAN

<b>I. Introduction and Purpose</b> .....	<b>1</b>
A. Project Description .....	1
B. Refuge Purposes .....	1
<b>II. Resources</b> .....	<b>5</b>
A. Resources To Be Protected .....	5
B. Relationship of Project to Landscape Conservation Goals and Objectives .....	6
C. Partnership Efforts/Related Resources .....	7
<b>III. Land Protection Strategy</b> .....	<b>11</b>
A. Action and Objectives .....	11
B. Land Protection Priorities .....	11
Priority Group I .....	11
Priority Group II .....	20
Priority Group III .....	20
C. Land Protection Options .....	20
Option 1. Less-than-fee-title Acquisition by the service .....	20
Option 2. Fee-Title Acquisition by the service .....	21
D. Land Protection Methods .....	21
Purchase .....	22
Leases and Cooperative Agreements .....	22
Donations .....	22
Exchanges .....	22
E. Service Land Acquisition Policy .....	23
F. Funding .....	23
<b>IV. Coordination</b> .....	<b>25</b>

### ENVIRONMENTAL ASSESSMENT

<b>I. Purpose and Need for Action</b> .....	<b>27</b>
A. Introduction .....	27
B. Purpose and Need .....	27
C. Background .....	31
D. Proposed Action .....	32
<b>II. Affected Environment</b> .....	<b>35</b>
A. General .....	35
B. Habitat and Land Use .....	35
C. Wildlife Resources .....	37
D. Fishery Resources .....	38
E. Related Resources .....	38
F. Climate Change .....	38
G. Socioeconomic and Sociocultural Conditions .....	39
H. Cultural Resources .....	39

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<b>III. Alternatives Including the Proposed Action</b> .....	<b>41</b>
A. Alternative 1: No Action .....	41
B. Alternative 2: Protection and Management of up to 10,917 Acres by the Fish and Wildlife Service (Proposed Action) .....	41
C. Alternative 3: Protection and Management of up to 5,176.1 Acres by the Fish and Wildlife Service .....	41
<b>IV. Environmental Consequences</b> .....	<b>45</b>
A. Alternative 1: No Action .....	45
B. Alternative 2: Protection and Management of up to 10,917 Acres by the Fish and Wildlife Service (Proposed Action) .....	46
C. Alternative 3: Protection and Management of up to 5,176.1 Acres by the Fish and Wildlife Service .....	47
D. Recommendation.....	48

**APPENDICES**

<b>Appendix A. References and Literature Citations</b> .....	<b>51</b>
<b>Appendix B. Interim Compatibility Determination</b> .....	<b>53</b>
<b>Appendix C. Intra-Service Section 7 Biological Evaluation</b> .....	<b>55</b>
<b>Appendix D. Interim Recreation Act Funding Analysis</b> .....	<b>61</b>
<b>Appendix E. Information on Preparers</b> .....	<b>63</b>

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## LIST OF FIGURES

Figure 1.	Proposed minor expansion areas of Pocosin Lakes National Wildlife Refuge .....	2
Figure 2.	Management/acquisition boundary of Pocosin Lakes National Wildlife Refuge .....	4
Figure 3.	Conservation areas in northeastern North Carolina and southeastern Virginia.....	9
Figure 4.	Inholding and south boundary tracts.....	12
Figure 5.	West New Lake, East New Lake, and Intracoastal Waterway tracts .....	13
Figure 6.	Eastern half of Southwest Triangle, western half of Southwest Triangle, and Gum Neck Canal tracts.....	14
Figure 7.	Scuppernong River tracts .....	15
Figure 8.	Lake Phelps and north boundary tracts .....	16
Figure 9.	East Frying Pan and West Frying Pan tracts .....	17
Figure 10.	Project area land acquisition priority groups.....	18
Figure 11.	Watersheds 1 and 2 on Pocosin Lakes National Wildlife Refuge.....	29
Figure 12.	Lands included in the proposed project under Alternative 2.....	42
Figure 13.	Lands included in the proposed project under Alternative 3.....	43

## LIST OF TABLES

Table 1.	Acquisition history for Pocosin Lakes National Wildlife Refuge .....	3
Table 2.	Protection priorities for the proposed expansion, ownership, acreage, and recommended methods of acquisition.....	19
Table 3.	Location and purpose of proposed additions to Pocosin Lakes NWR .....	30
Table 4.	Conservation areas surrounding Pocosin Lakes National Wildlife Refuge .....	36
Table 5.	Comparison of the effects of Alternatives 1, 2, and 3 .....	49



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## DRAFT LAND PROTECTION PLAN

### *I. Introduction and Purpose*

#### **A. PROJECT DESCRIPTION**

This Draft Land Protection Plan (Draft LPP) identifies the proposed acquisition boundary for the expansion of Pocosin Lakes National Wildlife Refuge (NWR) in the State of North Carolina. The Fish and Wildlife Service (Service) delineated approximately 10,917 acres adjacent to the refuge for restoration, enhancement, and management, as part of Pocosin Lakes NWR. These acres are encompassed by the acquisition boundary in Alternative 2 of the Draft Environmental Assessment for the expansion of this refuge (Figure 1). The purposes of this Draft 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 Draft LPP presents the methods the Service and interested landowners could use to accomplish their objectives for wildlife and habitat conservation within the refuge boundary.

#### **B. REFUGE PURPOSES**

The primary purpose of the refuge is to protect and conserve migratory birds and other wildlife resources through the protection of wetlands, in accordance with the following laws:

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds... 16 U.S.C. 664 (Migratory Bird Conservation Act of 1929)

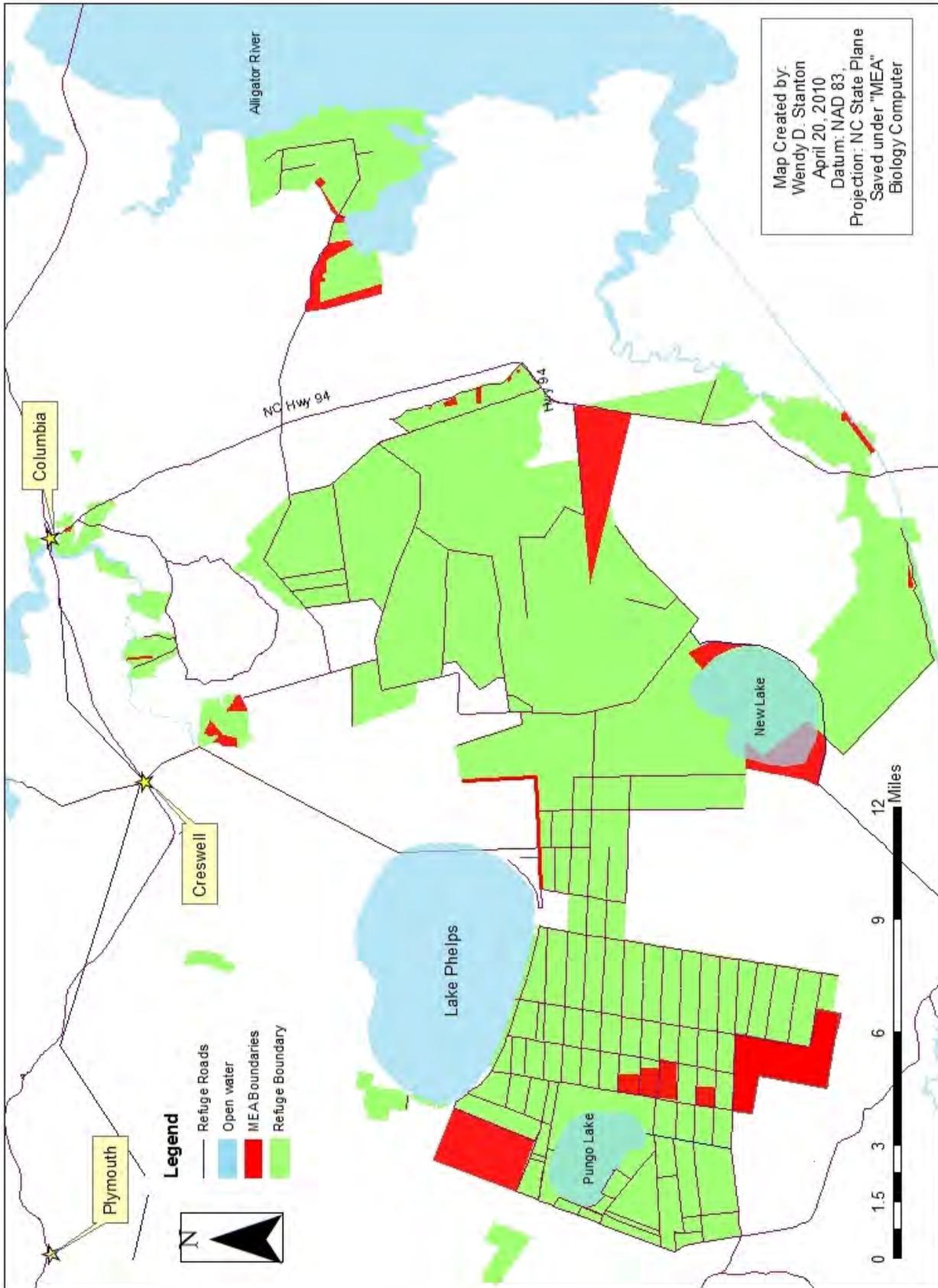
...for the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions... 16 U.S.C. 3901 (b) 100 Stat. 3583 (Emergency Wetland Resources Act of 1986)

...for the development, advancement, management, conservation, and protection of fish and wildlife resources... 16 U.S.C. 742f (a) (4) (Fish and Wildlife Act of 1956)

...for the benefit of the United States Fish and Wildlife Service in performing its activities and services. Such acceptance may be subject to the terms of any restriction of affirmative covenant or condition of servitude... 16 U.S.C. 742f (a) (4) (Fish and Wildlife Act of 1956).

The purpose for the refuge expansion is to restore and protect pocosin habitat and the wildlife dependent on it, including threatened and endangered species, and to manage populations of migratory birds and other interjurisdictional trust species.

Figure 1. Proposed minor expansion areas of Pocosin Lakes National Wildlife Refuge



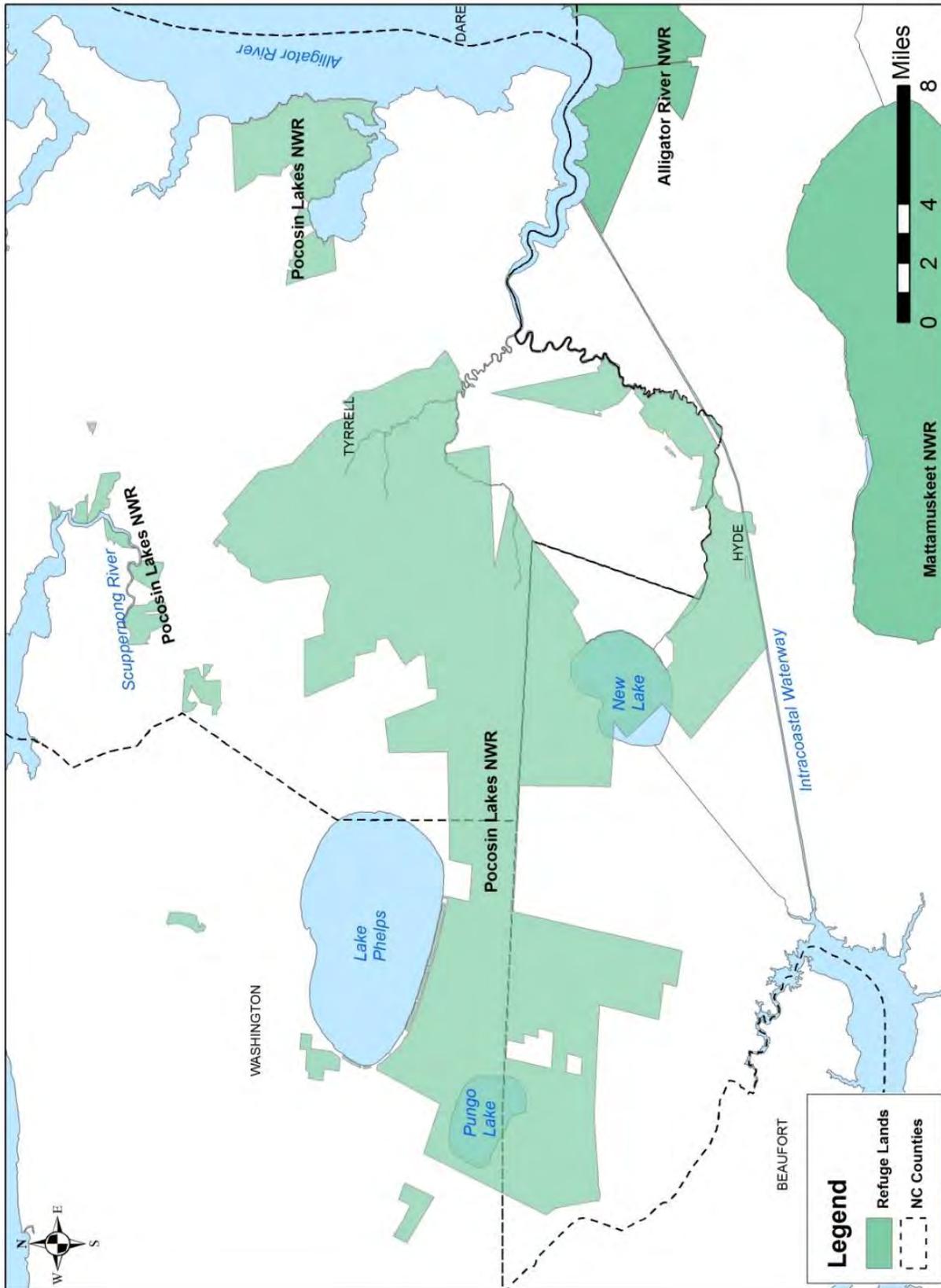
Pocosin Lakes NWR was established in 1990 through the donation of 89,658 acres. In 1991, nearby Pungo National Wildlife Refuge was abolished and the acreage was incorporated into Pocosin Lakes NWR. Subsequent land donations and transference have led to a total current acreage for Pocosin Lakes NWR of 110,106.54 (Figure 2). A complete history of acquisitions is listed in Table 1.

**Table 1. Acquisition history for Pocosin Lakes National Wildlife Refuge**

<i>Date</i>	<i>Tracts</i>	<i>Acres</i>	<i>Cost</i>	<i>Cost/Acre</i>	<i>Total Acreage<sup>1</sup></i>	<i>Total Cost<sup>1</sup></i>
1990	1	89,568.00	\$0	\$0	89,658	\$0
1991	3	19,465.37	\$1,682,158	\$93.14	109,123.37	\$1,682,158
1993	1	55.53	\$0	\$0	109,178.90	\$1,682,158
1994	1	879.32	\$0	\$0	110,058.22	\$1,682,158
1999	2	48.32	\$0	\$0	110,106.54	\$1,682,158
<b>Total</b>	<b>8</b>	<b>110,106.54</b>	<b>\$1,682,158</b>	<b>\$15.27</b>	<b>110,106.54</b>	<b>\$1,682,158</b>

<sup>1</sup> Summed annual land acquisitions and payments when calculating total acreage and total cost.

Figure 2. Management/acquisition boundary of Pocosin Lakes National Wildlife Refuge



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## II. Resources

### A. RESOURCES TO BE PROTECTED

The most significant threats to the North Carolina Coastal Plain include alterations in surface hydrology, habitat fragmentation, fire suppression, declines in water quality, and climate change. Resources found on the areas proposed for inclusion in the acquisition boundary include peatland habitat called pocosin, riverine habitat along the Scuppernong River, open water and lake bottoms of New Lake, and agricultural fields.

Peatland communities typified by large deposits of wet organic soils, or histols, dominate the landscape within and around Pocosin Lakes NWR. These peatland communities consist of four distinct habitat types: pocosin, bay forest, peatland Atlantic white cedar, and mixed pine flatwoods (Schafale and Weakley 2008). The most abundant habitat type is pocosin, which is a Native American term meaning swamp on a hill. Pocosin is a specific type of a poorly drained shrub bog that has a deep accumulation of organic material (peat) over mineral soil. Peatland is threatened by changes in hydrology, such as ditching and draining. This removal of water from the landscape causes the peat to compact and oxidize, releasing nutrients and heavy metals into the air and waterways.

Riverine habitats include many small tributaries and the larger rivers they drain into, including the Scuppernong and Alligators Rivers. These riverine and adjacent riparian zones provide important habitat for many fish and wildlife species and benefit water quality. Hardwood swamp and mixed hardwood/pine swamp forests make up areas along the Scuppernong River.

Open water habitat occurs in several large lakes within and near the Pocosin Lakes NWR boundary, Pungo Lake, Lake Phelps, and New Lake. The lakes are relatively shallow and have reduced in depth over the years due to efforts to connect them to navigable waterways or because of efforts to drain neighboring agricultural fields (Frost 2011). Today, the lakes provide important habitat for stopover, breeding, and wintering migratory waterfowl; neotropical migratory birds; and other migratory birds.

Agricultural lands with corn, soybean, and winter wheat crop rotations provide important high-carbohydrate forage (also known as hot foods) for wintering tundra swans and geese (Bellrose 1976). These agricultural foods combined with the natural foods found in moist-soil units and other wetland habitats provide critical benefits to the feeding ecology for waterfowl species. The farm fields of the Pungo Lake Unit and non-refuge fields that are adjacent provide important habitat for migrating tundra swan (*Cygnus columbianus*), snow geese (*Chen caerulescens*), and Canada geese (*Branta canadensis*). Between 20 and 35 percent of the Atlantic population of tundra swans utilize this area.

Of the approximately 217 species of migratory birds (e.g., shorebirds, marsh birds, wading birds, waterfowl, raptors, landbirds, and neotropical migratory songbirds) found on Pocosin Lakes NWR, 67 of these nest on the refuge. Partners in Flight identify several of these birds as extremely high-priority species for conservation, including Bachman's sparrow, Henslow's sparrow (*Ammodramus henslowii*), black-throated green warbler (*Dendroica virens*), Swainson's warbler (*Limnothlypis swainsonii*), and the red-cockaded woodpecker (*Picoides borealis*) (Rich et. al 2004). Both the refuge and proposed expansion areas provide the specialized habitats to support these priority bird species.

In addition, the areas considered for inclusion in the acquisition boundary provide habitat for two endangered species. Habitat near the Frying Pan tract (Figure1) is preferred by red cockaded woodpeckers. The endangered red wolf has been reintroduced in the area and occupies lands in the southeast sections adjacent to the refuge.

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## **B. RELATIONSHIP OF PROJECT TO LANDSCAPE CONSERVATION GOALS AND OBJECTIVES**

Maintenance and stabilization of the area's wetland and open water habitats are important goals of cooperative private-state-federal partnerships under the North American Waterfowl Management Plan, Partners in Flight, and the Atlantic Coast Joint Venture. The North American Waterfowl Management Plan (NAWMP) of 1986 brought together international teams of biologists from private and government organizations, from Canada and the United States, to address long-term conservation of waterfowl populations. To implement the goals of the NAWMP, Joint Venture partnerships formed to restore waterfowl populations to the levels of the early 1970s by enhancing, restoring and protecting about 6 million acres of priority wetland habitats from the Gulf of Mexico to the Canadian Arctic.

Pocosin Lakes NWR falls within the Atlantic Coast Joint Venture (ACJV), which spans from Maine to Florida including Puerto Rico. The ACJV's Waterfowl Implementation Plan (2005) identified waterfowl focus areas, to advance waterfowl conservation in the Atlantic Flyway in support of the NAWMP. Pocosin Lakes NWR and adjacent lands are in the Albemarle-Pamlico Peninsula Waterfowl Focus Area and the habitat objective for this area is to enhance, restore, or protect 937,680 acres of waterfowl habitat.

The Partners in Flight Bird Conservation Plan for the South Atlantic Coastal Plain has habitat objectives for establishing:

- Mature forested wetlands of at least 10,000 acres for black-throated warblers; 6,000 acres for Swainson's warblers (10,000 in agriculturally dominated landscapes); and 4,000 acres for prothonotary warblers (7,000 in agriculturally dominated landscapes).
- General habitat objectives include: (1) Restoring and maintaining 47,000 acres of Atlantic white cedar in eastern North Carolina and Virginia; (2) minimizing further conversion of pocosins to other non-forest land uses; (3) maintaining at least 5,000 acres of pocosin grassland; (4) improving 40,000 acres of pond pine through more aggressive prescribed fire; and (5) encouraging habitat management recommendations provided under the short-rotation pine discussion in areas where pocosins have been converted to plantation pine (Partners in Flight 2005).

The area encompassing Pungo Lake and Lake Phelps is a globally important bird area (Audubon's Important Bird Areas Program). The Pungo-Pocosin Lakes Important Bird Area (IBA) is 316,615 acres in size and encompasses Pocosin Lakes NWR, the expansion area, Pettigrew State Park including Lake Phelps, and private farmland to the west.

Carbon sequestration is an important function of the peatland habitats and loss of these habitats is a concern for the Service. Currently, researchers from Duke University in collaboration with the Service scientists are studying the effects of hydrologic restoration on carbon sequestration within these pocosin peatland systems.

Restoration of peatland Atlantic white cedar habitat is another important focus of refuge management. Work is currently underway with North Carolina State University and Pocosin Arts to restore Atlantic white cedar in and around Pocosin Lakes NWR

The National Fish Habitat Action Plan (Association of Fish and Wildlife Agencies 2006) focuses on protecting, restoring, and enhancing the nation's fish and aquatic communities through

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partnerships that foster fish habitat conservation and improve the quality of life for the American people. Under the plan, Fish Habitat Partnerships were established on a regional basis and focus on the plan's mission, objectives, and goals. Two such partnerships, the Southeast Aquatic Resources Partnership and the Atlantic Coastal Fish Habitat Partnership, overlay the refuge and are potential sources of funding for restoration of aquatic habitat.

Maintenance and sustainability of the diadromous fishery resources, which use the Scuppernong River, Alligator River, and other creeks and tributaries in the expansion area as a migratory pathway and as a spawning and nursery habitat, are goals of the Atlantic States Marine Fisheries Commission (ASMFC). When the species are in Atlantic Ocean waters, they are under the regulatory authority of the Fishery Management Councils (New England, Mid-Atlantic and South Atlantic) and/or the National Marine Fisheries Service. Service participation in these regulatory institutions is the responsibility of the Service's Fisheries Program. The ASMFC has prepared Fishery Management Plans (FMPs) for most of the diadromous species using refuge waters (see below), and the New England and Mid-Atlantic councils are currently considering amendments which would affect the bycatch of the two river herring species in the ocean. The ASMFC FMPs establish the management targets and thresholds for each species, in some cases on a watershed basis (e.g., for American shad and river herring, see ASMFC 2009, 2010).

### **C. PARTNERSHIP EFFORTS/RELATED RESOURCES**

The Service has a long history in northeastern North Carolina beginning in 1932 with the establishment of the Swanquarter National Wildlife Refuge. Today, 18 field stations occur in the area, including Refuge, Fishery, Ecological Services, Migratory Bird, and Law Enforcement offices. Each of these field stations participates on the Eastern North Carolina/Southeast Virginia (ENC-SEVA) Strategic Habitat Conservation Team. The ENC-SEVA Strategic Habitat Conservation Team is a Departmental cross-program collaborative effort working to conserve the region's natural resources through a science-based adaptive management approach. The ENC/SEVA Strategic Habitat Conservation Team works through the South Atlantic Landscape Conservation Cooperative (SALCC) to seek out and partner with other efforts to manage and conserve natural resources.

Pocosin Lakes NWR, along with 10 other national wildlife refuges, is part of a larger landscape recognized by the Service as the South Atlantic Landscape and is part of the SALCC. In the early 1990s, a partnership among federal, state, and non-governmental land managers in northeastern North Carolina, informally referred to as the Land Protection Team, formed to work collaboratively to conserve the natural resources of this ecosystem. An early result of those efforts was a Preliminary Project Proposal for the Proposed Expansion of Eastern North Carolina Refuges. Approved by the Director of the Fish and Wildlife Service in 1994, the proposal recommended expansion of seven of the ten refuges in the ecosystem to form a connected system of conservation areas linked by corridors that would provide continuous forested habitat for many of the Service's trust species. Though approved, the 1994 proposal did not advance to the detailed planning stage; however, the team that worked on that proposal still collaborates on joint conservation interests. Figure 3 shows all of the currently protected areas on the landscape.

Other federally managed areas in the region include Croatan National Forest, Cape Lookout and Cape Hatteras National Seashores, Dare County Bombing Range, and Camp Lejeune and Cherry Point Marine Air Stations. The Albemarle-Pamlico Estuary has National Estuary Program designation through the U.S. Environmental Protection Agency (EPA), and is managed as a cooperative program between the North Carolina Department of Environment and Natural Resources, the EPA, and the Virginia Department of Conservation and Recreation.

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The North Carolina Wildlife Resources Commission (NCWRC) is a state-partnering agency with the Service. It is charged with enforcement responsibilities for migratory birds, endangered species, and state trust species, as well as managing the state's natural resources. It also manages approximately 1.8 million acres of game lands in North Carolina. The NCWRC coordinates the state's wildlife conservation program and provides public recreation opportunities, including an extensive hunting and fishing program, on several game lands and from several boat ramps located near Pocosin Lakes NWR. The Service and NCWRC manage hunting on public lands within the expansion area and some refuge areas through a joint venture.

The North Carolina Coastal Reserve (NCCR) and the National Estuarine Research Reserve System (NCNERR) are networks of ten protected sites established for long-term research, education, and stewardship. Kitty Hawk Woods, Emily and Richardson Preyer Buckridge, Buxton Woods, and Rachel Carson all fall within the South Atlantic Landscape Conservation Cooperative focus area. The program is a partnership between the National Oceanic and Atmospheric Administration (NOAA) and the North Carolina Department of Environmental and Natural Resources (NCDENR).

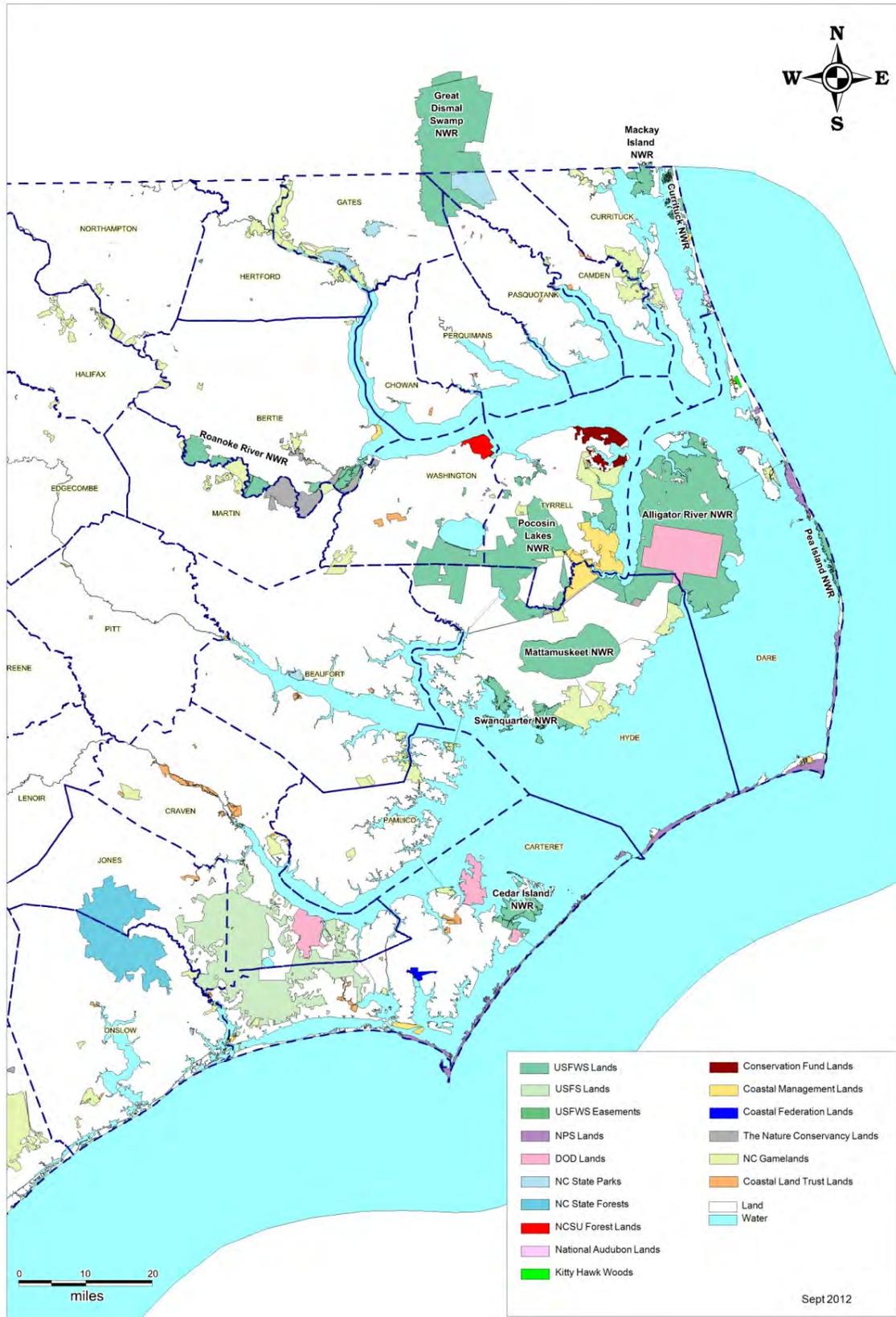
The NCDENR also works cooperatively with Pocosin Lakes NWR on two important resource protection projects: hydrology restoration and control of invasive plant species. The NCDENR supplements law enforcement on Pocosin Lakes NWR and manages the refuge's hunt programs as well. The North Carolina Forest Service within the North Carolina Department of Agriculture and Consumer Service is a partner in fighting wildfires and providing training for fire fighters.

Several non-governmental organizations play instrumental roles in northeastern North Carolina's land protection efforts. The Conservation Fund purchased and then donated the first parcels of land that became the Pocosin Lakes NWR. This important partnership between the refuge and the Conservation Fund continues with the ongoing investigation for feasibility of carbon sequestration banking on peat soils. The Nature Conservancy has been able to acquire critical lands for protection and in some cases has turned management of those lands over to state or federal land managers.

Perhaps one of the strongest partnerships the refuge has is with cooperative farmers. Farmlands in the Pungo Unit of Pocosin Lakes NWR are farmed in cooperation with local farmers. The farmer raises crops, keeps a share for his own purposes, and leaves the remainder in the field as rent and for the benefit of wildlife. The Pocosin Lakes NWR Comprehensive Conservation Plan calls for an additional 900 acres of cropland for wildlife use. This proposed expansion would support that objective.

Pocosin Lakes NWR is an active partner with all of these organizations and agencies and would pursue continued partnering opportunities for management of the proposed expansion.

Figure 3. Conservation areas in northeastern North Carolina and southeastern Virginia





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### *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, the Service considered and evaluated three alternatives. Alternative 2 is proposed 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 of Pocosin Lakes NWR. By protecting additional conservation lands critical to the management of refuge resources, the project is tied to many of the goals and objectives of the refuge's comprehensive conservation plan.

#### **B. LAND PROTECTION PRIORITIES**

The Service's Proposed Action (Alternative 2) would result in the acquisition of up to 10,917 acres of pocosin habitat as an expansion of Pocosin Lakes 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. The Service believes these are the minimum interests necessary to conserve and protect the fish and wildlife resources in the proposed area.

The project area has 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.

Three 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 three priority groups is given below. Table 2 summarizes the Service's land protection priorities and proposed methods of acquisition. Figures 3 through 9 show the locations of the project areas and their respective priority groups.

#### *PRIORITY GROUP I*

Priority Group 1 consists of the lands considered most critical to maximize the benefits from hydrology restoration on 27,412 acres (Figures 4-7, Figure 10). The hydrology restoration would enhance pocosin wetland and wildlife habitat quality, reduce the risk of catastrophic wildfire and ground fire, improve water quality on and off the refuge, and sequester carbon by stopping the loss of organic peat soil oxidation caused by artificial drying of the soils. The expansion would add protection to the headwaters of the Northwest and Southwest Forks of the Alligator River, provide important connectivity along the Scuppernong River Corridor, and provide links to other conservation lands and management units. The unique characteristics of New Lake and its shoreline would be protected to retain high water quality and habitat values, including providing habitat for wintering, migratory waterfowl. The refuge boundary along the New Lake Tract would be simplified by aligning it with existing roads, facilitating enforcement and providing further protection and enhancement of wildlife habitat.

Figure 4. Inholding and south boundary tracts

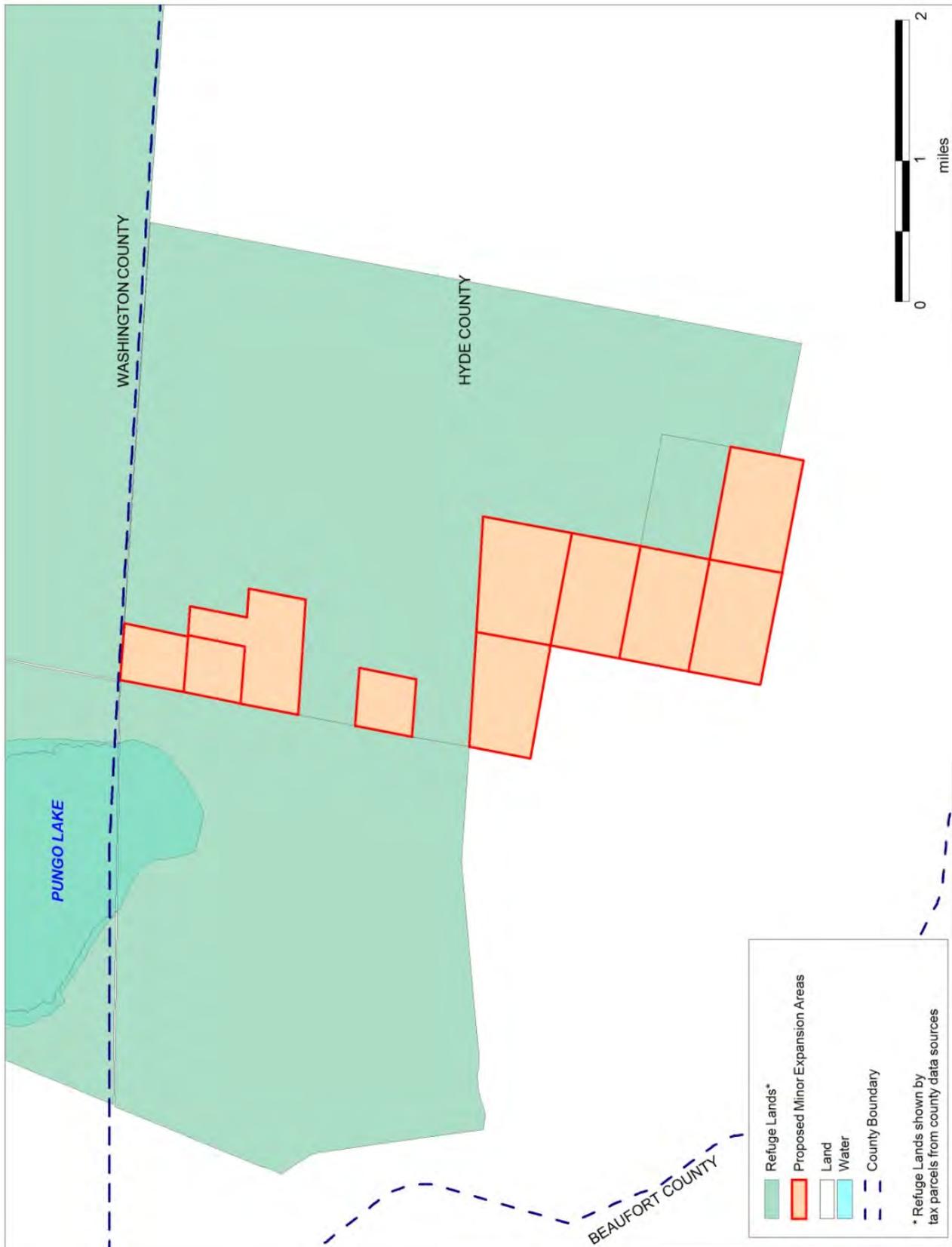
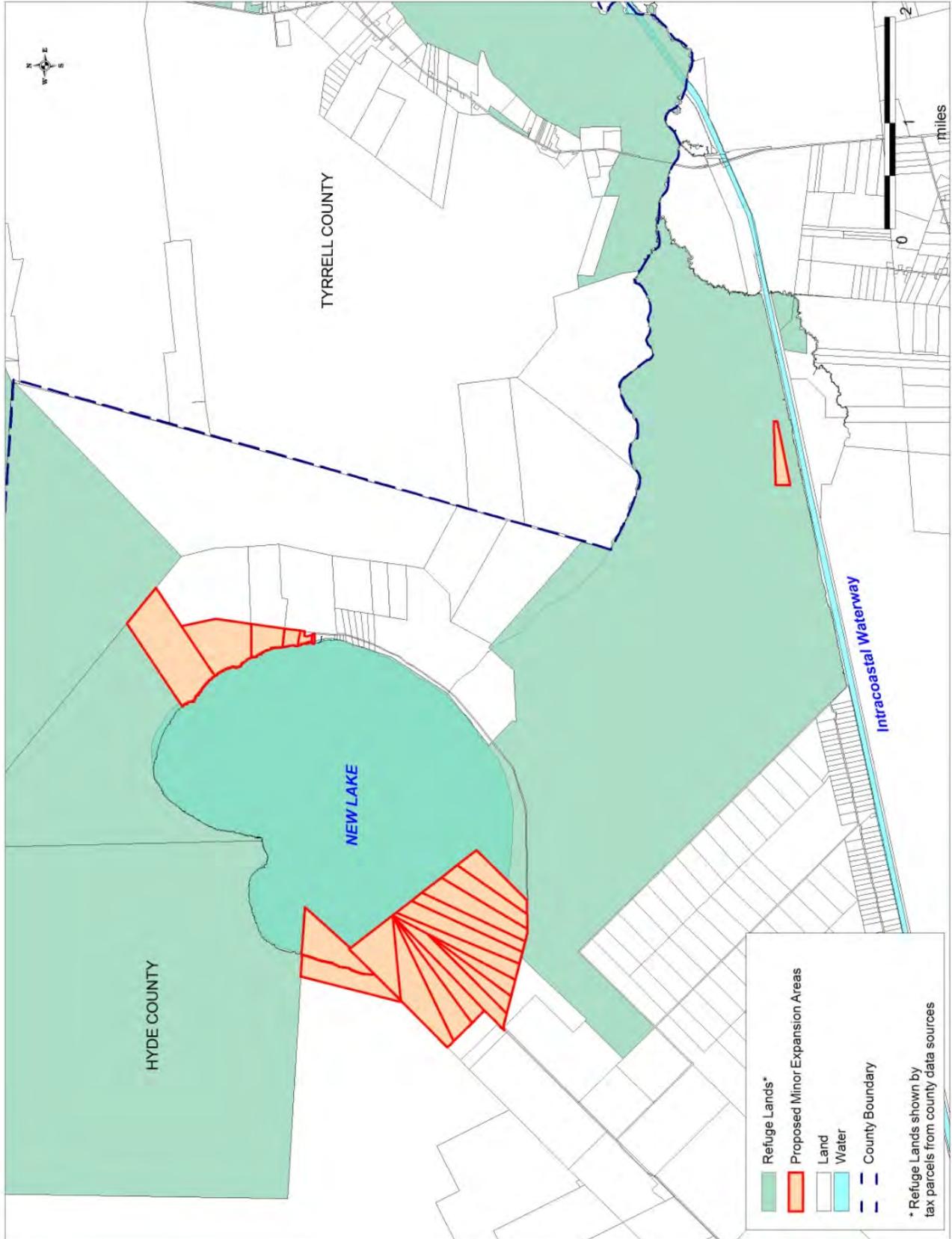


Figure 5. West New Lake, East New Lake, and Intracoastal Waterway tracts



**Figure 6. Eastern half of Southwest Triangle, western half of Southwest Triangle, and Gum Neck Canal tracts**

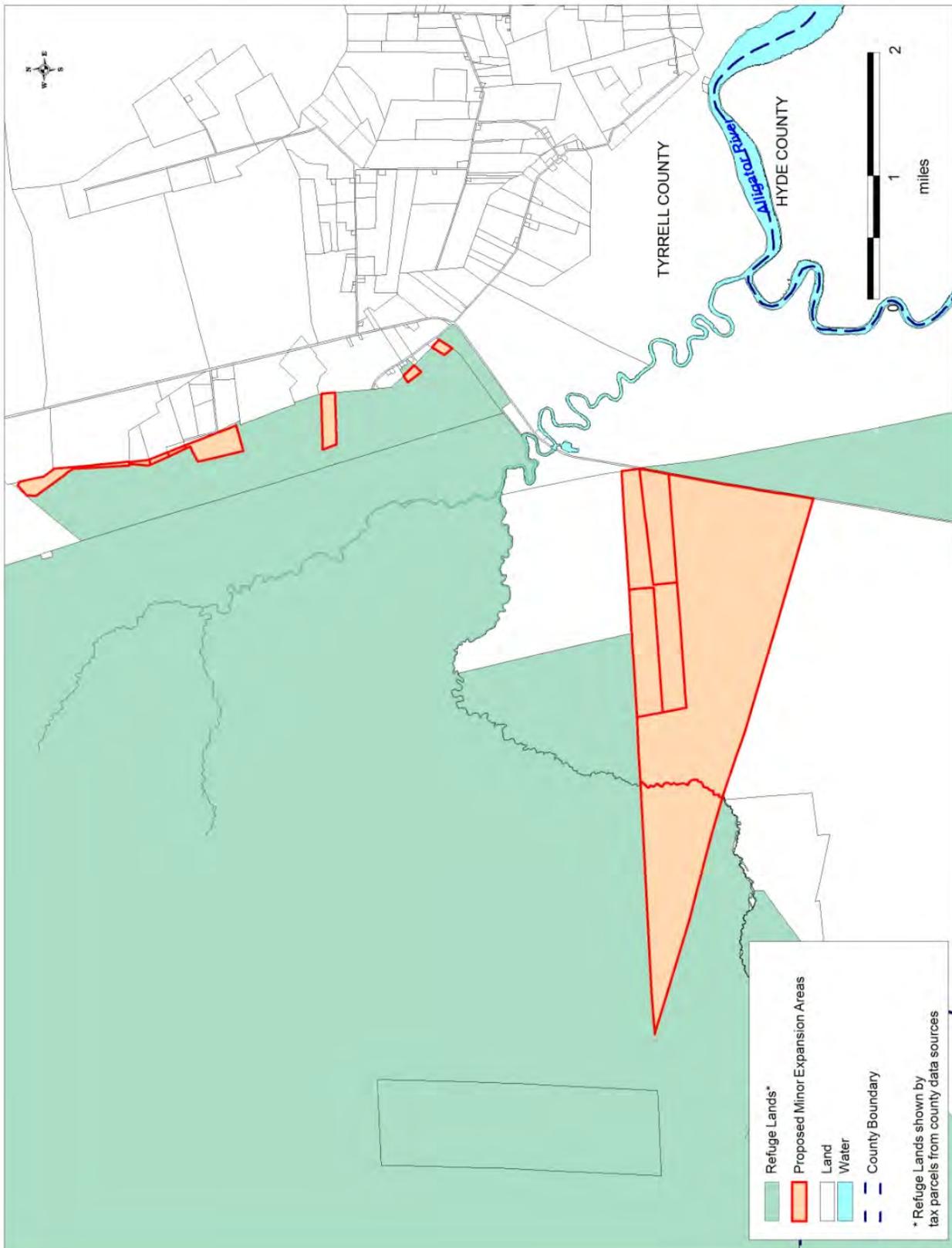


Figure 7. Scuppernong River tracts

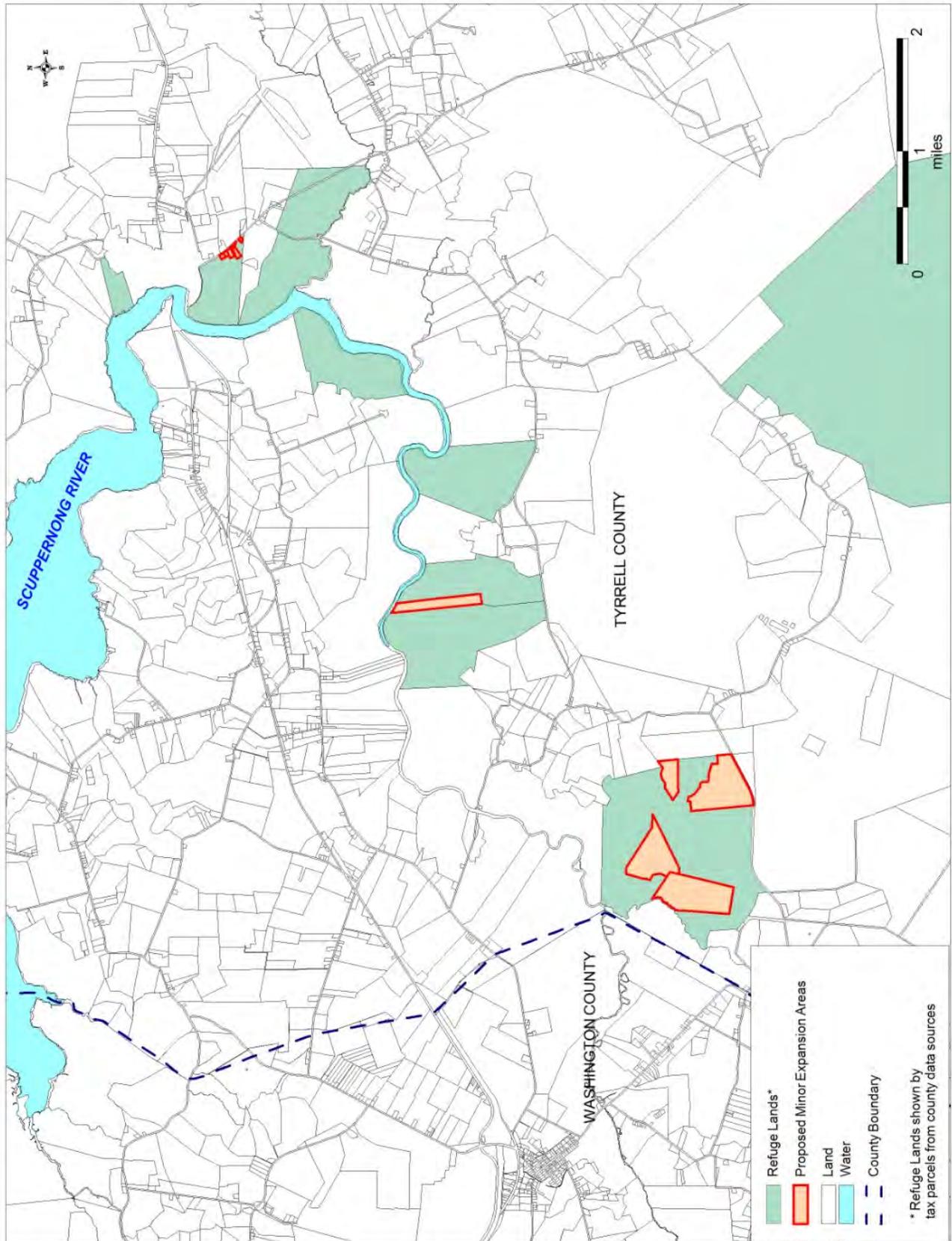


Figure 8. Lake Phelps and north boundary tracts

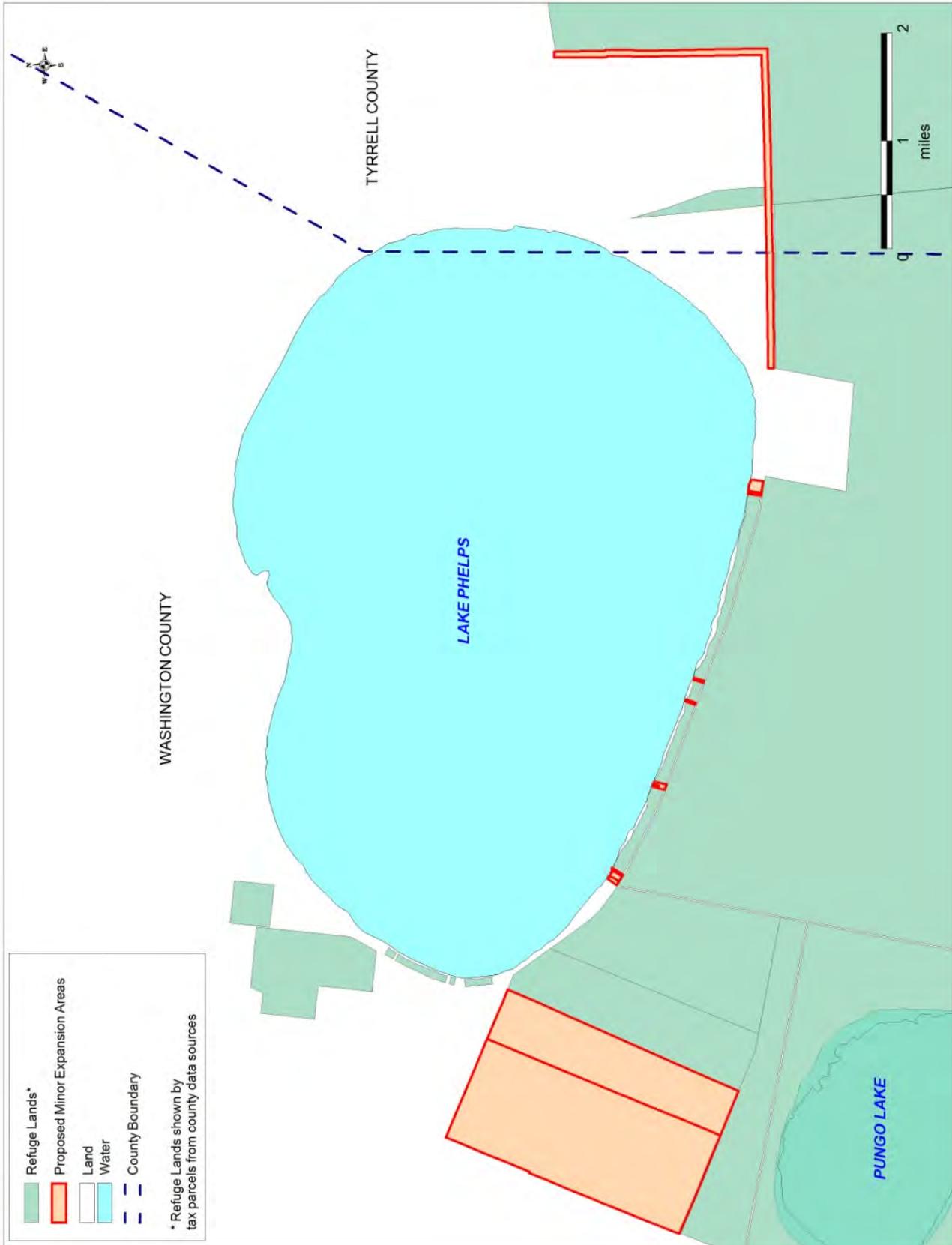


Figure 9. East Frying Plan and West Frying Pan tracts

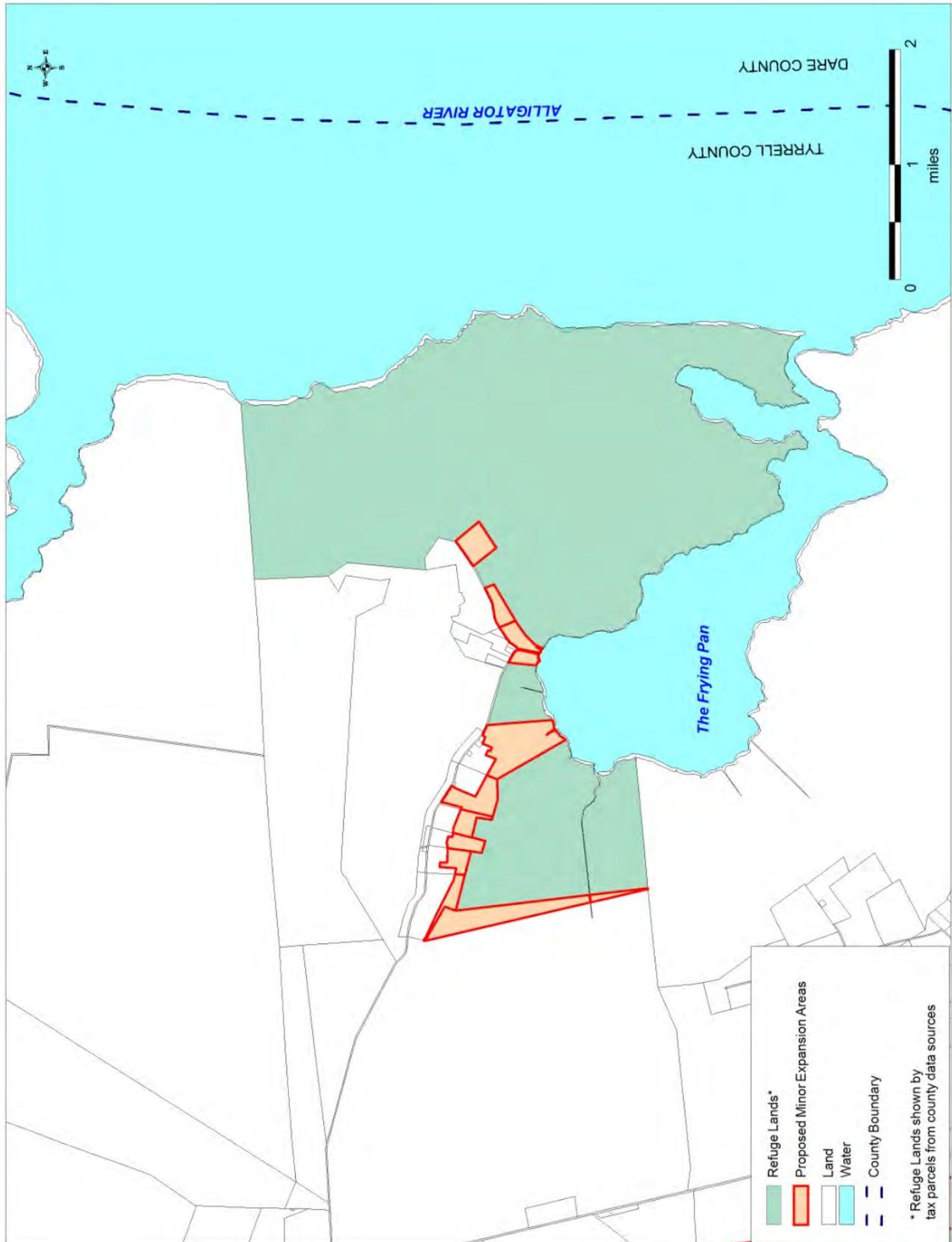
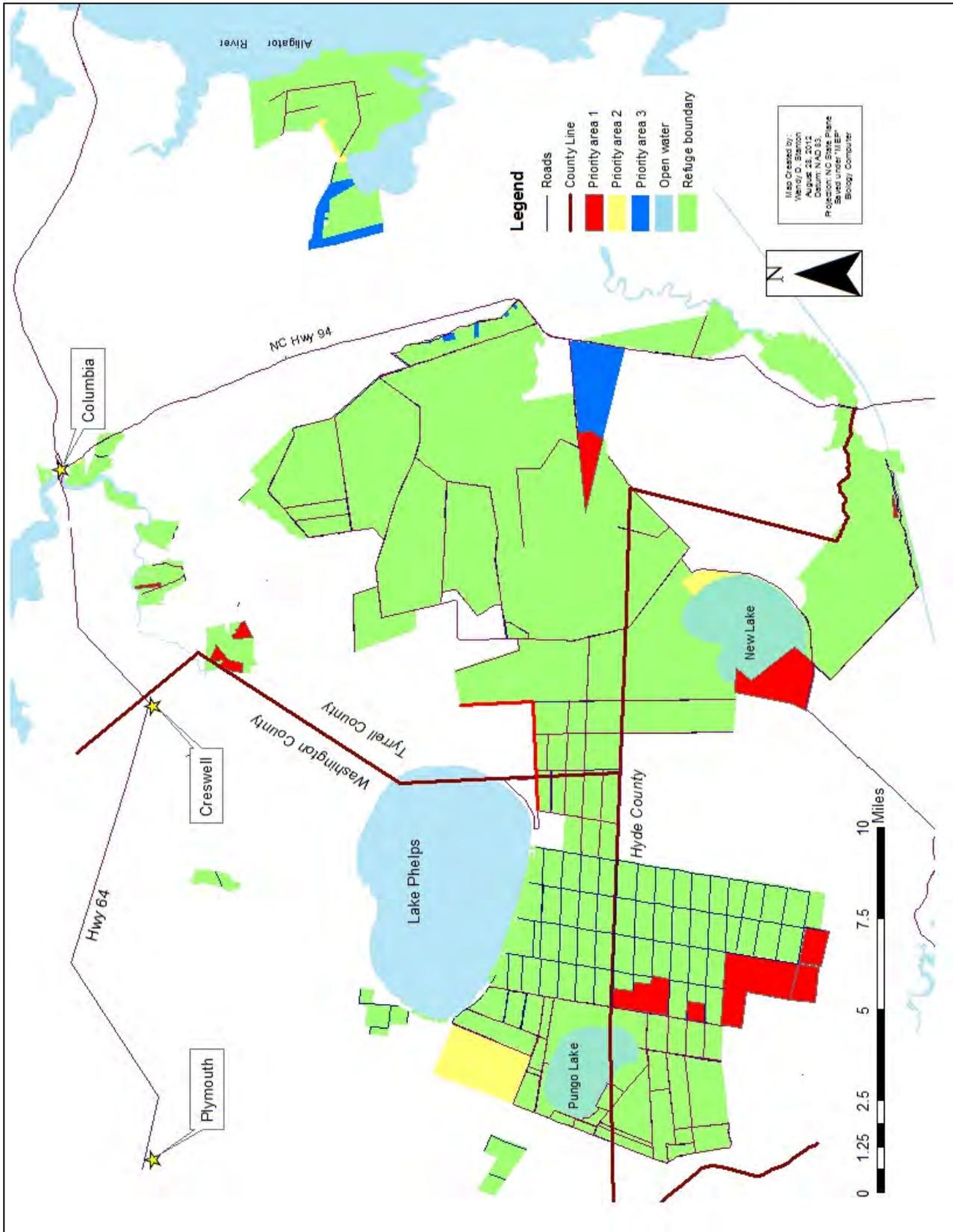


Figure 10. Project area land acquisition priority groups



**Table 2. Protection priorities for the proposed expansion, ownership, acreage, and recommended methods of acquisition**

<b>Priority Group</b>	<b>List of Landowners</b>	<b>Type of Landowners/ Acres</b>	<b>Approximate Acreage</b>	<b>Type of Acquisition (minimum interest)</b>
I	Inholding Tracts	Private/904.8	904.8	Fee-title, Easement
	West New Lake	Private/790.6 Corporate-554	1344.6	Fee-title, Easement
	South Boundary Blocks	Private/2059.3 Corporate/390.5	2449.8	Fee-title, Easement
	Western half of Southwest Fork Triangle Tract	Private/434.5 Private Estate/43.1 Corporate/27.4	453.2	Fee-title, Easement
	Intracoastal Waterway Tract	Private ½ interest	33.3	Fee-title
Small eastern tracts in Priority II 8.5 acres	Scuppernong River Tracts	Private/206.1 Private Trust/110.9	387.4	Fee-title, Easement
II	North Boundary Tracts	Corporate/177.6	177.6	Easement
	Lake Phelps Tracts	Private/727.9 Corporate/1484.3	2212.2	Fee-title, Easement
	East New Lakes Tract	Private/475.6 Corporate/1.5	477.1	Fee-title, Easement
	East Frying Pan Tract	Private/114.4	114.4	Fee-title, Easement
III	West Frying Pan Tracts	Private/296.9 Corporate/139.6	436.5	Fee-title, Easement
	Gum Neck Canal Tract	Private/120.3 Private Estate/13.3	133.6	Fee-title, Easement
	Eastern half Southwest Fork Triangle Tract	Private/490.4 Corporate/1301.9	1792.3	Fee-title, Easement
<b>Total Acres</b>			<b>10,916.8</b>	

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## *PRIORITY GROUP II*

Priority Group II consists of lands that would increase the amount of supplemental agricultural foods and moist-soil plant foods and habitat made available to wintering waterfowl on the Pungo Unit (Figure 4, Figure 7, Figures 8-9). It would provide larger blocks of contiguous pocosin and riparian habitats and provide important links to other conservation lands or management boundaries. The refuge boundary along the eastern New Lake Tract would be simplified by aligning it with existing roads, which would facilitate enforcement and provide further protection and enhancement of wildlife habitat.

## *PRIORITY GROUP III*

Lands within Priority Group III (Figure 5, Figure 8, and Figure 9) provide important buffers to management boundaries and other conservation lands. These lands provide for water quality protection to Frying Pan Lake and Alligator River and simplify refuge boundaries.

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. Figure 10 provides the land acquisition priorities.

## **C. LAND PROTECTION OPTIONS**

The Service acquires lands and interests in lands, such as easements, and management rights in lands, such as 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.

We would 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 acquire it only from willing sellers. Our proposal 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 BY THE SERVICE*

Under Option 1, we would 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 our goals for the parcel, or that provides adequate protection for important adjoining parcels and habitats. The structure of such easements would 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 would also allow for public use where appropriate. We would determine, on a case-by-case basis, and negotiate with each landowner, the extent of the rights we would be

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interested in buying. 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 would 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 we identify conservation easements, we would be interested primarily in purchasing development and some wildlife management rights. Easements are best when:

(1) 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; (2) 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; (3) current land use regulations limit the potential for adverse management practices; (4) the protection strategy calls for the creation and maintenance of a watershed protection area that can be accommodated with passive management; or (5) 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 BY THE SERVICE*

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

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

In some cases, it may become necessary to convert a previously acquired conservation easement to fee-title acquisition. For example, when an owner is interested in selling the remainder of interest in the land on which we have acquired an easement. The Service would evaluate that need on a case-by-case basis.

#### **D. LAND PROTECTION METHODS**

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

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## *PURCHASE*

For most of the tracts in the boundary, the proposed method is listed as Fee or Easement; however, the method we ultimately use 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 would retain ownership of the land, but would sell certain rights identified and agreed upon by both parties. The objectives and conditions of our proposed conservation easements would 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 (agricultural, residential, etc.);  
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.

## *DONATIONS*

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

## *EXCHANGES*

The Service has the authority to exchange land in Service ownership for other land that has greater habitat and/or wildlife value. Inherent in this concept is the requirement to get dollar-for-dollar value with, occasionally, an equalization payment. Exchanges are attractive because they usually do not

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increase federal land holdings or require purchase funds; however, they also may be very labor-intensive and take a long time to complete.

#### **E. SERVICE LAND ACQUISITION POLICY**

Once a land protection (refuge acquisition) boundary has been approved the Service contacts neighboring landowners to determine their interests in selling. If a landowner expresses an interest and gives the Service permission, a real estate appraiser would appraise the property to determine its market value. Once an appraisal has been approved, the Service could 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 proposed land protection (refuge acquisition) boundary on the biological importance of key habitats. The establishment or expansion of this boundary gives the Service the approval to negotiate with landowners that 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's long-established policy is to work with willing sellers as funds become available; the Service continues to operate under that policy. Lands within this boundary do not become part of the refuge unless their 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.



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## *IV. Coordination*

The lands and waters proposed for acquisition here are a subset of a larger conservation planning exercise that is currently being undertaken by several conservation organizations and agencies working in the Albemarle/Pamlico region. These organizations include: The Nature Conservancy, North Carolina Wildlife Resources Commission, U.S. Air Force, Pocosin Lakes NWR, Roanoke River NWR, Alligator River NWR, Pea Island NWR, Currituck NWR, Mackay Island NWR, Great Dismal Swamp NWR, Back Bay NWR, Mattamuskeet NWR, and Swan Quarter NWR. The value of these lands has also been discussed with the MBCF, which is currently working with a carbon sequestration investment firm to investigate feasibility of carbon banking in the area. This expansion proposal has been discussed with some of the affected landowners, the executive director of the Red Wolf Coalition, the superintendent of Pettigrew State Park, and local residents.



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## ENVIRONMENTAL ASSESSMENT

### *I. Purpose and Need for Action*

#### A. INTRODUCTION

The Fish and Wildlife Service (Service) proposes to protect and manage pocosin wetlands, endangered red wolves, migratory wintering waterfowl, and other migratory bird habitats in Hyde, Tyrrell, and Washington Counties, North Carolina, through the expansion of the Pocosin Lakes National Wildlife Refuge (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 scope of this Draft Environmental Assessment (Draft EA) is limited to the proposed acquisition of lands for the expansion of the Pocosin Lakes NWR. This Draft EA is not intended to cover the development and/or implementation of detailed, specific programs for the administration and management of those lands. If the refuge is expanded and the needed lands or interests in lands are acquired, the Service would modify the refuge's existing management plans to incorporate the new lands and resources under its control. At that time, these modified refuge management plans would be reviewed in accordance with the Departmental requirements of the National Environmental Policy Act.

#### B. PURPOSE AND NEED

Pocosin Lakes NWR consists of 110,106.54 acres of pocosin, also known as peat, riverine hardwood, open water, and agricultural habitats located in Hyde, Tyrrell, and Washington Counties, North Carolina (Figure 2). This proposal would expand the acquisition boundaries of the refuge from 110,106.54 acres to 121,023.3 acres.

Acquisition boundaries are administrative lines delineating areas in which the Service may consider negotiations with willing owners 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. Lands within an acquisition boundary are not subject to any refuge regulations or jurisdiction unless and until an interest is acquired. Land interests are acquired from willing sellers/owners only. Any landowner that 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, hunting, 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 Section E.

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Within 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:

### **Hydrology Restoration Areas**

Of critical importance to the refuge's mission is acquiring land parcels surrounded wholly by refuge lands (Figure 4), parcels along the southern boundary of the refuge (Figure 4), and a buffer area along the refuge's northern boundary (Figure 8). Hydrology restoration work in these areas (referred to as Watersheds 1 and 2 (Figure 11) in the Pocosin Lakes National Wildlife Refuge: Hydraulic and Hydrology Study and Water Management Plan) is nearing completion (Soil Conservation Service 1994). We have already installed the necessary infrastructure within existing refuge areas to mimic the natural hydrologic conditions that occurred prior to ditching and draining these wetlands; however, we cannot manage for ideal hydrological conditions throughout Watersheds 1 and 2 without overflow to some adjoining lands. Acquisition of these parcels would allow us to manage water levels to optimize restoration benefits on existing refuge lands, where we cannot do so now due to impacts on private land, and on additional acres proposed for acquisition in the heart of the restoration areas. These restoration benefits would enhance pocosin wetland and wildlife habitat quality, improve water quality on- and off-site in waters North Carolina has designated as nutrient sensitive, decrease risk of catastrophic wildfire and highly destructive ground fire, and decrease oxidation of the artificially dry organic, peat soils, which result in significantly less carbon being released to the atmosphere (Ward and Augsburg 2010).

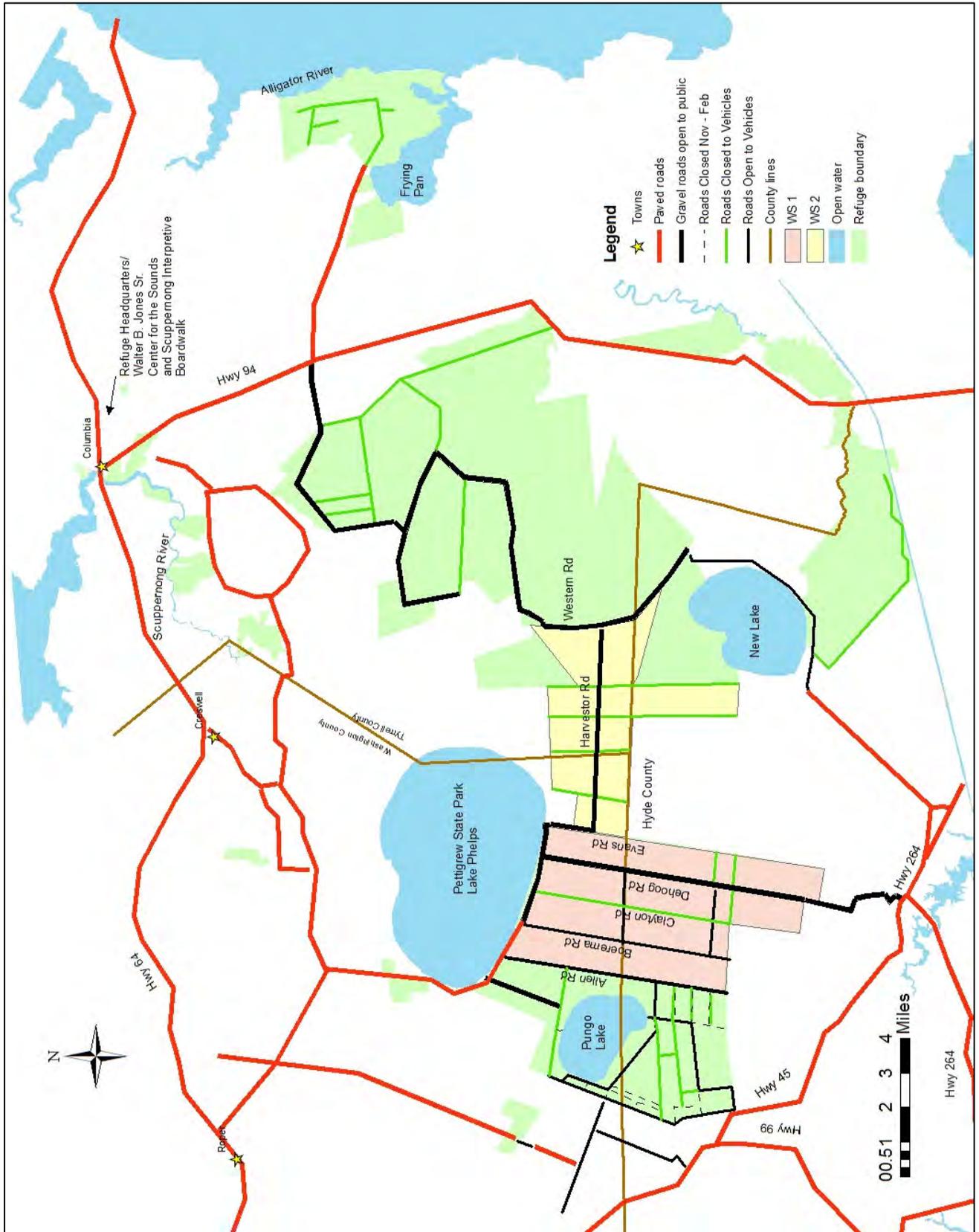
### **Southwest Fork Area**

Most of the Northwest and Southwest Forks of the Alligator River, and their headwaters lie within Pocosin Lakes NWR. A small section of the Southwest Fork is privately owned, being part of a triangle-shaped tract of intact pocosin wetlands that juts into the refuge (Figure 6). These tracts, as well as additional intact pocosin wetlands to the east, are part of a larger pocosin wetland system, most of which lies within the refuge and includes the headwaters of the Northwest and Southwest Forks. These wetlands were judged to be relatively intact (they are some of the lowest and least impacted - by historic ditching and draining - wetlands on the refuge), and did not require restoration under the refuge's hydrology restoration plan. However, they do receive water from the Watershed 2 and Watershed 3 restoration areas. This entire wetland system needs protection from development and other uses that might degrade the existing refuge wetlands, and the system as a whole in order to maintain pocosin wetland values which include high-quality wildlife habitat, enhanced water quality both on and off the refuge, and sequestration of large amounts of carbon.

### **New Lake**

Approximately 4,200 of New Lake's 4,800 acres is part of the refuge (Figures 2 and 5). Acquiring the remaining lake bottom and some associated wetland buffer areas is another critical need for Pocosin Lakes NWR. The addition of these tracts would ensure we can properly manage the lake's water levels and better protect wintering waterfowl from disturbance. We can also enhance the quality of this habitat for waterfowl roosting and loafing, and protect these important aquatic and wetland habitats from further development. A small number of houses have been built on the east side of the lake, but only one house lies within the area proposed for acquisition.

Figure 4. Watersheds 1 and 2 on Pocosin Lakes National Wildlife Refuge



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## Agricultural Lands for Waterfowl

Additional agricultural lands adjacent to the Pungo Unit of Pocosin Lakes NWR are needed to meet the waterfowl management objectives of the Pungo Unit (Figure 8). These needs are documented in the Biological Review conducted for the refuge's CCP and in the CCP itself (USFWS 2007). The agricultural land is needed to provide additional grain as a supplemental food supply and additional moist-soil habitat for wintering waterfowl. Approximately 2,212 acres of agricultural ground are proposed for inclusion in the acquisition boundary to help ensure the Service's ability to acquire 750 acres from willing sellers within that area. If more than 750 acres of the 2,212 acres of cropland are acquired, they would be restored to their appropriate wetland type unless an evaluation of waterfowl needs at that time indicates a need for additional acres of moist-soil habitat or additional supplemental grain.

## Scuppernong River

The Scuppernong River is a coastal river off the Albemarle Sound. From the Columbia to its headwaters in Washington County, the river corridor is relatively undisturbed and scenic. The refuge's ownership along the Scuppernong River is extremely fragmented (Figure 2). Pettigrew State Park is actively acquiring land along the river to protect this intact and scenic riparian corridor. Expansion of Pocosin Lakes NWR along the Scuppernong River (387 acres) would complement the state's riparian protection efforts while protecting important aquatic and wetland habitat for many Service trust species, including wood ducks (*Aix sponsa*), neotropical migratory birds, and other migratory birds (Figure 7). This acquisition would provide habitat corridors for the endangered red wolf (*Canis rufus*) and black bear (*Ursus americanus*) and would secure a riparian buffer to support water quality improvements and conservation activities for the endangered shortnose sturgeon (*Acipenser brevirostrum*), river herring (*Alosa* spp.), striped bass (*Morone saxatilis*), American eel (*Anguilla rostrata*), and other aquatic species. Protecting this corridor would also enhance nature-based tourism in Columbia and Tyrrell Counties. Lastly, expanded refuge ownership along this waterway would protect a few remaining stands of Atlantic white cedar (*Chamaecyparis thyoides*). The Service has classified these communities as critically endangered (Noss et al. 1995).

## Boundary Enhancement

Acquisition of several other tracts located in several locations around the refuge would provide contiguous ownership of refuge lands in strategic areas, protecting important wetland habitats and improving refuge management operations by bringing boundary lines out to existing roads or other suitable features (Figures 5-9). This would make recognizing the boundary simpler for the public and decrease maintenance and administrative costs.

**Table 3. Location and purpose of proposed additions to Pocosin Lakes NWR**

Location and Purpose	Acres	% of Proposed Expansion
Hydrology Restoration Areas	3,532	32%
Southwest Fork Area	2,246	21%
New Lake	1,822	17%
Agricultural Lands for Waterfowl	2,212	20%
Scuppernong River	387	3%
Boundary Enhancement	718	7%
<b>Total</b>	<b>10,917</b>	<b>100%</b>

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## C. BACKGROUND

Pocosin Lakes NWR was established in 1991 under the authority of the Migratory Bird Conservation Act of 1929; the Emergency Wetlands Resources Act of 1986; and the Fish and Wildlife Act of 1956. The refuge was created when the Conservation Fund donated 89,658 acres to the Service. The donated lands were immediately adjacent to the Pungo NWR (established in 1963 under the Migratory Bird Conservation Act of 1929 and the Fish and Wildlife Act of 1956). The Service added Pungo NWR (12,350 acres) to Pocosin Lakes as a unit of the refuge. The Service also transferred management responsibility for 5,707 acres in the Frying Pan area from Alligator River NWR to Pocosin Lakes NWR, due to its proximity to the new refuge. Since then, the Service has acquired five more tracts of land bringing Pocosin Lakes NWR to 110,106 acres (Table 1).

Within the National Wildlife Refuge System, a refuge may have both an acquisition boundary and a management boundary. The acquisition boundary is an area within which the Service may acquire land for conservation. A management boundary is land owned outright by the Service or managed in part by the Service through an easement or cooperative agreement. The management boundary lies within the acquisition boundary, but may be smaller in size than the acquisition boundary. For Pocosin Lakes NWR, the management boundary and the acquisition boundary are the same. This means that there is no land within the acquisition boundary that the Service does not currently own for this refuge.

Pocosin Lakes NWR (Figure 2) is located in Hyde, Tyrrell, and Washington Counties. The refuge headquarters is located in Tyrrell County in the town of Columbia. The western edge of the refuge is approximately 13 miles southeast of Plymouth in Washington County, and the southern boundary is 12 miles west of Swan Quarter Township in Hyde County.

The proposed expansion areas are located immediately adjacent to current refuge lands; in some cases they are completely surrounded by refuge lands (Figure 1). These tracts currently consist of pocosin wetlands (approximately 6,500 acres), cropland (approximately 3,460 acres), lake bottom (approximately 600 acres), riparian wetlands (approximately 300 acres), and cleared/developed areas (approximately 145 acres). All of these areas would be managed as extensions of current refuge lands to meet the goals of the Pocosin Lakes National Wildlife Refuge (USFWS 2007). Those goals are listed as follows:

- Conserve, protect, and maintain healthy and viable populations of migratory birds, wildlife, fish, and plants, including federal and state endangered and trust species.
- Restore, protect, and enhance pocosin wetlands and other natural habitats for optimum biodiversity. Intensively manage habitats specific to waterfowl on the Pungo Unit.
- Develop programs and facilities to increase public use opportunities, including hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.
- Protect and perpetuate refuge resources by limiting the adverse effects of human activities and development on refuge resources.
- Acquire resources and infrastructure to accomplish the other refuge goals. Support local efforts to sustain economic health through nature-based tourism.

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Two federally listed species occupy the above habitats, both on Pocosin Lakes NWR and within the proposed expansion areas. These include the endangered red wolf and red-cockaded woodpecker (*Picoides borealis*). State listed species that do or could occur on Pocosin Lakes NWR include the following: American alligator (*Alligator mississippiensis*); American eastern peregrine falcon (*Falco peregrinus*); Bachman's sparrow (*Aimophila aestivalis*); black vulture (*Coragyps atratus*); Cooper's hawk (*Accipiter cooperii*); glossy ibis (*Plegadis falcinellus*); little blue heron (*Egretta caerulea*); loggerhead shrike (*Lanius ludovicianus*); Rafinesque's big-eared bat (*Corynorhinus rafinesquii*); red-cockaded woodpecker (*Picoides borealis*); star-nosed mole (*Condylura cristata*); southern bald eagle (*Haliaeetus leucocephalus leucocephalus*); southern dismal swamp shrew (*Sorex longirostris fisheri*); tri-colored heron (*Egretta tricolor*); and Waccamaw killifish (*Fundulus waccamensis*)

The trust species found on Pocosin Lakes NWR also include 217 species of migratory birds, 67 of which nest on the refuge. The Partners in Flight identify several of these birds that could occur on the refuge as extremely high-priority species for conservation: Bachman's sparrow, Henslow's sparrow (*Ammodramus henslowii*), black-throated green warbler (*Dendroica virens*), and Swainson's warbler (*Limnithlypis swainsonii*) (Rich et.al 2004). Both the refuge and proposed expansion areas provide the specialized habitats to support these priority birds.

The North Carolina Division of Marine Fisheries has designated the Scuppernong River a spawning area for anadromous fish. Similarly, the North Carolina Division of Water Quality (NCDWQ) has designated Alligator River and several streams draining the east side of the refuge (Riders Creek plus the Northwest and Southwest Forks of the Alligator River) as outstanding resource waters. In addition, NCDWQ has designated waters on and surrounding the refuge's west side (Pungo River area) as "nutrient sensitive."

#### **D. PROPOSED ACTION**

The Service proposes to acquire, protect, and manage lands and waters through fee-title purchases, leases, conservation easements, and cooperative agreements from willing sellers. All lands and waters acquired would be managed by the Service as Pocosin Lakes NWR. The objectives of the proposed expansion are listed as follows:

- Manage water levels in Watersheds 1 and 2 to achieve optimal hydrologic conditions on all 27,412 acres to enhance pocosin wetland and wildlife habitat quality, reduce the risk of catastrophic wildfire and ground fire, improve water quality on and off the refuge, and sequester carbon by stopping the loss of organic/peat soil oxidation caused from artificial drying of the soils.
- Protect the unique characteristics of New Lake and its shoreline to retain high water quality and habitat values.
- Manage the water level in New Lake to enhance the quality of the lake for waterfowl roosting and loafing.
- Increase the amount of supplemental agricultural foods and moist-soil plant foods and habitat made available to wintering waterfowl on the Pungo Unit as per the refuge's CCP.
- Protect the relatively intact pocosin wetland system which includes the Northwest and Southwest Forks of the Alligator River and their headwaters in order to retain habitat, water quality, and carbon sequestration values.

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- Protect the Scuppernong River corridor from development in order to retain habitat, water quality, scenic, and recreational values.
  - Protect and enhance wildlife habitat while simplifying the location of refuge boundaries by aligning the boundaries with easily recognized landmarks such as roads.

It is anticipated that funding for this proposal would be provided through the Migratory Bird Conservation Fund or the Land and Water Conservation Fund. The authorities for the use of these funds for land acquisition are the Emergency Wetlands Resources Act of 1986, The Migratory Bird Conservation Act of 1929, and the Endangered Species Act of 1973, as amended.



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## II. Affected Environment

This chapter describes the environment that would 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

Pocosin Lakes NWR is in northeastern North Carolina on the Albemarle-Pamlico Peninsula south of the Albemarle Sound, north of the Pamlico Sound, and west of the Alligator River. The cities of Norfolk, Virginia, and Greenville, North Carolina, are the nearest major cities and are 90 miles north and 100 miles west of the refuge headquarters in Columbia, North Carolina. Numerous conservation areas occur in eastern North Carolina, including ten national wildlife refuges.

Pocosin Lakes NWR lies within Hyde, Tyrrell, and Washington Counties where all or parts of Mattamuskeet NWR, Swanquarter NWR, Alligator River NWR, Pettigrew State Park, the Buckridge Coastal Reserve, and numerous game lands are also located (Table 4).

### B. HABITAT AND LAND USE

Three types of habitats dominate Pocosin Lakes NWR: pocosin wetland, hardwood swamp forest, and mixed pine flatwoods. Pocosin is a specific type of a poorly drained shrub bog that has a deep accumulation of organic material (peat) over mineral soil. The vegetation of pocosin wetlands consists of thick, tightly bounded shrubs and thorny vines with pond pine (*Pinus serotina*) or loblolly pine (*Pinus taeda*) dominating the canopy. A fully developed pocosin is elevated in comparison to the surrounding landscape. The availability of nutrients in the soil affects the size of the vegetation. Typically, the deeper peat surface layers are further away from the underlying, nutrient-rich mineral soils resulting in stunted or shorter vegetation in the native plant community (short or low pocosin). The shallower peat soils are closer to the underlying, nutrient-rich mineral soil resulting in taller vegetation (tall or high pocosin). Both of these pocosin types occur on the refuge and in the proposed expansion area (Sharitz and Gibbons 1992).

Mixed pine flatwoods is another special type of pocosin wetland where peat soils are deeper than 16 inches. The habitat type contains loblolly pine (*Pinus taeda*), pond pine (*Pinus serotina*), and soft mass hardwood species, such as red maple (*Acer rubrum*), swamp tupelo (*Nyssa biflora*), and slippery elm (*Ulmus rubra*). The understory includes red bay (*Persea palustris*), sweet pepperbush (*Clethra alnifolia*), and wax myrtle (*Morella cerifera*).

Hardwood swamp forest includes non-riverine swamp forest and wet hardwood forest. These habitat types contain a variety of hard and soft mast bearing species and a gradient of peat depths and flood regimes. Non-riverine swamp forests have poorly drained organic peat soils, although not as deep as that of a pocosin. Bald cypress (*Taxodium distichum*), red maple (*Acer rubrum*), and swamp tupelo (*Nyssa biflora*) dominate the canopy of non-riverine swamp forests, with red bay (*Persea palustris*), sweet pepperbush (*Clethra alnifolia*), and various ferns (*Woodwardia spp.*) and vines occupying the understory (VDCR 2006). The wet hardwood swamp forests occur on shallow peat to more mineral soils and include the above species and hard mast species such as water oak (*Quercus nigra*), willow oak (*Quercus phellos*), laurel oak (*Quercus laurelifolia*), and swamp chestnut oak (*Quercus michauxii*).

**Table 4. Conservation areas surrounding Pocosin Lakes National Wildlife Refuge**

<b>Name of Conservation Area</b>	<b>Acreage</b>	<b>Owner</b>	<b>Distance from Pocosin Lakes</b>
Mattamuskeet NWR	50,000	FWS	3 miles south of Pocosin Lakes NWR in Hyde County
Swanquarter NWR	16,400	FWS	10 miles south of Pocosin Lakes NWR in Hyde County
Alligator River NWR	152,000	FWS	3 miles east of Pocosin Lakes NWR in Dare and Hyde Counties
Roanoke River NWR	21,000	FWS	14 miles west of Pocosin Lakes NWR in Bertie County
Pettigrew State Park (contains Lake Phelps)	1,200 land 16,600 water	North Carolina State Parks	North of Pocosin Lakes NWR in Tyrrell and Washington Counties
Palmetto-Peartree Preserve	10,000	The Conservation Fund	8 miles northeast of Columbia in Tyrrell County
Lantern Acres Game Land	1,825	NC Wildlife Resources Commission	Adjoins northeast boundary of Pocosin Lakes NWR in Tyrrell County
Pungo River Game Land	614	NC Wildlife Resources Commission	3 miles south of Pocosin Lakes NWR in Hyde County
Bachelor Bay Game Land	5,426	NC Wildlife Resources Commission	11 miles northwest of Pocosin Lakes NWR in Bertie and Washington Counties
Van Swamp Game Land	5,482	NC Wildlife Resources Commission	10 miles west of Pocosin Lakes NWR in Tyrrell and Washington Counties
J. Morgan Futch Game Land	600	NC Wildlife Resources Commission	Adjoins north Frying Pan boundary of Pocosin Lakes NWR in Tyrrell County
Alligator River Game Land	13,877	NC Wildlife Resources Commission	Adjoins north Frying Pan boundary of Pocosin Lakes NWR in Tyrrell County
New Lake Game Land	1,394	NC Wildlife Resources Commission	Adjoins east and southeast boundaries of Pocosin Lakes NWR in Hyde and Tyrrell Counties
Gull Rock Game Land	31,057	NC Wildlife Resources Commission	11 miles southwest of Pocosin Lakes NWR in Hyde County
Buckridge Coastal Reserve	18,194	NC Division of Coastal Management	Adjoins Frying Pan Unit and southeastern boundary of Pocosin Lakes NWR in Tyrrell County
Bull Neck Swamp Research Forest	6,158	North Carolina State University	5 miles northwest of Pocosin Lakes NWR in Washington County

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The proposed expansion areas are extensions of the dominant habitat types occurring within the refuge or converted farmlands that would buffer and maximize optimal pocosin restoration on the refuge. A majority of the proposed expansion areas consists of pocosin wetlands. Acquiring these wetlands is of critical importance, because hydrological restoration is a management goal of Pocosin Lakes NWR. When peat soils are formed under saturated conditions, they sequester significant quantities of carbon and nitrogen and trace amounts of mercury and other elements. These constituents are released when the pocosin wetlands are artificially drained and the peat soils physically erode or oxidize rather than accumulate. Prior to refuge ownership, these pocosins were drained for farming, peat mining operations, and access for timber harvest. Hydrology restoration would restore a healthy pocosin ecosystem and the natural functions of sequestering carbon, nitrogen, and mercury. This would improve water quality, benefit wildlife habitat, and reduce the severity of catastrophic wildfires.

The historic land use in the area depended, for the most part, on the nature of the land. Hydric soils cover 97 percent of Tyrrell County, 99 percent of Hyde County, and 86 percent of Washington County (USDA 1981, 1988, 1991a, b, c). Hydric soils remained in forest, pocosin (shrubby plant communities), or marsh until the 20th Century. Historic land uses revolved around hunting upland game and waterfowl. Native Americans and farmers, descended from European settlers, cultivated crops on the uplands, on the shoreline of the Albemarle Sound and Lake Mattamuskeet, and on the terraces of streams for centuries. In the 20th Century, farmers drained much of the hydric mineral soil and shallow organic soil.

Today, Tyrrell County is 61 percent forested (153,400 acres) and 28 percent cropland (69,749 acres) (USDA 1988, 1991a). Corn, winter wheat, and soybeans are important crops in the county. Hyde County is 60 percent forested (235,800 acres), 24 percent cropland (95,327 acres), and 11 percent marsh (4,729 acres) (USDA 1991a). Washington County is 38 percent forested (84,200 acres) and 45 percent cropland (100,388 acres) (USDA 1991c). The important crops in Hyde and Washington Counties are cotton, soybean, corn, and wheat.

### **C. WILDLIFE RESOURCES**

Two federally listed species occupy the above habitats, both on Pocosin Lakes NWR and within the proposed expansion area. These include the endangered red wolf and red-cockaded woodpecker. State listed species that do or could occur on Pocosin Lakes NWR include the following: American alligator (*Alligator mississippiensis*); American eastern peregrine falcon (*Falco peregrinis*); Bachman's sparrow (*Aimophila aestivalis*); black vulture (*Coragyps atratus*); Cooper's hawk (*Accipiter cooperii*); glossy ibis (*Plegadis falcinellus*); little blue heron (*Egretta caerulea*); loggerhead shrike (*Lanius ludovicianus*); Rafinesque's big-eared bat (*Corynorhinus rafinesquii*); red-cockaded woodpecker; star-nosed mole (*Condylura cristata*); southern bald eagle (*Haliaeetus leucocephalus leucocephalus*); southern dismal swamp shrew (*Sorex longirostris fisheri*); tri-colored heron (*Egretta tricolor*); and Waccamaw killifish (*Fundulus waccamensis*).

The trust species found on Pocosin Lakes NWR also include 217 species of migratory birds (e.g., shorebirds, marsh birds, wading birds, waterfowl, raptors, landbirds and neotropical migratory songbirds), 67 of which nest on the refuge. The members of Partners in Flight identify several of these birds that could occur on the refuge as extremely high-priority species for conservation: Bachman's sparrow, Henslow's sparrow (*Ammodramus henslowii*), black-throated green warbler (*Dendroica virens*), and Swainson's warbler (*Limnothlypis swainsonii*) (Rich et. al 2004). Both the refuge and proposed expansion areas provide the specialized habitats to support these priority bird species.

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Other wildlife species that occur in a variety of habitats across the refuge and in the proposed expansion area include 36 species of amphibians, over 40 species of reptiles, and over 40 mammal species. A black bear study conducted during 2003 and 2004 estimated the bear density as some of the highest reported in the literature and ranged from 1.23 to 1.66 bears per square kilometer in the areas sampled. The number of bears on the refuge in suitable habitat would range from 369 to 498 bears. Genetic variability and structure were substantially higher on the refuge compared to other bear populations in North America (Tredick 2005).

#### **D. FISHERY RESOURCES**

Maintenance and sustainability of the diadromous fishery resources including hickory shad and striped bass, which use the Scuppernong River, Alligator River, and other creeks and tributaries in the expansion area as a migratory pathway and as a spawning and nursery habitat, are the goals of the Atlantic States Marine Fisheries Commission (ASMFC). When the species are in Atlantic Ocean waters, they are under the regulatory authority of the federal Fishery Management Councils (New England, Mid-Atlantic and South Atlantic) or the National Marine Fisheries Service. Service participation in these regulatory institutions is the responsibility of the Fisheries Program. The ASMFC has prepared Fishery Management Plans (FMPs) for most of the diadromous species using refuge waters, and the New England and Mid-Atlantic councils are currently considering amendments which would affect the bycatch of the two river herring species in the ocean. The ASMFC FMPs establish the management targets and thresholds for each species, in some cases on a watershed basis (e.g., for American shad and river herring, see ASMFC 2009, 2010).

The North Carolina Division of Marine Fisheries has designated the Scuppernong River a spawning area for anadromous fish including blueback herring and alewife. Similarly, the North Carolina Division of Water Quality has designated several streams draining the east side of the refuge (Riders Creek, Northwest and Southwest Forks of the Alligator River) and the Alligator River as outstanding resource waters.

The National Fish Habitat Action Plan (Association of Fish and Wildlife Agencies 2006) focuses on protecting, restoring, and enhancing the nation's fish and aquatic communities through partnerships that foster fish habitat conservation and improve the quality of life for the American people. Under the plan, Fish Habitat Partnerships were established on a regional basis and focus on the plan's mission, objectives, and goals. Two such partnerships, the Southeast Aquatic Resources Partnership, and the Atlantic Coastal Fish Habitat Partnership, overlay the refuge and are potential sources of funding for restoration of aquatic habitat.

#### **E. RELATED RESOURCES**

See Figure 3 for related resources.

#### **F. CLIMATE CHANGE**

The proposed expansion would allow the refuge to implement actions to lessen the effects of climate change on critical habitats. Climate change has a dual influence through timing and amounts of rainfall and sea level rise. Rainfall is the primary source of fresh water in the ecosystem. Trends in rainfall in the lower 48 states have been on the increase since 1901 at a rate of 6.4 percent per century (USEPA 2010). In a flat system governed by surface hydrology, that can be significant. Sea level rise models show much of the area falling below sea level in the next 50 to 100 years (NCDENR 2010). While management cannot prevent sea level rise, it can help to provide for adequate space and quality of habitat to increase resiliency and allow for the gradual change of habitats over time.

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Habitat regimes would shift, displacing those species that cannot survive new conditions of higher water levels and changing salinity. The proposed expansion area, if incorporated into the refuge, would allow for hydrology restoration that would create more resiliency in the habitat due to sea-level rise. It would not prevent the rise but would make the impacts more gradual, allowing wildlife and habitats to adapt.

The current projections of sea level rise due to climate change could result in inundation of lower elevation habitats in the coastal plain. As this occurs over the next several decades, vegetative communities would gradually shift to more salt-tolerant species. The most vulnerable habitats for these vegetative shifts are along the open ditches and canals where saltwater can easily enter as sea level rises. The additional stress in these fragile areas would also increase the spread of highly adaptable invasive species such as Phragmites. The refuge's hydrology plan (Soil Conservation Service 1994) calls for the placement of flash-board risers and earthen plugs in canals and ditches to block the entrance of denser saltwater. This would minimize vegetative shifts and encroachment of invasive species and promote peat accretion, raising landscape elevation. The carbon and other nutrient sequestration benefits from hydrology restoration would protect water quality on and off of the refuge and reduce the impacts from climate change on these unique habitats.

## **G. SOCIOECONOMIC AND SOCIOCULTURAL CONDITIONS**

The refuge headquarters is located in Tyrrell County in the town of Columbia. The western edge of the refuge is approximately 13 miles southeast of Plymouth in Washington County, and the southern boundary is 12 miles west of Swan Quarter Township in Hyde County. The estimated 2008 population is 803 for Columbia, 3,863 for Plymouth, and 958 for Swan Quarter Township (City-Data, Columbia, NC 2010; City-Data Plymouth, NC 2010; City-Data, Swan Quarter Township, NC 2010). All three towns are the largest communities within their respective county, and all three counties have depressed economies.

The unemployment rate is 14 percent in Hyde County, 13.9 percent in Tyrrell County, and 13.4 percent in Washington County (City-Data, Columbia, NC 2010; Employment Security Commission of North Carolina 2010). Although other factors may be at play, the high percentage of hydric, organic soils may significantly influence the economic state of each county. Within Hyde County, 99 percent of the soil base is hydric, compared to 96 percent for Tyrrell County and 86 percent in Washington County (City-Data, Columbia, NC 2010; City-Data Plymouth, NC 2010; City-Data, Swan Quarter Township, NC 2010). Consequently, each county has limited opportunities for successful agricultural, residential, and commercial development without ditching and draining the lands.

The city of Columbia and Tyrrell County have embraced tourism as a means to economic growth, but efforts to develop the industry to date have had limited success. At least one study (Lash and Black 2005) indicates that using the endangered red wolf as an ecotourism centerpiece for the area would likely be successful.

## **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 proposal with the North Carolina State Historic Preservation Office.

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Service acquisition of land with known or potential archaeological or historical sites provides two major types of protection for these resources – protection from damage by federal activity and protection from vandalism or theft. The Service’s policy is to preserve these cultural, historic, and archaeological resources in the public trust and avoid any adverse effects wherever possible.

The proposed acquisition of lands would have no adverse effect 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 would coordinate with the Service’s Regional Historic Preservation Officer and carry out appropriate site identifications, evaluations, and protection measures as specified in the regulations and in Service directives and manuals.

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### *III. Alternatives Including the Proposed 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 would not acquire any of the lands proposed for the expansion of the refuge. The proposed project lands would remain in private ownership and current land uses would most likely continue. Protection of the fish and wildlife habitats and natural resource values of these lands would be contingent upon the enforcement of existing federal, state, and local environmental regulations (the Clean Water Act, State water quality and pollution laws, etc.), and the discretion of the private landowners.

#### **B. ALTERNATIVE 2: PROTECTION AND MANAGEMENT OF UP TO 10,917 ACRES BY THE FISH AND WILDLIFE SERVICE (PROPOSED ACTION)**

Under this alternative, the Service would identify in an approved acquisition boundary, and potentially acquire up to 10,917 acres of habitat for protection and management as part of Pocosin Lakes NWR (Figure 12). This is the proposed action, which provides the maximum benefits for hydrology and pocosin ecosystem restoration. The proposed action provides contiguous pocosin habitat, connects riparian habitats as wildlife corridors, and provides maximum benefits for habitat and water quality. Refuge boundary lines would be clearly delineated for adjacent landowners and visitors. The unique habitat around New Lake would be protected for waterfowl. The headwaters of the Northwest and Southwest Forks of the Alligator River would be protected. The additional farmland would supplement forage and provide additional moist-soil unit habitats for wintering, migratory waterfowl in accordance with the refuge's CCP.

#### **C. ALTERNATIVE 3: PROTECTION AND MANAGEMENT OF UP TO 5,176.1 ACRES BY THE FISH AND WILDLIFE SERVICE**

Under this alternative, the Service would identify in an approved acquisition boundary, and potentially acquire, up to 5,176.1 acres of habitat for protection and management as part of Pocosin Lakes NWR (Figure 13). This alternative would provide an increase in benefits for hydrology and pocosin ecosystem restoration on 17,280 acres. Additional land around the New Lake Tract would be protected for waterfowl and some of the refuge boundary lines simplified. Some additional farmland from the southern blocks tract would supplement forage habitat for wintering, migratory waterfowl as in accordance with the refuge's CCP. The Service would acquire sufficient interest in the identified lands to prevent conflicting land uses and to manage the areas for their wildlife values.

Figure 5. Lands included in the proposed project under Alternative 2

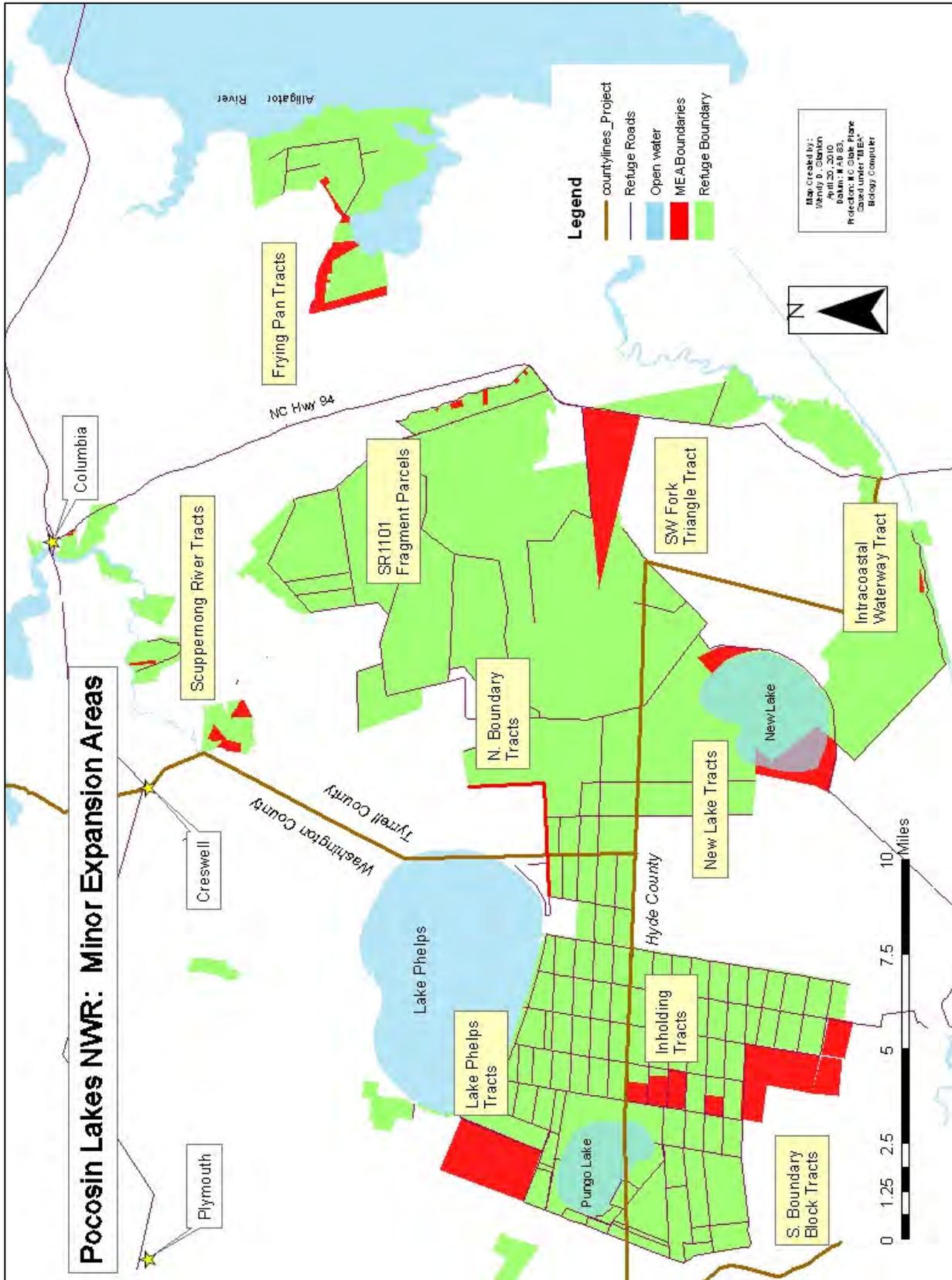
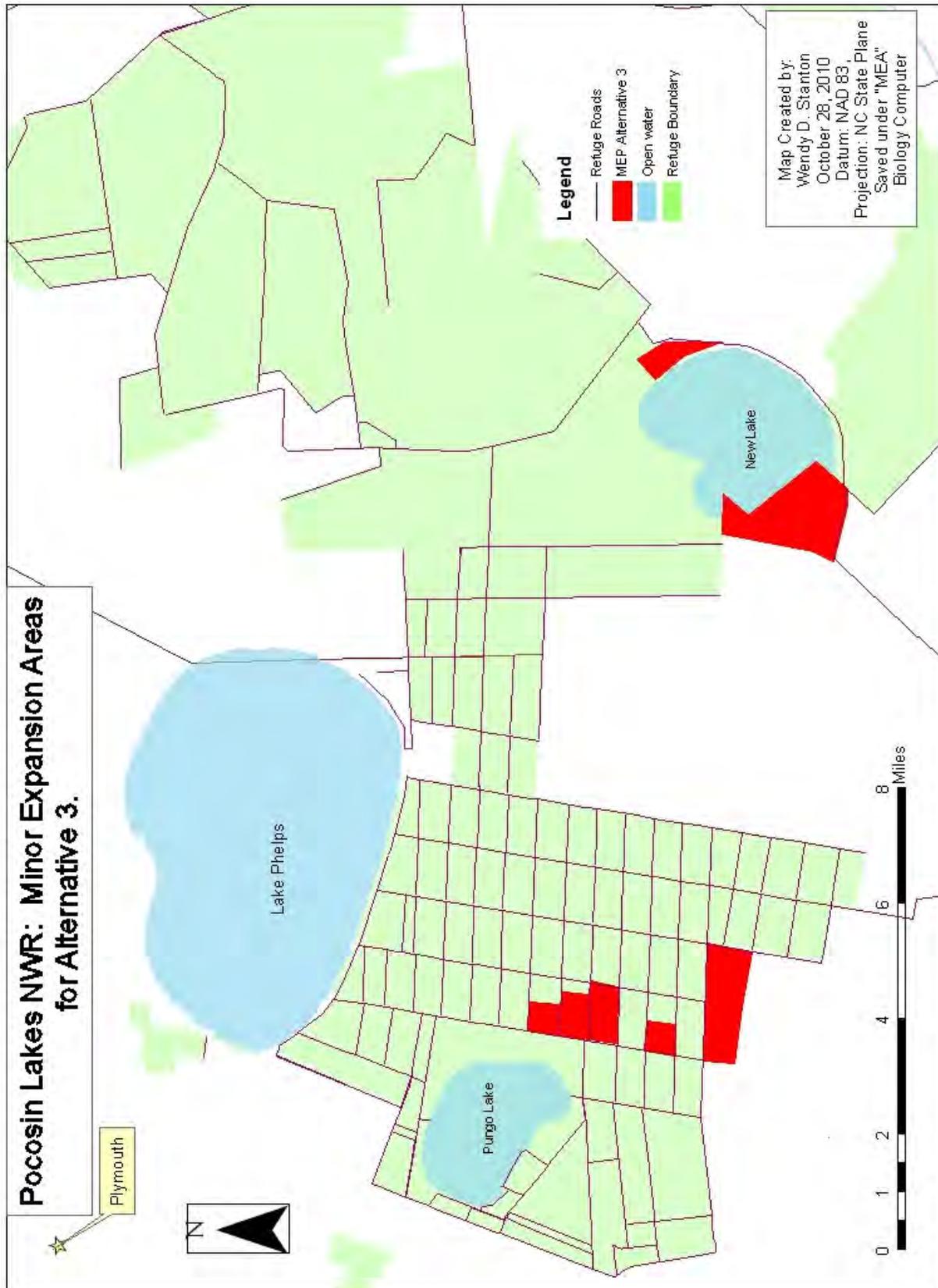


Figure 6. Lands included in the proposed project under Alternative 3





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## IV. Environmental Consequences

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

### A. ALTERNATIVE 1: NO ACTION

Under this alternative, the Service would take no action to acquire, protect, and manage any additional lands. 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, which are distinct from laws, involving the protection of wetlands and floodplains only apply to federal agencies. They do not apply to habitat alterations by non-federal entities that receive no federal funds.

The Clean Water Act is a federal law that provides for the protection of wetlands. The Army Corps of Engineers operates the Section 404 permit program under this authority. 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 State of North Carolina has regulatory authority over the area and would 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 would be consistent with protection of the area's fish and wildlife resources. These programs are subject to changes in the law and to varying definitions and interpretations, often to the detriment of wetlands. The Army Corps of Engineers regulatory authority provides for the issuance of Section 10 and Section 404 permits when they are 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 would alter the wetlands in the proposed refuge unit area could be issued.

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

Under the "No Action" alternative, the refuge would continue to manage only current refuge lands within the present limiting factors. This alternative would not promote the maximum benefits from hydrology restoration, connectivity of riparian habitat, wildlife corridors, and water and habitat quality. The current private inholdings, areas of private ownership within the refuge boundary, would continue to further limit hydrology restoration in the interior blocks of the refuge. These interior blocks represent the most severely drained and altered pocosin habitats on the refuge. Consequently, the maximum sequestration benefits of carbon and nitrogen would not be realized and habitat and water quality conditions would not be optimal. Due to the drier conditions and concerns over burning on private inholdings, the prescribed fire program would have fewer and narrower windows of opportunities to conduct burns within prescription parameters. The pocosin habitat is a fire-adapted ecosystem. The presence of fire perpetuates the healthy existence of many native plant species. Over time, the attenuated benefits caused by these limitations to burn would likely cause shifts in the species composition of native vegetation and intensify potential encroachment of invasive species. This also raises concerns for fuel buildup and conditions for potential catastrophic wildfire.

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Current boundary lines that are adjacent to and bisect New Lake, the Southwest Fork Triangle tract, Gum Neck Canal parcels, Frying Pan tracts, and Scuppernong River tracts would continue to provide law enforcement challenges. Although the present boundary is posted with signs, these signs are continually knocked down or deliberately moved. At present, the refuge boundary is difficult to detect, because it does not coincide with obvious features such as roads or creeks. This results in confusion for refuge visitors and adjacent landowners.

## **B. ALTERNATIVE 2: PROTECTION AND MANAGEMENT OF UP TO 10,917 ACRES BY THE FISH AND WILDLIFE SERVICE (PROPOSED ACTION)**

Under this alternative, the Service would identify an approved acquisition boundary, and potentially acquire up to 10,917 acres of habitat as part of Pocosin Lakes NWR. The land protection priorities and proposed methods of acquisition are summarized in Chapter III of the Draft LPP.

Under the “Proposed Action,” the refuge would be able to maximize the benefits from hydrology restoration on 27,412 acres, and realize connectivity of riparian habitat for wildlife corridors. The current private inholdings and adjacent refuge land would no longer be a limiting factor for hydrology restoration or prescribed burning. The maximum sequestration benefits of carbon and nitrogen would be realized and habitat and water quality conditions would be optimal.

Specifically, the objectives of the “Proposed Action” are listed as follows:

- Manage water levels in Watersheds 1 and 2 to achieve optimal hydrologic conditions on all 27,412 acres; to enhance pocosin wetland and wildlife habitat quality; to reduce the risk of catastrophic wildfire and ground fire; to improve water quality on and off the refuge; and to sequester carbon by stopping the loss of organic, peat soil oxidation caused from artificial drying of the soils.
- Protect the unique characteristics of New Lake and its shoreline, retaining high water quality and habitat values including providing habitat for wintering, migratory waterfowl.
- Manage the water level in New Lake to enhance the quality of the lake for waterfowl roosting and loafing.
- Increase the amount of supplemental agricultural foods and moist-soil plant foods and habitat made available to wintering waterfowl on the Pungo Unit, as called for in the refuge’s CCP.
- Protect the relatively intact pocosin wetland system which includes the Northwest and Southwest Forks (of the Alligator River) and their headwaters in order to retain their habitat, water quality, and carbon sequestration values.
- Protect the Scuppernong River corridor from development in order to retain its wildlife habitat, water quality, scenic, and recreational values.
- Facilitate enforcement of refuge regulations by aligning refuge boundaries with easily recognized landmarks, such as roads and creeks.

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Based on the nature of the proposal, the location of the site, and the current land use, the proposed action would not have any significant effects on the quality of the human environment including public health and safety. Further, because the purpose of the proposal is to protect, maintain, and where possible, enhance the natural habitat of the lands within the proposed acquisition area, the proposal is not expected to have any significant adverse effects on the area's wetlands and floodplains, pursuant to Executive Orders 11990 and 11988.

Implementation of the proposed action would not involve any highly uncertain, unique, unknown, or controversial effects on the human environment. The proposed action would not establish a precedent for future actions with significant effects, nor would it represent a decision in principle about a future consideration. No cumulatively significant impacts on the environment would be anticipated.

In addition, the proposal would not significantly affect any unique characteristic of the geographic area, such as historical or cultural resources, wild and scenic rivers, or ecologically critical areas. The proposal would not significantly affect any site listed in or eligible for listing in the National Register of Historic Places, nor would it cause loss or destruction of significant scientific, cultural, or historic resources. The area's cultural resources would be protected under the regulations of the National Historic Preservation Act of 1966, as amended, the Archaeological Resources Protection Act, and the Advisory Council on Historic Preservation (36 CFR 800). The North Carolina State Historic Preservation Office would be contacted whenever any future management activities have the potential to affect cultural resource sites.

All tracts acquired by the Service in fee-title would be removed from local real estate tax rolls, because Federal Government agencies are not required to pay state or local taxes. However, the Service makes annual payments to local governments in lieu of real estate taxes, as required by the Refuge Revenue Sharing Act (Public Law 95-469). Payment for acquired land is computed on whichever of the following formulas is greatest: (1) Three-fourths of 1 percent of the fair market value of the lands acquired in fee title; (2) 25 percent of the net refuge receipts collected; or (3) 75 cents per acre of the lands acquired in fee title.

Some local officials have expressed concerns about the removal of lands from the counties' respective tax rolls. In FY 2006, the Service paid \$81,622 (or \$0.74 per acre) to Hyde, Tyrrell, and Washington Counties in lieu of taxes on Pocosin Lakes NWR's 110,106 acres. In recent years, the Service's in-lieu of tax payments to counties has been running just under 50 percent of the taxable amount. This percentage is based on the amount of funding appropriated by Congress for this purpose. If opposition based on reduction in tax revenue makes it impossible to acquire all proposed expansion areas in fee title, we would consider conservation easements and land swaps as options for partnering with the landowners in support of refuge conservation goals.

No actions would be taken that would lead to a violation of federal, state, or local law imposed for the protection of the environment.

### **C. ALTERNATIVE 3: PROTECTION AND MANAGEMENT OF UP TO 5,176.1 ACRES BY THE FISH AND WILDLIFE SERVICE**

Under this alternative, the Service would identify in an approved acquisition boundary, and potentially acquire up to 5,176.1 acres of habitat as part of Pocosin Lakes NWR. The inholding tracts, New Lake tract, and blocks of land adjacent to the southern boundary of the refuge between Allen and Clayton Roads would be acquired from willing sellers. The land protection priorities and proposed methods of acquisition are summarized in Chapter III of the Draft LPP.

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Under this alternative, the refuge would continue to manage the existing lands and additional 5,176.1 acres within some of the present limiting factors. This alternative would promote some of the benefits from hydrology restoration and water and habitat quality. The acquisition of the private inholdings and blocks of land located adjacent to the southern boundary of the refuge between Allen and Clayton Roads would no longer limit hydrology restoration in the interior blocks of the refuge for Watershed 1. These interior blocks represent the most severely drained and altered pocosin habitat on the refuge. However, for the southeast portion of Watersheds 1 and 2, the maximum sequestration benefits of carbon and nitrogen would not be realized and habitat and water quality conditions would not be optimal.

Due to the drier conditions and concerns of burning on adjacent refuge lands, the prescribed fire program would have additional, but not optimal, windows of opportunities to conduct burns within prescription parameters. The pocosin habitat is a fire-adapted ecosystem. The presence of fire perpetuates the healthy existence of many native plant species. Over time, the attenuated benefits caused by these limitations to burn would likely cause shifts in the species composition of native vegetation and intensify potential encroachment of invasive species. This also raises concerns for fuel buildup and conditions for potential catastrophic wildfire.

Specifically, the objectives for Alternative 3 would include the following:

- Manage water levels in Watershed 1 to achieve optimal hydrologic conditions on 17,280 acres to enhance pocosin wetland and wildlife habitat quality, reducing the risk of catastrophic wildfire and ground fire in Watershed 1, improving water quality on and off the refuge, and sequestering carbon by stopping the loss of organic, peat soil oxidation caused from artificial drying of the soils.
- Protect the unique characteristics of New Lake and its shoreline in order to retain high water quality and habitat values, including providing habitat for wintering, migratory waterfowl.
- Manage the water level in New Lake to enhance the quality of the lake for waterfowl roosting and loafing.
- Provide a small increase to the amount of supplemental agricultural foods and moist-soil plant foods/habitats made available to wintering waterfowl on the Pungo Unit, as called for in the refuge's CCP.
- Facilitate enforcement of refuge regulations at one of the critical areas by aligning refuge boundaries with easily recognized landmarks such as roads and creeks.

#### **D. RECOMMENDATION**

Alternative 2 is recommended because it promotes the maximal benefits from hydrology restoration in 10,917 acres in Watershed 2. Alternative 3 excludes the connectivity of riparian habitats, wildlife corridors and corresponding water and habitat quality in these areas. Table 5 provides an analysis of the differences between Alternatives 1, 2, and 3.

The headwaters of the Northwest and Southwest Forks of the Alligator River would not be completely protected under Alternative 3. The headwaters area represents the most fully intact and least altered pocosin habitat on the refuge and provides important habitat for anadromous fish, including river herring.

The northwest section of the refuge would not be protected by the Lake Phelps tracts in Alternative 3. Benefits of additional buffers and supplemental agricultural foods and moist-soil plant foods and habitat would not be realized. These tracts, as proposed in Alternative 2, would provide a more contiguous block of wildlife habitat between the refuge and Lake Phelps.

Under Alternative 3, the Intracoastal Waterway inholding tract would continue to provide challenges for habitat management, law enforcement, and the prescribed burn program. It would be available for development, which would increase fragmentation of an 8,000-acre block of contiguous pocosin habitat.

The Frying Pan Unit includes the only documented endangered red-cockaded woodpeckers on the refuge. Alternative 2 would provide protection of this important habitat for red-cockaded woodpeckers.

The present boundary in areas that are adjacent to the Southwest Fork Triangle tract, SR 1101 fragment parcels, Frying Pan tracts, Intracoastal Waterway tract, and Scuppernong River tracts would continue to provide law enforcement challenges under Alternative 3. Although the present refuge boundary is posted with signs, these signs are continually knocked down or deliberately moved. The refuge boundary in these areas does not clearly depict a boundary line along a road or creek, resulting in ongoing confusion for refuge visitors and adjacent landowners.

**Table 5. Comparison of the effects of Alternatives 1, 2, and 3**

<b>Objective</b>	<b>Alternative 1 (No Action)</b>	<b>Alternative 2 (Proposed Action)</b>	<b>Alternative 3</b>
<b>Land acquisition</b>	None	10,917 acres	5,176.1 acres
<b>Hydrology restoration</b>	No difference	Existing boundaries plus maximum benefits to 27,412 acres	Existing boundaries plus benefits to 17,280 acres
<b>Protection of New Lake</b>	No difference	Complete protection	Complete protection
<b>Waterfowl habitat</b>	No difference	Moderate increase	Slight increase
<b>Protection of NW and SW Forks of Alligator River</b>	No difference	Complete protection	No difference
<b>Protection of Scuppernong River corridor</b>	No difference	Moderate increase	No difference
<b>Simplify refuge boundaries</b>	No difference	Moderate increase	Slight increase



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## *Appendix B. Interim Compatibility Determination*

Under the National Wildlife Refuge System Improvement Act of 1997, the National Wildlife Refuge System Administration Act of 1966, and the Refuge Recreation Act of 1962, the Service may not permit public recreational activities on a national wildlife refuge unless the activities are first determined to be compatible with the purposes of the refuge. A thorough Interim Compatibility Determination would be conducted when specific lands are available for purchase and would bridge the gap between acquisition of the proposed refuge expansion lands and completion of an amendment to the refuge's CCP.

All lands of the National Wildlife Refuge System are managed in accordance with an approved CCP that guides management decisions and sets forth strategies for achieving refuge purposes. The CCP will be consistent with sound resource management principles, practices, and legal mandates, including Service compatibility standards and other Service policies, guidelines, and planning documents. One of the major objectives of a CCP is to provide a basis for determining the compatibility of secondary uses on refuge lands. An amendment to the refuge's CCP would be completed within two years after the project lands are acquired by the Service.

Uses typically compatible with refuge purposes include: (1) Wildlife observation/photography; (2) recreational fishing of freshwater fish (e.g., largemouth bass, crappie, catfish, and bream) in accordance with State of North Carolina regulations; (3) recreational hunting of migratory birds and resident game in accordance with refuge and State of North Carolina regulations; (4) trapping of some furbearing animals and feral hogs; (5) wildlife-dependent environmental education activities (e.g., canoe trips, nature camps, boardwalks and nature trails, and interpretation of resources and programs); (6) refuge resource studies; (7) cropland management program; (8) commercial photography; (9) commercial tours and guiding; (10) wood and reed gathering; (11) meetings of non-Service agencies/organizations; and (12) forest management program.

For more detailed information on uses and compatibility, please see the Comprehensive Conservation Plan for Pocosin Lakes National Wildlife Refuge (USFWS 2007).



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## Appendix C. Intra-Service Section 7 Biological Evaluation

### REGION 4 INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

**Originating Person:** Wendy Stanton, Refuge Biologist

**Telephone Number:** (252) 796-3004 Ext. 224      **E-Mail:** *wendy\_stanton@fws.gov*

**Date:** July 23, 2010

**PROJECT NAME:** Pocosin Lakes NWR: Minor Expansion Proposal

**I. Service Program:**

- Ecological Services
- Federal Aid
  - Clean Vessel Act
  - Coastal Wetlands
  - Endangered Species Section 6
  - Partners for Fish and Wildlife
  - Sport Fish Restoration
  - Wildlife Restoration
- Fisheries
- Refuges/Wildlife

**II. State/Agency:** U.S. Fish and Wildlife Service

**III. Station Name:** Pocosin Lakes National Wildlife Refuge

**IV. Description of Proposed Action:** The refuge's Minor Expansion Proposal (MEP) requires a Section 7 consultation for the addition of approximately 11,054 acres of land to the refuge. The areas proposed for acquisition immediately adjoin the current boundaries of Pocosin Lakes NWR to create larger, contiguous blocks of habitat. The minor expansion would benefit the listed species by providing additional protected lands under the refuge's jurisdiction.

**V. Pertinent Species and Habitat:**

- Include species/habitat occurrence map:
- Complete the following table:

SPECIES/CRITICAL HABITAT	STATUS <sup>1</sup>
Red wolf ( <i>Canis rufus</i> )	E
Red-cockaded woodpecker ( <i>Picoides borealis</i> )	E
Sensitive joint vetch ( <i>Aeschynomene virginica</i> )	T

<sup>1</sup>STATUS: E=endangered, T=threatened, PE=proposed endangered, PT=proposed threatened, CH=critical habitat, PCH=proposed critical habitat, C=candidate species

**VI.**

**VII. Location:**

**A. Ecoregion Number and Name:** Southeast Region, Area II- Roanoke/Tar/Neuse/Cape Fear Ecosystem

**B. County and State:** Tyrrell, Washington, and Hyde Counties, North Carolina

**C. Section, township, and range:**  
76°35'00", 36°43'00"

**D. Distance and direction to nearest town:** Refuge office is located in Columbia, North Carolina.

**E. Species/habitat occurrence:** Red wolves do occur on the refuge and adjacent private lands. All known red-cockaded woodpecker cavities and potential foraging habitat are located primarily on the east side of the refuge in the Frying Pan Unit. As of this time, the sensitive joint vetch has not been documented on the refuge. The MEP would not adversely affect these species or critical habitats on the refuge.

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**VIII. Determination of Effects:**

**A. Explanation of effects of the action on species and critical habitats in item V.**

<b>SPECIES/CRITICAL HABITAT</b>	<b>EFFECTS OF THE ACTION ON SPECIES/CRITICAL HABITAT<sup>1</sup></b>
<b>Red wolf</b> ( <i>Canis rufus</i> )	Not likely to adversely affect species or critical habitat.
<b>Red-cockaded woodpecker</b> ( <i>Picoides borealis</i> )	Not likely to adversely affect species or critical habitat.
<b>Sensitive joint vetch</b> ( <i>Aeschynomene virginica</i> )	Not likely to adversely affect species or critical habitat.

<sup>1</sup>DEFINITIONS FOR EFFECTS OF THE ACTION:

*Direct Effects - those that are an immediate result of the action.*

*Indirect Effects - those caused by the action later in time but are still reasonably certain to occur. They include the effects of future activities that are induced by the original action and that occur after the action is completed.*

*Interrelated - those that are part of a larger action and depend on the larger action for their justification.*

*Interdependent - those that have no significant effect independent utility apart from the action under consideration.*

*Cumulative Effects - the effects of state or private activities, not involving federal activities that are reasonably certain to occur within the action area.*

**B. Explanation of Actions to be Implemented to Reduce Adverse Effects:**

SPECIES/CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE EFFECTS
<b>Red wolf</b> ( <i>Canis rufus</i> )	The proposed MEP would likely benefit the red wolf population on the refuge by providing additional land protection.
<b>Red-cockaded woodpecker</b> ( <i>Picoides borealis</i> )	The proposed expansion of 791 acres in the Frying Pan Unit would likely benefit the red-cockaded woodpecker population in that area by providing additional land protection.
<b>Sensitive joint vetch</b> ( <i>Aeschynomene virginica</i> )	This species has not been documented on the refuge.

**Effect Determination and Response Requested:**

SPECIES/ CRITICAL HABITAT	<u>DETERMINATION<sup>1</sup></u>			RESPONSE REQUESTED
	NE	NA	AA	
<b>Red wolf</b> ( <i>Canis rufus</i> )		X		concurrence
<b>Red-cockaded woodpecker</b> ( <i>Picoides borealis</i> )		X		concurrence
<b>Sensitive joint vetch</b> ( <i>Aeschynomene virginica</i> )		X		concurrence

<sup>1</sup>DETERMINATION/RESPONSE REQUESTED:

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested is optional but a "Concurrence" is recommended for a complete Administrative Record.

NA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response Requested is a "Concurrence".

AA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested for listed species is "Formal Consultation". Response Requested for proposed or candidate species is "Conference".

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Signature    date

Title

**IX.    Reviewing Ecological Services Office Evaluation:**

**A. Concurrence \_\_\_\_\_ Nonconcurrence \_\_\_\_\_**

**B. Formal consultation required \_\_\_\_\_**

**C. Conference required \_\_\_\_\_**

**D. Informal conference required \_\_\_\_\_**

**E. Remarks:**

Signature    Date

Title    Office



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## Appendix D. Interim Recreation Act Funding Analysis

**Station Name:** Pocosin Lakes National Wildlife Refuge

**Date Established:** 1991

**Purpose(s) for which the Refuge was Established:**

The purpose of Pocosin Lakes NWR, as reflected in the legislation under which Congress authorized the refuge and the refuge has acquired land, is to protect and conserve migratory birds and other wildlife resources through the protection of wetlands, in accordance with the following laws: *...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...* 16 U.S.C. 664 (Migratory Bird Conservation Act of 1929); *...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 (Emergency Wetland Resources Act of 1986) *...for the development, advancement, management, conservation, and protection of fish and wildlife resources...* 16 U.S.C. 742f(a)(4) (Fish and Wildlife Act of 1956) *...for the benefit of the United States Fish and Wildlife Service in performing its activities and services. Such acceptance may be subject to the terms of any restriction or affirmative covenant or condition of servitude...* 16 U.S.C. 742f(a)(4) (Fish and Wildlife Act of 1956)

**Recreational Use(s) Evaluated:**

(1) Wildlife observation/photography; (2) recreational fishing of freshwater fish (e.g., largemouth bass, crappie, catfish, and bream) in accordance with State of North Carolina regulations; (3) recreational hunting of migratory birds and resident game in accordance with refuge's and State of North Carolina regulations; (4) trapping of some furbearing animals and feral hogs; (5) wildlife-dependent environmental education activities (e.g., canoe trips, nature camps, boardwalks, nature trails, and interpretation of resources and programs; (6) refuge resource studies; (7) cropland management programs; (8) commercial photography; (9) commercial tours and guiding; (10) wood and reed gathering; (11) meetings of non-Service agencies/organizations; and (12) forest management programs.

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

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 uses.

**Project Leader:** \_\_\_\_\_  
(Signature/Date)

**Refuge Supervisor:** \_\_\_\_\_  
(Signature/Date)

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



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## *Appendix E. Information on Preparers*

This document was prepared by:

**Howard Phillips**, Refuge Manager;

**David Kitts**, Deputy Refuge Manager;

**Wendy Stanton**, Wildlife Biologist;

**Sara Ward**, Ecologist;

**Kathryn Reis**, Graduate Intern;

**Pam Wingrove**, Natural Resource Planner.

With the exception of Kathryn Reis, all are employees of the Service.





## **POCOSIN LAKES NATIONAL WILDLIFE REFUGE**

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**October 2012**

